Life Science

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Electrophoresis

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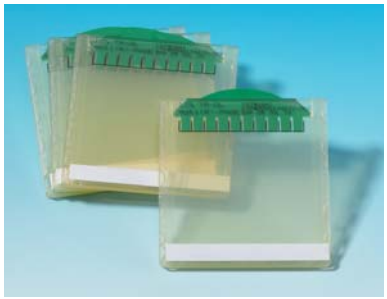
Roti®-PAGE Precast Gels

ready-to-use

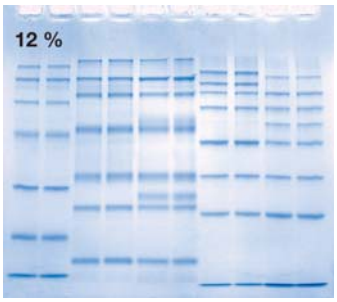
ready-to-use, for rapid and easy protein gel electrophoresis

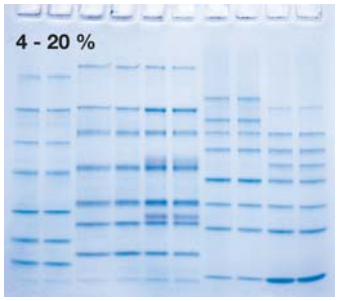
- Sharp resolution
- Very easy application
- Compatible with most minigel chambers
- Shelf life: 12 weeks from date of manufacture
- Well tested Rotiphorese® quality
- Suitable for denaturing and native electrophoresis
- Consistent lot-to-lot and get-to-gel performance
- In-process controlled manufacturing and functional testing of every lot
- Well suited and optimised for all standard down-stream applications, like, e.g. gel staining (Coomassie, fluorescence, silver), gel drying (vacuum, gel drying frames) and Western-Blotting (Semi-Dry, Tank)

Store at +4 °C
Transport temp.: cooled



Gel parameters:
Cassette size (l x w): 9 x 10 and 10 x 10 cm
Gel size (l x w): 7.1 x 8,3 bzw. 8,1 x 8,3 cm
Gel thickness: 1 mm
Gel matrix continuous (10 % or 12 % polyacrylamide) or in gradient (4 - 20 %)
Stacking gel 4 % polyacrylamide
Buffer system Tris/Glycine without SDS
Package contains Tris/Glycin buffer with 0,02 % sodium azide





Roti®-PAGE with 12 % gel matrix or gradient gel matrix (4-20 %)
Coomassie Staining. Denaturing gel run in Tris/Glycin buffer with 0,1 % SDS. 1 hour, 25 mA (150 V, ramping to 300 V).
Lane 1-2: 8 µl Roti®-Mark STANDARD (Art. No. T851);
Lane 3-4: 5 µl Roti®-Mark PRESTAINED (Art. No. T852);
Lane 5-6: 5 µl Roti®-Mark BICOLOR (Art. No. 2806);
Lane 7-8: 7,5 µl Roti®-Mark 10-150 (Art. No. T850);
Lane 9-10: 7,5 µl Roti®-Mark WESTERN (Art. No. 0948).

Gel plates may be separated very easily by using the comb without tearing the precious gel.

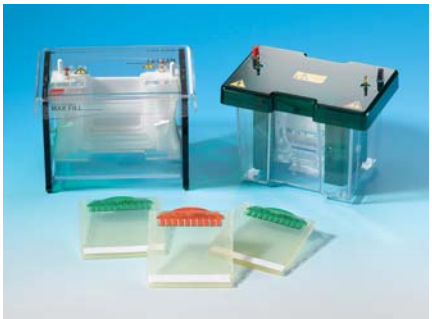
Precast mini gels for rapid and easy gel electrophoresis in laboratory and students courses. Roti®-PAGE mini gels come precast and are very easy and quick to use.
Our proven and tested Rotiphorese® quality and the standardised tris-glycine buffer system are compatible with all running and loading buffers according to Lämmli and all downstream applications (Western Blot, MS-analysis, sequencing etc.).

All Roti®-PAGE Minigels include 4 % polyacrylamide stacking gels and yield a sharp band separation in the recommended protein range. Because of their variable format of 9 x 10 cm or 10 x 10 cm, the gel plates fit all standard mini-electrophoresis chambers and can be separated easily after the run without damaging the precious gel. The gel matrix contains no SDS (for native gels), a running buffer containing SDS is recommended for denaturing gels (e.g. Rotiphorese® 10x SDS-PAGE, Art. No. 3060).

Compatibility

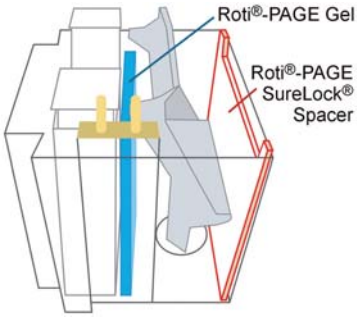
Both gel sizes of Roti®-PAGE Precast Gels (9 x 10 cm and 10 x 10 cm) are well compatible with both series of Roth's vertical electrophoresis units, classical green line (Art. No. Y001-Y004) and injection-moulded line Rotiphorese®-PROclamp (Art. No. 3501-3503).

Unit	9 x 10 cm	10 x 10 cm
BioRad® Mini PROTEAN® I, II & III and Ready Gel® Cell	**yes**	not comp.
CBS Scientific MGV System 10 x 8 cm unit	**yes**	not comp.
CBS Scientific MGV System 11.3 x 10 cm unit	not comp.	**yes**
Cleaver Scientific omniPAGE mini	**yes**	**yes**
Fisher EC 120-2	**yes**	**yes**
Fisher FBVE units	not comp.	**yes**
Gibco BRL Mini-V8	**yes**	not comp.
Hoefer Mighty Small SE 250*, 260 & 280	**yes**	**yes**
Hoefer Mini VE	not comp.	**yes**
Invitrogen Novex® Xcell Units (incl. MiniCell)	**yes**	**yes**
Life Technologies - BioMetra® Mini V	**yes**	not comp.
LONZA PAGE® Minigel Chamber	**yes**	**yes**
Novex® Xcell Units (incl. MiniCell)	**yes**	**yes**
peQLab Perfect Blue™ Twin S	**yes**	**yes**
Scieplas TV50 and TV100	**yes**	**yes**
Serva BlueVertical™ Mini Slab Gel System BV 102	**yes**	**yes**
Sigma Aldrich Mini Techware 10 x 8 cm unit	**yes**	not comp.
Sigma Aldrich Mini Techware 11.3 x 10 cm unit	not comp.	**yes**
Thermo Scientific EC 120 mini vertical gel system	**yes**	**yes**
Thermo Scientific Owl Penguin™ Modell P8DS-1	not comp.	**yes**



For units of other suppliers this list applies. In case other units are used or special adaptors are required, please ask our technical service under info@carlroth.com

Store at +4 °C
Transport temp.: cooled



▶ **Roti®-PAGE adaptors** for **Biorad® PROTEAN®** and **Invitrogen™ SureLock®** units, please go to Electrophoresis / Accessories at page 1162

Important information on refrigerated transports

All products identified as being particularly temperature-sensitive are shipped in **special ice boxes with freezer packs or in dry ice.**
Additional costs resulting from such, **will be invoiced** (further information on request).

Please note:
In order to guarantee optimum product quality, the dispatch of refrigerated transport products will be carried out **on Mon and Tue only outside Germany!**
Slight delays in delivery are therefore possible.

PAGE Precast Gels - Order List

Product	Wells	Gel plates	Art. No.	Pack Qty.	€
Roti®-PAGE 10 % continuous matrix for proteins of 25 to 200 kD	10	9x10 cm	**2838.1**	2	38,60
			2838.2	10	161,15
		10x10 cm	**2839.1**	2	38,60
			2839.2	10	161,15
Roti®-PAGE 12 % continuous matrix for proteins of 20 to 100 kD	10	9x10 cm	**2840.1**	2	38,60
			2840.2	10	161,15
		10x10 cm	**2841.1**	2	38,60
			2841.2	10	161,15
Roti®-PAGE Gradient (4-20 %) Matrix in Gradient 4-20 % for proteins of 5 to 200 kD	10	9x10 cm	**2842.1**	2	38,60
			2842.2	10	161,15
		10x10 cm	**2843.1**	2	38,60
			2843.2	10	161,15
Roti®-PAGE Gradient (4-20 %) Matrix in Gradient 4-20 % for proteins of 5 to 200 kD	12	9x10 cm	**2844.1**	2	38,60
			2844.2	10	161,15
		10x10 cm	**2845.1**	2	38,60
			2845.2	10	161,15

Rotiphorese®-Acrylamide Ready-Made Solutions

The right choice for each and every application

The large variety of different Rotiphorese®-solutions provides you with the right product for each and every application. Rotiphorese®-gel solution may be used both in protein and nucleic acid electrophoresis.
Rotiphorese®-ready-to-use solutions for manual sequencing facilitate the preparation of sequencing gels of a constant high quality - also suitable for automatic sequencers.

Safe

Acrylamide ia a strong nerve poison which has clearly proved to be carcinogenic and to change the genetic make-up during animal testing. Acrylamide is resorbed primarily through the skin. The formation of dust when working with the solid matter is particularly critical.
A hazard which can be easily avoided by using the Rotiphorese® ready-to-use solution.

Superior quality

Rotiphorese®-Acrylamide and -Bisacrylamide solutions from ROTH have the highest purity level. They are produced from substances free from acrylic acid. Oxidation products are removed from the solution by a selective absorption process. A new formation of such and/or polymerisation of the solution is prevented by gaseous stabilisation of the solution.
In order to guarantee a high consistency of our Rotiphorese®-solutions, each batch undergoes electrophoretic testing.

Simple codification in product term

Rotiphorese® Gel 30 (37.5:1)

Concentration in %

Ratio acrylamide / bisacrylamide

Recommendation for Use of Rotiphorese® Ready-Made Gel Solutions

Analysis of	Gel solution	Art. No.
Proteins/peptides >15 kDa, DNA fragments and DNA/protein interaction	Gel 30 (37,5:1)	3029.1
	Gel 40 (37,5:1)	T802.1
Proteins/peptides <30 kDa and DNA oligonucleotides	Gel 40 (29:1)	A515.1
DNA sequences (manual sequencing)	Rotiphorese®-DNA sequencing system	A431.1
	Gel 40 (19:1)	3030.1
DNA sequences (short-run automat. sequencing)	NF solution 40 % (19:1)	A516.1
DNA sequences (long-run automat. sequencing)	NF solution 30 % (29:1)	A124.1
	NF solution 40 % (29:1)	A121.1

Ready-Made Solutions Acrylamide/Bisacrylamide-Mix

ready-to-use

Rotiphorese® Gel 30 and Gel 40 are ready-to-use, gas-stabilised acrylamide solutions with different concentrations and with different ratios of acrylamide to bisacrylamide. Rotiphorese®-ready-to-use solutions can be used directly.

Rotiphorese® Gel 30 (37,5:1)

ready-to-use, gas stabilised, aqueous 30 % acrylamide and bisacrylamide stock solution at a ratio of 37,5:1

For preparation of protein gels in electrophoresis.
Storage temp. +8 °C

Danger H302-H315-H317-H319-H340-H350-H361f-H372

Cross linking 2,7.

3029.3	250 ml	glass	23,15 €
3029.2	500 ml	glass	36,05 €
3029.1	1 l	glass	60,75 €
Original pack 6 x 1 l			57,71/1 l

Rotiphorese® Gel 40 (19:1)

ready-to-use, gas stabilised, aqueous 40 % acrylamide and bisacrylamide stock solution at a ratio of 19:1

Ideal for the preparation of sequencing gels and other DNA gels used for separating small DNA fragments.
Storage temp. +8 °C

Danger H302+H332-H315-H317-H319-H340-H350-H361f-H372

Cross linking 5.

3030.2	250 ml	glass	28,95 €
3030.1	1 l	glass	70,45 €
Original pack 6 x 1 l			66,93/1 l

Rotiphorese® Gel 40 (29:1)

ready-to-use, gas stabilised, aqueous 40 % acrylamide and bisacrylamide stock solution at a ratio of 29:1

For preparation of protein- or DNA gels. Particularly ideal for the analysis of protein/DNA interactions, or peptides.
Storage temp. +8 °C

Danger H302+H312-H315-H319-H317-H340-H350-H361f-H372

Cross linking 3,3.

A515.2	250 ml	glass	31,10 €
A515.1	1 l	glass	76,25 €
Original pack 6 x 1 l			72,44/1 l

Rotiphorese® Gel 40 (37,5:1)

ready-to-use, gas stabilised, aqueous 40 % acrylamide and bisacrylamide stock solution at a ratio of 37,5:1

For preparation of protein gels.
Storage temp. +8 °C

Danger H302+H312-H315-H319-H317-H340-H350-H361f-H372

Cross linking 2,7.

T802.2	250 ml	glass	27,85 €
T802.1	1 l	glass	67,20 €
Original pack 6 x 1 l			63,84/1 l

Acrylamide and Bisacrylamide Stock Solutions: Rotiphorese® Gel A and B

PAGE solutions are always a mixture of acrylamide and bisacrylamide. Acrylamide forms linear polymers, whereas bisacrylamide crosslinks these linear polymers forming pores of a special size. The pore size may be altered by varying the total gel concentration (% T) and the percentage of the crosslink (% C).

With the Rotiphorese® stock solutions the desired T/C rate can be produced. You need an acrylamide stock solution (Gel A or Gel A-40) and a bisacrylamide stock solution (Gel B).
For detailed instructions regarding gel preparation with Rotiphorese® Gel A, A-40 and B please see our Technical Information Brochure „Gels made of Polyacrylamide - General technical informations“.

Rotiphorese® Gel A

30 % acrylamide solution
Storage temp. +8 °C

Danger H302-H315-H319-H317-H340-H350-H361f-H372

Ready-to-use, stabilised 30 % acrylamide stock solution for gels up to approx. 20 % gel concentration.

3037.2	250 ml	glass	20,10 €
3037.1	1 l	glass	49,15 €
Original pack 6 x 1 l			46,69/1 l

Rotiphorese® Gel A-40

40 % acrylamide solution
Storage temp. +8 °C

Danger H302+H332-H315-H319-H317-H340-H350-H361f-H372

Ready-to-use, stabilised 40 % acrylamide stock solution for gels up to approx. 25 % gel concentration.

7748.1	250 ml	glass	27,45 €
7748.2	1 l	glass	65,50 €
Original pack 6 x 1 l			62,23/1 l

Rotiphorese® Gel B

2 % bisacrylamide solution
Storage temp. +8 °C
Ready-to-use, stabilised 2 % bisacrylamide stock solution.

3039.2	250 ml	glass	18,20 €
3039.1	1 l	glass	43,55 €
Original pack 6 x 1 l			41,37/1 l

Please note our **Technical Information Brochure** on the Internet next to the products:

Gels made of Polyacrylamide
General technical informations

Rotiphorese® NF Ready-to-Use Solutions for Automated Sequencing

ready-to-use

Rotiphorese® ready-to-use solutions for automated sequencing **are special fluorescence-free acrylamide/bisacrylamide mixtures** of highest quality as required for automatic sequencing.
Made from 4x cristallised acrylamide.

Rotiphorese® NF-Acrylamide/ Bis-solution 30 % (29:1)

ready-to-use, gas stabilised, aqueous 30 % acrylamide and bisacrylamide stock solution at a ratio of 29:1, fluorescence free
Made from 4x cristallised acrylamide. Tested for automatic sequencers.
Storage temp. +8 °C

Danger H340-H350-H372-H361f-H302+H312-H315-H319-H317

Cross linking 3,3.

A124.1	250 ml	glass	44,00 €
A124.2	1 l	glass	134,40 €
Original pack 6 x 1 l			127,68/1 l

Rotiphorese® NF-Acrylamide/ Bis-solution 40 % (19:1)

ready-to-use, gas stabilised, aqueous 40 % acrylamide and bisacrylamide stock solution at a ratio of 19:1, fluorescence free
Made from 4x cristallised acrylamide. Tested for automatic sequencers.
Storage temp. +8 °C

Danger H302+H332-H315-H319-H317-H340-H350-H361f-H372

Cross linking 5.

A516.1	250 ml	glass	45,70 €

Rotiphorese® NF-Acrylamide/ Bis-solution 40 % (29:1)

ready-to-use, gas stabilised, aqueous 40 % acrylamide and bisacrylamide stock solution at a ratio of 29:1, fluorescence free
Made from 4x cristallised acrylamide. Tested for automatic sequencers.
Storage temp. +8 °C

Danger H302+H332-H315-H319-H317-H340-H350-H361f-H372

Cross linking 3,3.

A121.1	250 ml	glass	37,10 €

▶ Fluorescence free urea see page 1114

▶ Fluorescence free 10 x TBE buffer see page 1123

Fluorescence-free
NF acrylamide solutions are very well suited for application in fluorescence-labelled automated sequencing, e.g. using LI-COR or ABI slab gel sequencers.

Rotiphorese® Ready-Made Solutions for Manual Sequencing

ready-to-use

- For preparing 4-20 % sequencing gels
- No tedious dissolving of urea
- Prevents acrylamide dusts
- Simple handling

Rotiphorese® DNA sequencing system

Set of ready-to-use solutions for preparation of DNA sequencing gels.
Storage temp. +4-15 °C

Danger H340-H350-H372-H361f-H302-H315-H319-H317

Convenient set containing three ready-made solutions for easy and fast casting of sequencing gels. Solutions are produced in Rotiphorese® quality and are perfectly matched - providing superior, reproducible quality and high sequence resolution.
Handling is most simple: Measure and mix certain amounts of all three components, add APS and TEMED, and cast the gel.

The following components are included:
1 l Rotiphorese® sequencing gel concentrate (3043.1) - ready-to-use, stabilised solution of 25 % acrylamide/bisacrylamide 19:1 with 50 % urea (8.3 M).
1 l Rotiphorese® sequencing gel diluent (3047.1) - 50 % (g/v; 8.3 M) solution of urea in water.
250 ml Rotiphorese® sequencing gel buffer concentrate (3050.1) - 10x TBE with 50 % urea (8.3 M).
Detailed instructions-for-use are included in the set. One set is sufficient for 50 6 % gels (30 x 40 cm) with 40 % urea (e.g. in Roth Sequencing Electrophoresis Unit, Art. No. AE28.1).

A431.1	1 kit	glass	98,40 €

Rotiphorese® Sequencing gel concentrate

Ready-to-use solution (19:1) for the preparation of gels containing 0-20 % monomer, for electrophoresis.
Storage temp. +4-15 °C

Danger H302-H315-H319-H317-H340-H350-H361f-H372

Ready-to-use, stabilised solution of 25 % acrylamide/bisacrylamide 19:1. For the preparation of polyacrylamide sequencing gels containing 0-20 % monomer; 23,75 % acrylamide,1,25 % methylene bisacrylamide and 50 % urea (8,3 M). Cross linking 5.
Also part of the DNA sequencing system (Art. No. A431.1).

3043.2	100 ml	glass	12,60 €
3043.1	1 l	glass	55,40 €
Original pack 6 x 1 l			52,63/1 l

Rotiphorese® Sequencing gel diluent

50 % (g/v; 8,3 M) solution of urea in water for diluting Rotiphorese® Sequencing gel concentrate.
Storage temp. +4-15 °C
Also part of the DNA sequencing system (Art. No. A431.1).

3047.1	1 l	glass	34,30 €
Original pack 6 x 1 l			32,59/1 l

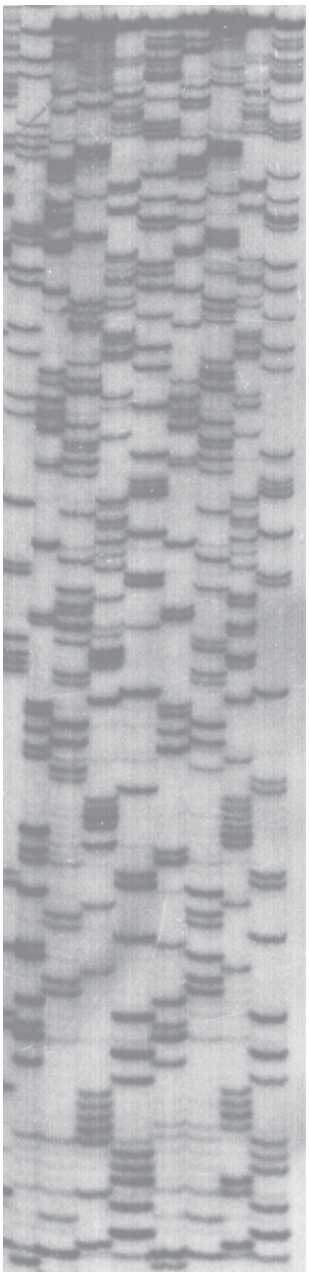
Rotiphorese® Sequencing gel buffer concentrate

50 % (g/v; 8,3 M) solution of urea in 10x TBE
(1 M Tris-borate, 20 mM EDTA buffer, pH 8,3), for electrophoresis.
Storage temp. +4-15 °C

Warning H315-H319

Also part of the DNA sequencing system (Art. No. A431.1).

3050.1	250 ml	glass	22,50 €



Reagents for PAGE

Acrylamide, 2 x cryst.

≥98 %, 2x cryst., extra pure
For gel electrophoresis
Propene amide, acrylic acid amide
C_3H_5NO
M 71,08 g/mol

Danger
H301-H312+H332-H315-H319-H317-H340-H350-H361f-H372

Standard acrylamide, inexpensive and versatile.
For all standard applications.

7871.1	500 g	plastic	44,65 €
Original pack 6 x 500 g			42,42/500 g
7871.2	1 kg	plastic	57,95 €
Original pack 6 x 1 kg			55,05/1 kg
7871.3	2,5 kg	plastic	114,95 €
7871.4	5 kg	plastic	192,45 €

Acrylamide, 4 x cryst.

≥99,9 %, p.a., 4x cryst.
For gel electrophoresis.
Propene amide, acrylic acid amide
C_3H_5NO
M 71,08 g/mol

Danger
H301-H312+H332-H315-H319-H317-H340-H350-H361f-H372

Top-quality acrylamide, particularly suitable for sequencing gels and flourescence labelled applications.

7906.1	100 g	plastic	31,75 €
7906.3	250 g	plastic	68,30 €
7906.4	500 g	plastic	116,65 €
Original pack 6 x 500 g			110,82/500 g
7906.2	1 kg	plastic	214,50 €
Original pack 6 x 1 kg			203,78/1 kg

Acrylamide, BioScience

≥99,9 %, BioScience Grade, 4 x cr yst.
For molecular biology
Propene amide, acrylic acid amide
C_3H_5NO
M 71,08 g/mol

Danger
H301-H312+H332-H315-H319-H317-H340-H350-H361f-H372

Top-quality acrylamide for electrophoresis, especially suitable for molecular biological applications.

0189.1	100 g	plastic	38,60 €
0189.2	500 g	plastic	150,00 €
Original pack 6 x 500 g			142,50/500 g

Bisacrylamide

≥98 %, for gel electrophoresis
Bis, N,N'-Methylene bisacrylamide
$C_7H_{10}N_2O_2$
M 154,17 g/mol
Storage temp. +4 °C

Warning H302

7867.1	50 g	plastic	28,50 €
7867.2	100 g	plastic	44,65 €

Urea

≥99,5 %, p.a., BioScience-Grade
For molecular biology and biochemistry.
Carbamide
CH_4N_2O
M 60,06 g/mol

2317.3	500 g	plastic	27,85 €
Original pack 6 x 500 g			26,46/500 g
2317.1	1 kg	plastic	48,30 €
Original pack 6 x 1 kg			45,89/1 kg
2317.4	2,5 kg	plastic	106,45 €
2317.2	5 kg	plastic	188,15 €

Rotiphorese® NF-Urea

tested for automatic sequencers, fluorescence free
CH_4N_2O
M 60,06 g/mol
Storage temp. +4 °C

A120.1	1 kg	plastic	58,60 €
Original pack 6 x 1 kg			55,67/1 kg

APS

≥98 %, p.a., ACS
Oxidizing agent for Cu, for separation of Mn and Cr. For electrophoresis. Polymerisation catalyst.
Ammonium persulphate, Ammonium peroxydisulphate
$(NH_4)_2S_2O_8$
M 228,20 g/mol

Danger H334-H272-H302-H335-H315-H319-H317

Polymerisation catalyst for acrylamide/ bisacrylamide polymerisation.
Use 10 % APS solution - fill 1 g of APS with water to an end volume of 10 ml.
Prepare freshly or store in aliquots at -20 °C. Freeze and thaw infrequently.

9592.3	50 g	plastic	9,05 €
9592.2	100 g	plastic	12,05 €
9592.5	500 g	plastic	25,70 €
Original pack 6 x 500 g			24,42/500 g
9592.1	1 kg	plastic	33,90 €
Original pack 6 x 1 kg			32,21/1 kg
9592.4	2,5 kg	plastic	64,40 €

TEMED

99 %, p.a, for electrophoresis
N,N,N',N'-Tetramethylethylenediamine, 1,2-Bis(dimethylamino)-ethane
$C_6H_{16}N_2$
M 116,21 g/mol

Danger H225-H314-H302+H332

Catalyst for acrylamide polymerisation, filled under nitrogen. Working concentration, e.g. when preparing sequencing gels: 40 µl TEMED for 100 ml gel casting solution.

2367.3	25 ml	glass	17,00 €
2367.1	100 ml	glass	33,25 €
2367.2	250 ml	glass	66,55 €

Roti®-Stock 20 % SDS

BioScience-Grade, ready-to-use, 0,2 µm filtered

ready-to-use

For molecular biology and electrophoresis.
SDS 20 % ready-to-use solution

Danger H318-H315-H335

20 % stock solution sodium dodecyl sulphate. Store the solution away from light in a dry place. SDS-stock solution and other solutions containing SDS should not be cooled below 24 °C otherwise the SDS may precipitate. The crystals can be easily resolubilised by heating them between 30 to 50 °C.
With original seal.

Composition:
20 % SDS in deionised water, 0,2 µm filtered

1057.1	1 l	glass	127,95 €
Original pack 6 x 1 l			121,55/1 l

SDS Pellets

≥99,5 %, Rotiphorese®-Grade, for electrophoresis

NEW

Anionic detergent
Sodium dodecyl sulphate, Sodium lauryl sulphate, Dodecyl sulphate sodium salt, Lauryl sulphate sodium salt, SLS
$C_{12}H_{25}NaO_4S$
M 288,38 g/mol

Danger H302-H315-H318-H412

Ultrapure, dust-free SDS in special quality for electrophoresis.
Each batch is tested for its functionality in electrophoresis.

Guarantee analysis:

Appearance. ..... white rods
Assay (titration). ..... ≥99,5 %
pH-value (10 % in water). 6,5-9
Water (KF). ..... ≤1,0 %
UV-absorption (20 % in H_2O):
280 nm. ..... ≤0,28
410 nm. ..... ≤0,1
Solubility (10 % in H_2O). ..... clear, colourless
Colour count (APHA, 10 % in H_2O). ..... ≤10
Turbidity (10 %, water). ..... ≤2,5 NTU
Chloride (Cl). ..... ≤0,01 %
Heavy metals (as Pb). ..... ≤2 ppm
Phosphate (PO_4). ..... ≤1 ppm

8029.1	100 g	plastic	24,65 €
8029.2	250 g	plastic	49,35 €
8029.3	500 g	plastic	85,90 €
Original pack 6 x 500 g			81,61/500 g
8029.4	1 kg	plastic	161,15 €
Original pack 6 x 1 kg			153,09/1 kg

Safety data sheets
can be found on the Internet next to the product description.

Agaroses and Gelling Reagents

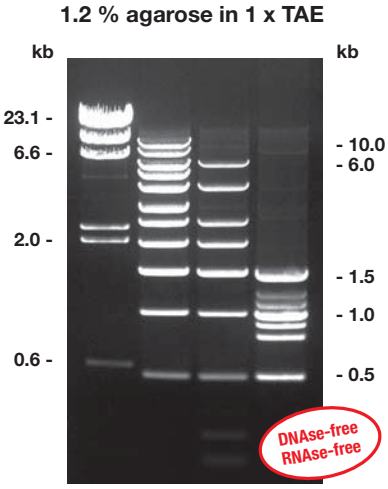
Our agarose Roti®garose is a neutral polysaccharide which is obtained in many purification steps from the cell wall of certain algae, called Rhodophyceae. Roti®garose forms very clear gels with all standard running buffers and will result in a sharp and clear separation of your biomolecules. Extremely pure agarose with very low interference binding to staining reagents. Roti®garose produces a low background and high contrast appearance after staining.

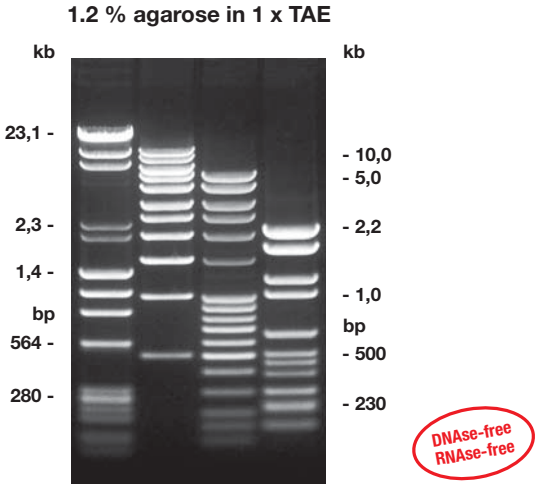
- For clear and sharp bands
- Gels with high transparency
- Low background
- Suitable for all standard running buffers and high-speed buffer systems
- Compatible with all nucleic acid staining systems
- Non-toxic in cell immobilisation assays
- Of course DNase and RNase free

Roth has the right agarose for every application:

Roti®garose	Art. No.	Application
Standard	3810	Routine gels, student´s courses, general analyses (1-20 kb).
NEEO ultra quality	2267	All standard applications, qualitative and quantitative gels, screening and blotting. Range 500 bp-20 kb.
Agarose Tablets	HP67	Highly reproducible gels, or simple applications in students courses. Suitable for all standard-gels (0,5-0,25 %). For fragments ≥300 bp.
GTQ	6352	Genetic engineering quality, for DNA-elution of fragments ≥500 bp without melting the agarose*
Broad Range	T846	For the total analytical range (200 bp up to 40 kb), Pulsed-Field electrophoresis, blotting, shift assays. Ideal when only a few agaroses are to be used in the laboratory.
Pulsed-Field	3771	Separation of large fragments (up to 20 kb), Pulsed Field gel electrophoresis (PFGE).
HR PLUS	HP30	Analysis of fragments between 100 and 3000 bp.
High Resolution	K297	Analysis of fragments between 50 and 1000 bp.
Low Melt	6351	With low melting and gelling temperatures (MT ≤65,5 °C, GT ≤28 °C). For gel elution from melted agarose. Range 500 bp-20 kb.
LM / PCR	HP31	Genetic engineering quality with low melting and gelling temperatures (MT ≤65 °C, GT ≤35 °C). For DNA-elution of fragments <1500 bp from melted agarose.
Super LM	HP45	With extremely low melting and gelling temperatures. (MT ≤62 °C, GT ≤20 °C). For gel elution from melted agarose. Recommended for in-gel analysis, capillary electrophoresis and cell and tissue culture. For fragments ≥1000 bp.
MEEO ultra quality	2268	With medium EEO. For immune, serum and antibody electrophoresis. Range 500 bp-10 kb.
HEEO ultra quality	2269	With high EEO. For protein precipitation and countercurrent electrophoresis.
Synergel®	0184	Agarose additive for finer pore formation. Increases the separative power of the agarose. For fragments from 10 bp up.

* **Tip:** Use Kit Roti®-Prep Gel Extraction (Art. No. 8510.1)





Agarose Standard

Roti®garose for DNA/RNA-electrophoresis

General agarose for routine gels, student's courses, and standard analyses (1 kb-20 kb).

- Inexpensive agarose for routine gels and standard analyses
- Good separation efficiency for nucleic acids of 1 to 20 kb length
- Easily melting, non-foaming agarose
- Low background fluorescence after ethidium bromide staining
- Very cost-effective

Figure (left to right): Roth Lambda *Hind* III Marker (Art. No. X910.1) 0,6 µg, 1 kbp DNA Ladder (Art. No. Y014.1) 0,8 µg, DNA-Marker short-run *extended* (Art. No. CL05.1) 0,4 µg, PCR-Marker DNA*score* (Art. No. T146.1) 0,5 µg.

Guarantee analysis:

Electroendosmosis (EEO).	≤0,12
Sulphate (SO_4).	≤0,15 %
Loss on drying.	≤10 %
Ash.	≤0,6 %
Gel strength (1 % gel).	≥1100 g/cm²
Gelling temperature (1,5 % gel).	36 ±2 °C
Melting temperature (1.5 % gel).	90-95 °C
DNases, RNases.	none detected

3810.1	10 g	plastic	14,95 €
3810.2	100 g	plastic	61,20 €
3810.3	500 g	plastic	242,85 €
Original pack 6 x 500 g			230,71/500 g
3810.4	1 kg	plastic	396,70 €
Original pack 6 x 1 kg			376,87/1 kg

Agarose NEEO ultra-quality

Roti®garose low electroendosmosis (EEO = 0,05-0,13)

High-quality agarose for all general applications (500 bp-20 kb).

- Excellent separative power for nucleic acids of 500 bp to 20 kb
- High gel strength for stable gels and good handling
- Extremely low EEO allows speedy and efficient separation of nucleic acid molecules
- Fast melting, non-foaming agarose

Figure: (left to right) Roth Lambda *Hind* III / phiX *Hae* III marker (Art. No. CP49.1) 1 µg, 1 kbp DNA-ladder (Art. No. Y014.1) 0,8 µg, 100 bp-DNA-ladder *extended* (Art. No. T835.1) 0,8 µg, pBR328 Mix I (Art. No. T146.1) 0,8 µg.

Guarantee analysis:

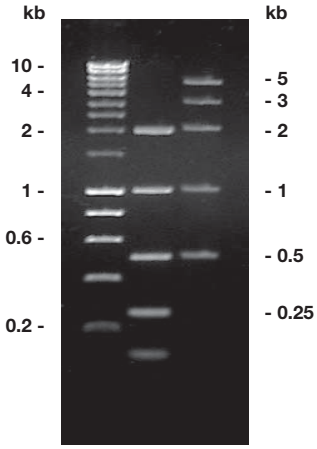
Electroendosmosis (EEO).	≤0,12
Water content.	≤8,5 %
Ash.	≤0,6 %
Sulphate (SO_4).	≤0,14 %
Gel strength (1 % gel).	≥1200 g/cm²
Gelling temperature (1,5 % gel).	36 ±2,0 °C
Melting temperature (1.5 % gel).	90-95 °C
DNases, RNases.	none detected

2267.1	10 g	plastic	17,75 €
2267.2	100 g	plastic	84,85 €
2267.5	250 g	plastic	195,15 €
2267.4	500 g	plastic	370,90 €
Original pack 6 x 500 g			352,36/500 g
2267.3	1 kg	plastic	622,45 €
Original pack 6 x 1 kg			591,33/1 kg

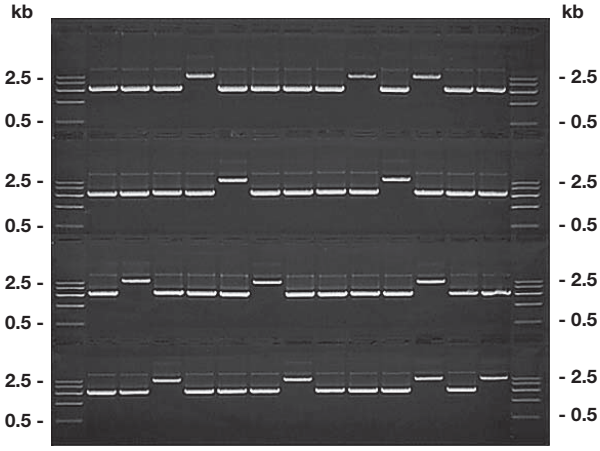
Please note our **Technical Information Brochure** on the Internet:

on **Roti®garoses** and gel electrophoresis accompanying our various agaroses.

1 % agarose in 0.5 x TBE



1.5 % agarose in 1 x TAE



Agarose-Tablets

Roti®garose 0,5 g agarose/tablet

Standard agarose with low EEO, for routine analyses (≥300 bp).

DNAse-free RNAse-free

- Easy-to-use and safe tablets for constant gel strength and well reproducible gels
- Reliable agarose for routine analyses
- for detection of inserts or PCR amplificates of over 300 bps
- Agarose with high gel strength, applicable from 0,5 to 2,5 %
- Compatible with all standard running buffers and nucleic acid-staining methods

Guarantee analysis:

Electroendosmosis (EEO). 0,05-0,1
Water content. ....<10 %
Sulphate (SO_4). ....<0,2 %
Gel strength (1,5 % gel). ....≥1200 g/cm²
Gelling temperature. ....37 ±2,0 °C
Melting temperature. ....89 ±1,0 °C
DNases, RNases. ....none detected

HP67.1	10 g	plastic	20,35 €
HP67.2	50 g	plastic	70,45 €
HP67.3	100 g	plastic	123,10 €
HP67.4	250 g	plastic	276,30 €

Agarose GTQ

Roti®garose genetic engineering quality

Especially tested agarose for gel elution and biomolecular approaches (500 bp-20 kb).

DNAse-free RNAse-free

- Genetic technology quality (GTQ)
- For preparative DNA/RNA-electrophoresis of 500 bp to 20 kb
- Recommended for all molecular-biological routine methods like blotting, cloning, sequencing etc.
- No DNA binding
- No inhibition of restriction enzymes and ligases
- Particular low gel background after ethidium bromide staining

Figure: High-through put screening with very short running distance. Plasmids of 2,65 and 4,36 kb. Lanes 1 and 15: Roth DNA marker short run 1 (Art. No. 0146.1) 0,2 µg per lane.

Guarantee analysis:

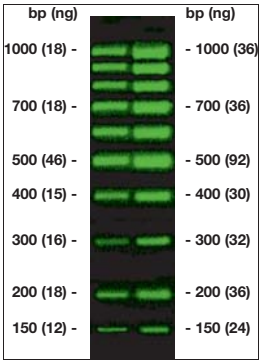
Electroendosmosis (EEO). ....≤0,11
Water content. ....≤8 %
Ash. ....≤0,5 %
Sulphate (SO_4). ....≤0,1 %
Gel strength (1 % gel). ....≥1200 g/cm²
Gel strength (1,5 % gel). ....≥2300 g/cm²
Gelling temperature. ....36 ±2,0 °C
Melting temperature. ....92 ±2,0 °C
DNases, RNases. ....none detected
DNA binding. ....none detected

6352.1	10 g	plastic	23,15 €
6352.2	100 g	plastic	144,60 €
6352.4	500 g	plastic	600,95 €
Original pack 6 x 500 g			570,90/500 g

▶ Starch (acc. to Smithies) for electrophoresis see chapter Chemicals A-Z.

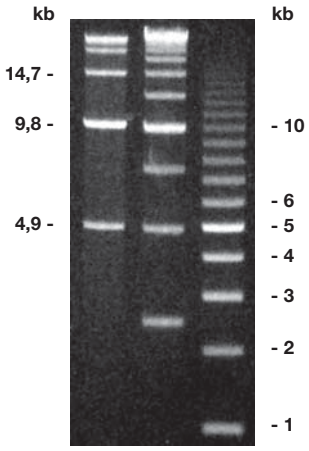
Agarose as Gelling Reagent

Chemically, agarose is a galactan which is capable of forming extremely solid gels, even at a low concentration. The pore size of the gels is determined by the concentration of the agarose used. Because there are no ionic groups in the gel, hydrophilic materials without any interaction with the gel matrix will also be separated according to their size. The high hysteresis of the agarose, that is the thermal stability after solidification, ensures that the gels remain reliably stable even during heat-producing running conditions.



▶ **Roti®-GelStain** and **Roti®-Load DNAstain** - non-toxic ready-made solutions for bright green gel staining see page 1142

0.5 % agarose in 1 x TAE



DNAse-free
RNAse-free

Agarose Broad Range

Roti®garose BioScience-Grade

For gel electrophoresis, total size range (200 bp-40 kb).

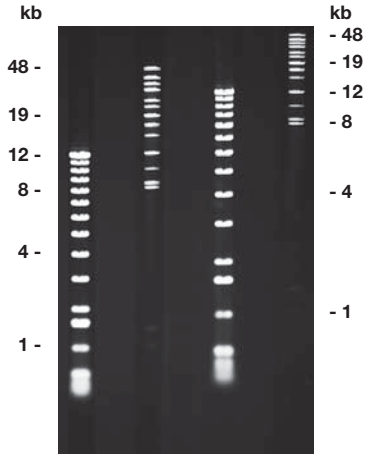
- High-molcular linear polymer of particularly high DNA mobility in electrophoresis
- The ideal choice for Pulse Field gel electrophoresis
- Excellent for resolving DNAfragments between 200 bp and 40 kb in conventional gel electrophoresis
- Low EEO allows speedy and efficient resolution of very large DNA-molecules
- Extremely high gel strength guarantees good handling even at low concentrations of 0,3 % agarose
- Also suitable for separation of particles like ribosomes, virions or chromosomes

Guarantee analysis:

Electroendosmosis (EEO). ....≤0,12
Ash content....≤0,25 %
Sulphate (SO_4). ....≤0,12 %
Turbidity (1.5 % solution). .... ≤4 NTU
Loss on drying. ....≤7 %
Gel strength (1 % gel). ....≥1800 g/cm²
Gel strength (1,5 % gel). ....≥3200 g/cm²
Gelling temperature. ....34,5-37,5 °C
Melting temperature....86,5-89,5 °C
DNA-separation (≥1000 bp)....complies
DNases, RNases. .... none detected

T846.1	10 g	plastic	22,05 €
T846.2	100 g	plastic	116,65 €
T846.3	500 g	plastic	499,90 €
Original pack 6 x 500 g			474,91/500 g

0.3 resp. 0.5 % agarose in 1 x TAE



DNAse-free
RNAse-free

Agarose Pulsed-Field

Roti®garose for Pulsed Field electrophoresis, genetic engineering quality

Special agarose for separation of large fragments (20-50 kb).

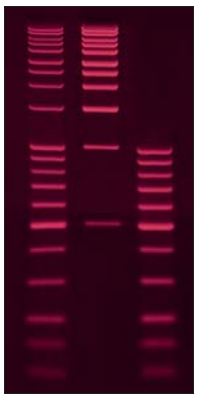
- Optimised for separation of fragments of 20 to 50 kb or for Pulsed Field Gel Electrophoresis (PFGE)
- High gel-strength agarose for tearproof gels that are easy to handle
- High DNA mobility for fast and efficient gel electrophoresis
- Low background fluorescence after ethidium bromide staining
- In general, suitable for separation of fragments larger than 1000 bp
- Tested for absence of DNAses, RNAses and DNA binding

Figure (left to right): 0,3 % Agarose Pulsed-Field, extended 1kbp Ladder (1 µg) and High Molecular Weight Marker (0,3 µg, heated for 10 mins. at 65 °C); then same markers on 0,5 % Agarose Pulsed-Field.

Guarantee analysis:

Electroendosmosis (EEO). ....≤0,05
Sulphate (SO_4). ....≤0,10 %
Loss on drying. ....≤10 %
Gel strength (1 % gel). ....≥1800 g/cm²
Gelling temperature. ....36 ±1,5 °C
Melting temperature....90-95 °C
DNases, RNases. .... none detected

3771.1	10 g	plastic	27,45 €
3771.2	25 g	plastic	50,00 €
3771.3	100 g	plastic	155,90 €
3771.4	250 g	plastic	321,45 €



▶ **Ethidium bromide solutions** - as high concentrated stock solution or ready-to-use in convenient dropper bottles see page 1144

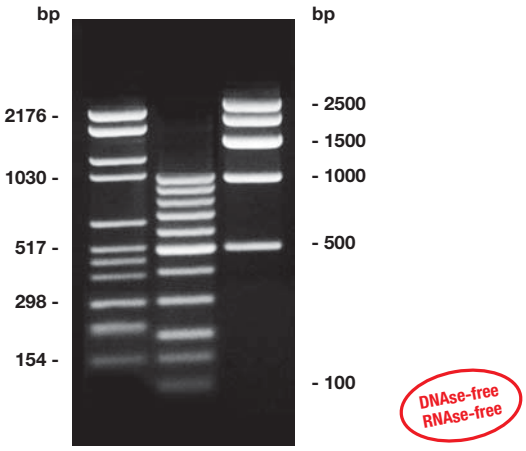
Electroendosmosis (EEO)

Osmotic liquid migration caused by electric current

In gel matrices of agarose gels, minor impurities caused by cations (sulphate ester) are frequent. When an electric field is applied they move in the direction of the cathode, generating an electroosmotic flow (EOF) of the entire aqueous medium towards the negative pole. The migration speed of the flow depends, amongst other things, on the strength of the electric field and the frictional force generated by the gel matrix. The EOF always runs in the direction of the cathode, that is opposite to the movement of the anions separated during nucleic acid electrophoresis, and slows down their migration.

In the event of an agarose with high EEO, many cations are present, which generate a strong EOF. Furthermore, the gel strength is low, causing only weak frictional force. The strong EOF can lead to a change of behaviour during the run of the negatively-charged molecules (DNA/RNA) when using the agarose MEEO or HEEO. In extreme case anions with low self-mobility can even be diverted and transported in the direction of the cathode, causing band shifting.

1.5 % agarose in 1 x TAE



Agarose HR-PLUS

Roti®garose for analytical gels

Special agarose for use in the main analytical range (100 bp-3 kb).

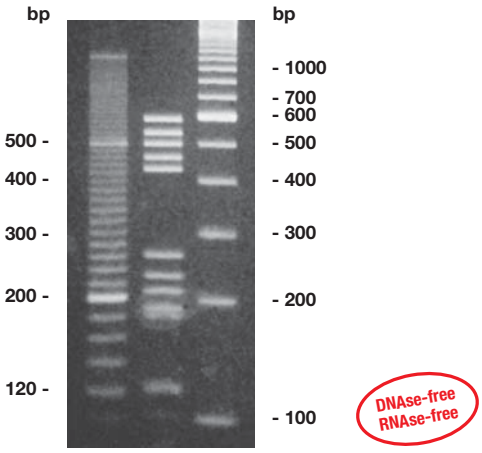
- Reliable agarose for routine analyses in the range of 100 to 3000 bp
- Superior separation efficiency and high gel strength, usable in concentrations of up to 3 % agarose
- Very well suited for analysis of PCR amplificates, restriction digests and for blotting
- Low gel background
- Compatible with all standard nucleic acid-staining methods
- Separation range in 1 x TAE:
  1 % proof agarose gel: 1000-3000 bp
  1,5 % proof agarose gel: 300-2000 bp
  2,5 % proof agarose gel: 100-1000 bp

Guarantee analysis:

Electroendosmosis (EEO). ....≤0,12
Water content. ....≤7 %
Ash. ....≤4 %
Sulphate (SO_4). ....≤0,11 %
Gel strength (1,5 % gel). ....≥1500 g/cm²
Gelling temperature (1,5 % gel). ....~36 °C
Melting temperature (1.5 % gel). ....~88 °C
Turbidity (1.5 % solution). .... ≤4 NTU
DNases, RNases. .... none detected
DNA binding. .... very low

HP30.1	10 g	plastic	42,90 €
HP30.2	100 g	plastic	267,70 €
HP30.3	500 g	plastic	1073,95 €
Original pack 6 x 500 g			1020,25/500 g

3 % agarose in 1 x TAE



Agarose High Resolution

Roti®garose for small fragments

Special agarose for PCR gels and small DNA fragments.

- High resolution of PCR-products and DNA fragments in the 50-1000 bp range
- Low gel background after staining, even for highly concentrated gels
- Can be used in concentrations of up to 5 % agarose
- Low DNA binding and low EEO for efficient separation of very small fragments
- Tip: cool the gel for 30 mins. at 4-8 °C before use for superior separation
- Separation range in 1 x TAE:
  1,8 % proof agarose gel: 500-1000 bp
  3,0 % proof agarose gel: 150-600 bp
  4,5 % proof agarose gel: 50-350 bp

Guarantee analysis:

Electroendosmosis (EEO). ....≤0,12
Water content. ....≤7 %
Ash. ....≤0,35 %
Sulphate (SO_4). ....≤0,11 %
Gel strength (1,5 % gel). ....≥600 g/cm²
Gel strength (3 % gel). ....≥1500 g/cm²
Gelling temperature (3 % gel). ....≤35,5 °C
Melting temperature (3 % gel). ....≤80 °C
Turbidity (1.5 % solution). .... ≤5 NTU
DNases, RNases. .... none detected

K297.1	10 g	plastic	50,00 €
K297.2	100 g	plastic	321,45 €
K297.3	500 g	plastic	1396,45 €
Original pack 6 x 500 g			1326,63/500 g

Agarose MEEO ultra-quality

Roti®garose medium electroendosmosis (EEO = 0,16-0,19)

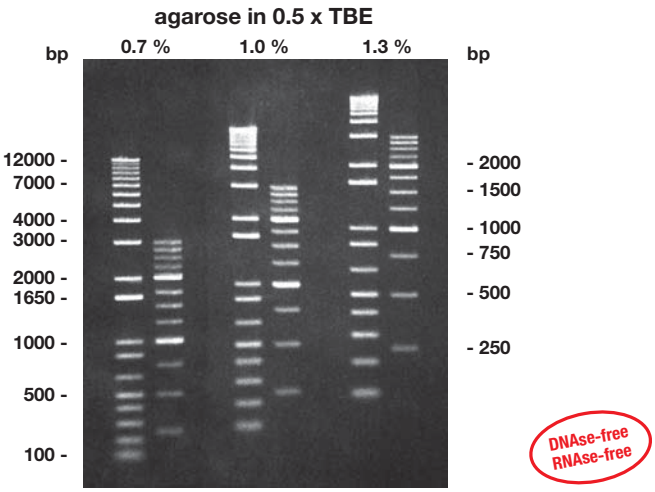
Special agarose for immuno, countercurrent, serum and antibody electrophoresis (500 bp-10 kb).

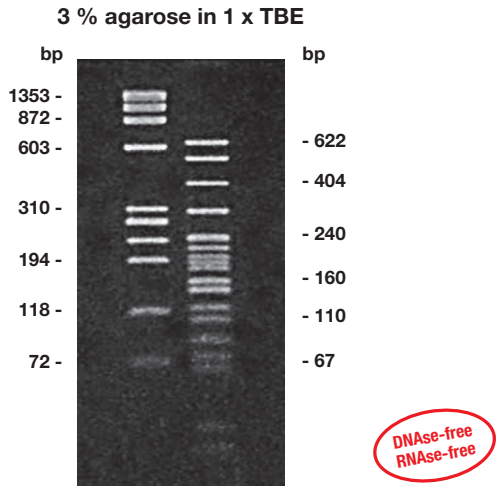
- Suitable for separation of nucleic acids between 500 bp and 10 kb
- Gels are well-to-handle and have a strong matrix, even when using thin gels of 1-2 mm

2268.1	10 g	plastic	18,85 €
2268.2	100 g	plastic	104,20 €
2268.4	500 g	plastic	439,70 €
Original pack 6 x 500 g			417,72/500 g
2268.3	1 kg	plastic	740,70 €
Original pack 6 x 1 kg			703,67/1 kg

Guarantee analysis:

Electroendosmosis (EEO). 0,16-0,19
Water content. ....≤7 %
Ash. ....≤0,5 %
Sulphate (SO_4). ....≤0,14 %
Gel strength (1 % gel). ....≥1000 g/cm²
Gel strength (1,5 % gel). ....≥2200 g/cm²
Gelling temperature (1,5 % gel). ....36 ±1,5 °C
Melting temperature (1.5 % gel). ....88 ±1,5 °C
Turbidity (1.5 % solution). .... ≤4 NTU





Agarose Low Melt

Roti®garose with low melting and gelling temperature

Particularly for gel elution and in-gel-application in a wide size range (500 bp-20kb).

Hydroxyethyl agarose

- Low melting point and low gelling temperature
- High transparency and very low self fluorescence. For particular clear gels.
- The ideal solution when nucleic acid fragments or proteins are to be recovered after electrophoretic resolution
- Suitable for enzymatic reactions in liquid agarose (in-gel-applications)
- Excellent for immobilising microorganisms and virus-plaque-assays
- Suitable for cell culture applications (animal and plant)
- Tested for stability after autoclaving

Guarantee analysis:

Electroendosmosis (EEO). ....≤0,12
Water content. ....≤7 %
Ash. ....≤0,4 %
Sulphate (SO_4). ....≤0,12 %
Gel strength (1,5 % gel). ....≥500 g/cm²
Gelling temperature (4 % gel). ....≤28 °C
Melting temperature (1.5 % gel). ....≤65,5 °C
Turbidity (1.5 % solution). ....≤4 NTU
DNases, RNases. ....none detected

6351.1	5 g	plastic	34,95 €
6351.5	25 g	plastic	145,15 €
6351.2	100 g	plastic	504,20 €
6351.4	500 g	plastic	2096,25 €
Original pack 6 x 500 g			1991,44/500 g

Agarose LM/PCR

Roti®garose with low melting and gelling temperature, genetic engineering quality

Particularly for gel elution of small fragments (50 bp-1500 bp).

Hydroxyethyl agarose

High resolution low melting agarose in genetic engineering quality. For optimal fragment separation, DNA recovery and cloning of PCR amplificates.

- Low melting point and low gelling temperature
- Fine resolution of fragments from 50 to 1500 bp
- Very well suited for analysis and recovery of PCR amplificates and fragments derived from restriction digests
- Also well suitable for in-gel-applications
- Low gel background, compatible with all standard nucleic acid-staining methods
- Low viscosity agarose, recommended for use in concentrations of 3 to 6 % agarose. Note: gels of 2 % agarose and lower are fragile

Guarantee analysis:

Electroendosmosis (EEO). ....≤0,13
Water content. ....≤7 %
Ash. ....≤0,45 %
Sulphate (SO_4). ....≤0,12 %
Gel strength (4 % gel). ....≥800 g/cm²
Gelling temperature (4 % gel). ....≤35 °C
Melting temperature (4 % gel). ....≤65 °C
Turbidity (4 % solution). ....≤6 NTU
DNases, RNases. ....none detected
DNA binding. ....none detected
In-gel-processing. ....complies
Agarase digest. ....complies

HP31.1	5 g	plastic	37,55 €
HP31.2	100 g	plastic	514,95 €
HP31.3	250 g	plastic	1052,45 €

Agarose HEEO ultra-quality

Roti®garose high electroendosmosis (EEO = 0,23-0,26)

Special agarose for protein separation and countercurrent electrophoresis.

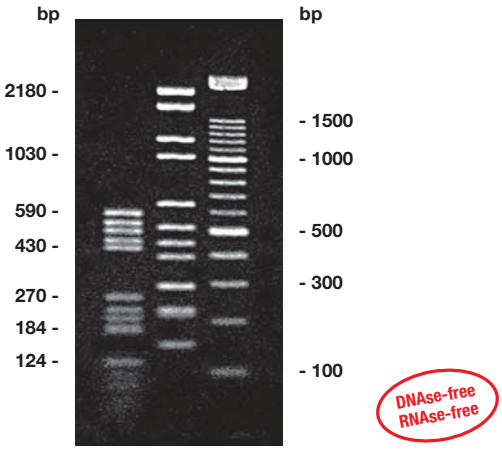
- Gels are well-to-handle and have a strong matrix, even when using thin gels of 1-2 mm
- Very clear and transparent matrix, even for thick gels

2269.1	10 g	plastic	20,10 €
2269.2	100 g	plastic	110,65 €
2269.3	1 kg	plastic	779,40 €
Original pack 6 x 1 kg			740,43/1 kg

Guarantee analysis:

Electroendosmosis (EEO). 0,23-0,26
Water content. ....≤7 %
Ash. ....≤1,0 %
Sulphate (SO_4). ....≤0,2 %
Gel strength (1 % gel). ....≥750 g/cm²
Gel strength (1,5 % gel). ....≥1200 g/cm²
Gelling temperature (1,5 % gel). ....36 ±1,5 °C
Melting temperature (1.5 % gel). ....88 ±1,5 °C
Turbidity (1.5 % solution). ....≤4 NTU

1.8 % agarose in 1 x TAE



Agarose Super LM

Roti®garose with particularly low melting and gelling temperature

Particularly for gel elution from melted agarose, capillary electrophoresis and in-gel processing (≥1000 bp).

Hydroxyethyl agarose

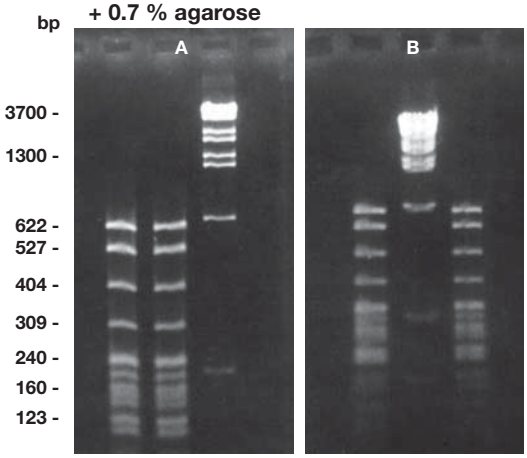
- Fine resolution of fragments over 1000 bp
- Very well suited for analysis and recovery of longer PCR amplificates or other longer fragments like vectors, rare cutter digestions etc.
- Recommended for in-gel-applications, virus plaque-assays and tissue/cell culture applications
- Low gel background, compatible with all standard nucleic acid-staining methods
- Lower gel strength than Agarose Low Melt. Recommended for use in concentrations of over 1 % agarose

Guarantee analysis:

Electroendosmosis (EEO). ..... ≤0,12
Water content. ..... ≤7 %
Ash. ..... ≤0,35 %
Sulphate (SO_4). ..... ≤0,14 %
Gel strength (1,5 % gel). ..... ≥300 g/cm²
Gelling temperature (1,5 % gel). ..... ≤20 °C
Melting temperature (1.5 % gel). ..... ≤62 °C
Turbidity (1.5 % solution). ..... ≤4 NTU
DNases, RNases. ..... none detected

HP45.1	5 g	plastic	37,55 €
HP45.2	100 g	plastic	514,95 €
HP45.3	250 g	plastic	1052,45 €

1.5 % Synergel™ + 0.7 % agarose | 4 % agarose



Synergel™

≥99 %, for gel electrophoresis

Agarose additive

Storage temp.: +20 °C

- Enhances separation of nucleic acid fragments
- For extremely clear gels

Synergel™ is a synergistic gelling and sieving agent consisting of a modified polysaccharide which, when combined with agarose, forms a hydrogen bonded binary gel system. The addition of Synergel™ to agarose improves gel performance by providing superior separation and definition of DNA fragments up to 30 kb. A gel mixture containing 0,7 % agarose and 0,7 % Synergel™, e.g., will produce improved results when compared to a 2 % agarose-only gel. Synergel™ also provides greater optical clarity, which allows higher quality photodocumentation of stained gels.

Figure 1 compares separation qualities of **A:** 1,5 % Synergel™ / 0,7 % agarose and **B:** 4 % high-resolution agarose (NuSieve®). Please see also figures for pUC19 markers T149 and X901. Standard buffer systems like phosphate, acetate or borate buffered Tris-EDTA may be used in forming the gel. RNA may also be separated in this system by using a 2,2 M formaldehyde-containing buffer. Nucleic acid may be electroeluted or transferred to membranes following standard Southern/Northern blotting protocols.

Type analysis:

Colour. ..... white to almost white powder
Odour. ..... slightly salty
pH (1 % solution). 9
DNase, RNase. ..... none detected

0184.2	10 g	plastic	27,85 €
0184.1	100 g	plastic	195,65 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Dye Migration in Agaroses

Running distances of xylene cyanol and bromophenol blue

How to Calculate Required Synergel™

1. What percentage agarose gel is currently being used?
2. The gel will inevitably contain 0.7 % agarose (the minimum agarose concentration required to ensure gel stability). Hence, subtract 0.7 % from the agarose total.
3. Divide the difference by 2. The result is the percentage of Synergel™ to be added to the 0.7 % agarose.

Example:

Convert a 1 % agarose to a 1 % Synergel™/agarose gel

a. Substract 0.7 % from the 1 % agarose: 1 % - 0.7 % = 0.3 %
b. Divide the difference by 2: 0.3 % : 2 = 0.15 %
c. 0.15 % (150 mg / 100 ml) is the amount of Synergel™ added to 0.7 % agarose (0.7 g / 100 ml) to produce the functional equivalent of a 1 % agarose gel.

Carrier Ampholytes

Roti®lyte

40 % solution in water, sterile filtered (0,2 µm)

Carrier ampholytes for isoelectric focussing (IEF).

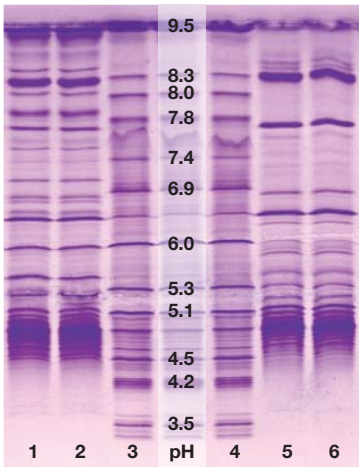


Figure:
pH range 3-10, gel thickness 350 µm
Lanes 1, 2, 5, 6: Potato extracts (10 µl)
Lanes 3, 4: Protein standard (10 µl)

- Reliable formation of a finely graded linear pH gradient
- Sharp band resolution due to high buffer capacity at pI
- High conductivity, no overheating of the gel
- Short staining- and destaining periods
- Compatible with all standard staining methods

Roti®lyte carrier ampholytes consist of a diverse mixture of sterile filtered hydrous polyamino-polysulfone-polycarboxylic acids. Due to the multitude of isoelectric points (pIs) present, those amphoteric molecules form a very finely graded, linear pH gradient in the electric field, hence making them particularly suitable for isoelectric focusing (IEF).
Roti®lyte carrier ampholytes excel by their high buffer capacity and conductivity, leading to excellent band definition. Even proteins differing by just 0,01 pH units may be discriminated efficiently. Due to their low molecular weight of 1000 Da in maximum, the ampholytes disperse quickly in the gel, therefore guaranteeing an even distribution of sample proteins during IEF. Since there is virtually no unspecific binding of dyes, no background staining happens, and Roti®lyte ampholytes are perfectly compatible with all standard staining methods.
They are well soluble in trichloroacetic acid, and may easily be removed from the gel during subsequent fixation.

Store unopened bottles at +4 °C. Opened bottles should be aliquoted and stored at -20 °C. Avoid frequent freeze and thaw cycles. Added in 3-5 % working concentration to acrylamide- or agarose gel solution.

Product	Concentration	Conductivity (mS/cm)	pH lower limit	pH upper limit	Art. No.	Pack qty. (ml)	€
Roti®lyte pH 3-5	40 %	0,1-0,3	3,0±0,5	5,1±0,5	**5834.1**	10	187,05
					5834.2	25	413,90
Roti®lyte pH 3-6	40 %	0,05-0,5	3,3±0,3	6,2±0,5	**5835.1**	10	174,70
					5835.2	25	389,70
Roti®lyte pH 3-7	40 %	0,2-0,7	3,3±0,3	7,0±0,5	**5839.1**	10	174,70
					5839.2	25	389,70
Roti®lyte pH 3-10	40 %	0,2-0,9	3,3±0,3	10,0±0,6	**5841.1**	10	151,60
					5841.2	25	342,95
Roti®lyte pH 4-6	40 %	0,1-0,2	4,0±0,5	6,1±0,5	**5845.1**	10	187,05
					5845.2	25	413,90
Roti®lyte pH 4-7	40 %	0,1-0,2	4,0±0,2	7,0±0,2	**5850.1**	10	174,70
					5850.2	25	389,70
Roti®lyte pH 5-6	40 %	0,05-0,5	5,3±0,3	6,2±0,5	**5851.1**	10	213,95
					5851.2	25	413,90
Roti®lyte pH 5-7	40 %	0,1-0,2	5,0±0,5	7,1±0,5	**5856.1**	10	187,60
					5856.2	25	413,90
Roti®lyte pH 5-8	40 %	0,1-0,5	5,0±0,5	8,0±0,6	**5857.1**	10	174,70
					5857.2	25	389,70
Roti®lyte pH 6-7	40 %	0,1-0,2	6,0±0,2	7,0±0,2	**5858.1**	10	174,70
					5858.2	25	389,70
Roti®lyte pH 6-8	40 %	0,15-0,55	6,2±0,4	8,0±0,5	**5860.1**	10	187,05
					5860.2	25	413,90
Roti®lyte pH 7-9	40 %	0,2-0,9	7,0±0,3	9,0±0,3	**5861.1**	10	187,05
					5861.2	25	413,90
Roti®lyte pH 8-10	40 %	0,1-0,3	7,5±0,5	9,5±0,6	**5864.1**	10	187,05
					5864.2	25	413,90

For additional product data and safety information, see chapter Chemicals A-Z.

Electrophoresis Gel Buffer Solutions

ready-to-use

Time sparing ready-made buffers saving valuable time and significantly reducing your effort to prepare electrophoresis buffers.

Each batch is manufactured from reagents of the highest purity and is subsequently filtered.

For gel electrophoresis and molecular biology.

Rotiphorese® 10x SDS-PAGE

10x concentrated SDS-PAGE running buffer, for electrophoresis.
Solution consisting of 0,25 M Tris, 1,92 M glycine and 1 % (w/v) SDS in distilled, deionised water for protein analysis.
Acc. to Laemmli (1970), *Nature* 227:680.

3060.1	1 l		glass	34,30 €
Original pack 6 x 1 l				32,59/1 l
3060.3	2,5 l	new size	glass	63,35 €
Original pack 4 x 2,5 l				60,18/2,5 l
3060.2	5 l		plastic	89,80 €
Original pack 2 x 5 l				85,31/5 l

Rotiphorese® 10x TBE Buffer

10-times concentrated buffer

Ideal for the preparation of sequencing gels and as running buffer in electrophoresis.
Storage temp.: +20 °C

Danger H315-H319-H360FD

Containing 1,0 M Tris-Borate pH 8,3 and 20 mM EDTA in distilled, deionised water; pH 8,3. Suitable for manufacturing sequencing gels with Rotiphorese® Gel 40 and as a running buffer.
Mix before use!

3061.1	1 l		glass	25,70 €
Original pack 6 x 1 l				24,42/1 l
3061.3	2,5 l	new size	glass	52,60 €
Original pack 4 x 2,5 l				49,97/2,5 l
3061.2	5 l		plastic	83,35 €
Original pack 2 x 5 l				79,18/5 l

Rotiphorese® NF 10 x TBE Buffer

Ready-to-use 10x TBE-buffer for preparing sequencing gels, also tested and optimised as running buffer in electrophoresis for automatic sequencers, fluorescence-free.
Storage temp.: +20 °C

Warning H315-H319

10-times concentrated buffer formulated specially for automated sequencing. 10x stock solution contains 0,89 M Tris-Borate and 22 mM EDTA in distilled, deionised water; pH 8,3. Suitable for manufacturing sequencing gels with Rotiphorese®-NF Acrylamide/Bis-solution 40 % (19:1) and as running buffer.
Mix before use!

A118.1	2,5 l	glass	93,00 €
Original pack 4 x 2,5 l			88,35/2,5 l

Concerning the Rotiphorese® buffers 10x TAE, 50x TAE and 10x TBE

During prolonged storage salt crystals may precipitate, which are easily resolubilised by gentle heating and shaking. The quality of the buffer is not affected by this procedure. Do not take out buffer solution when any precipitate is visible.

Rotiphorese® 50x TAE Buffer

Buffer concentrate for DNA electrophoresis.
Storage temp.: +20 °C

Warning H315-H319-H335

50-times concentrated running buffer, containing 2 M Tris, 1 M acetic acid and 50 mM EDTA in distilled, deionised water; pH 8,5.
Mix before use!

CL86.1	1 l		glass	54,30 €
Original pack 6 x 1 l				51,59/1 l
CL86.3	2,5 l	new size	glass	106,45 €
Original pack 4 x 2,5 l				101,13/2,5 l
CL86.2	5 l		plastic	160,20 €
Original pack 2 x 5 l				152,19/5 l

Rotiphorese® 10x TAE Buffer

Buffer concentrate for DNA electrophoresis.
Storage temp.: +20 °C

10-times concentrated running buffer, containing 0,4 M Tris, 0,2 M acetic acid and 10 mM EDTA in distilled, deionised water; pH 8,3.
Mix before use!

T845.1	1 l	glass	28,95 €
Original pack 6 x 1 l			27,50/1 l
T845.2	5 l	plastic	65,05 €
Original pack 2 x 5 l			61,80/5 l

Rotiphorese® 10x TAE Buffer *light*

with reduced EDTA concentration

Buffer concentrate for DNA electrophoresis, ideal for DNA elution gels or in-gel-applications.
Storage temp.: +20 °C

Rotiphorese® 10x TAE-buffer *light* is particularly ideal for agarose gels in DNA-elution. Although the reduced EDTA-content lowers the contamination of the eluted DNA with EDTA and therefore prevents any interference of enzymatic activity, e.g. from ligases, isomerases or polymerases, the buffer properties still remain totally intact.
Particularly suitable for in-gel-applications when used with Rotigarose® Low Melt (Art. No. 6351).
10-times concentrated serial buffer, containing 0,4 M Tris-acetate and 1 mM EDTA in distilled, deionised water; pH 8,3.
Mix before use!

0122.1	1 l	glass	24,20 €
Original pack 6 x 1 l			22,99/1 l

Please note our **Technical Information Brochure** on the Internet next to the products:

Gels made of Polyacrylamide

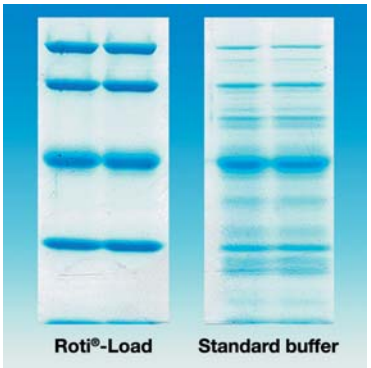
General technical informations

Gel Loading Buffers for Proteins

ready-to-use

Roti®-Load 1 (reducing) as well as **Roti®-Load 2 and 3 (non-reducing)** represent special gel loading buffers for protein gel electrophoresis. They have been designed to protect your proteins during sample preparation and to stabilise sensitive peptide bonds. Protein degradation is efficiently prevented by those buffer systems. Roti®-Load are 4x concentrated ready-to-use solutions, which may be used directly for sample loading.

Roti®-Load 1 and 2: Modified formulation acc. to Laemmli (*Nature* 227, 1970).



Roti®-Load 1

reducing, 4x conc.

Protein gel loading buffer, modified formulation acc. to Laemmli.
Storage temp.: +15-25 °C

Danger H318-H311+H331-H302-H315-H411

- Formulation acc. to Laemmli (modified)
- Stabilises peptide bands
- Prevents protein degradation
- Improves gel separation

Well tested and proven sample buffer for protein gel electrophoresis that has been modified and further developed based on the original formulation acc. to Laemmli (Nature 227, 1970).
Roti®-Load 1 prevents degradation of proteins while heating during sample preparation, additionally keeping the sample pH value constant during gel electrophoresis. Being a phosphate-buffered ready-to-use solution, Roti®-Load 1 already contains all necessary denaturing and reducing reagents, bromophenol blue as dye and glycerol as density increasing reagent.

Contains SDS (approx. 8 % w/v), β-mercapto ethanol (approx. 20 % v/v), glycerol (approx. 40 % v/v) and bromophenol blue (approx. 0,015 % w/v). Phosphate buffered.

K929.1	10 ml		glass	16,90 €
K929.2	4 x 10 ml		glass	48,30 €
K929.3	10 x 10 ml	new size	glass	112,90 €

Roti®-Load 2

non reducing, 4x conc.

Protein gel loading buffer, modified formulation acc. to Laemmli.
For protein complexes, secondary structures, and for native gels.
Storage temp.: +20 °C

Danger H318

- Formulation acc. to Laemmli (modified)
- Stabilises peptide bands
- For protein complexes and secondary structures
- For native gels

Well tested and proven sample buffer for protein gel electrophoresis that has been modified and further developed based on the original formulation acc. to Laemmli (Nature 227, 1970).
For depiction of protein complexes, secondary structures, and for native gels.
Roti®-Load 2 prevents degradation of proteins while heating during sample preparation, additionally keeping the sample pH value constant during gel electrophoresis. Being a phosphate-buffered ready-to-use solution, Roti®-Load 2 already contains all necessary denaturing reagents, bromophenol blue as dye and glycerol as density increasing reagent.
Roti®-Load 2 may be supplemented with 20 µl/ml DTT solution (1 M), in order to gain a loading buffer using DTT as reducing reagent rather than β-Mercaptoethanol.

Contains SDS (approx. 8 % w/v), glycerol (approx. 40 % v/v) and bromophenol blue (approx. 0,015 % w/v). Phosphate buffered.

K930.1	10 ml	glass	14,20 €

Roti®-Load 3 (LDS)

non reducing, 4x conc.

Protein gel loading buffer for ready-made gels and cooled gels.
Storage temp.: +20 °C

Warning H315-H319

- Optimised for ready-made gels
- Superior solubility at low temperatures
- Stabilises proteins in the gel

Modified, non-reducing protein sample-gel loading buffer for gels under denaturing or native conditions. During sample preparation and heating, Roti®-Load 3 (LDS) efficiently prevents degradation of your proteins, also stabilising the pH value during the run. This new gel loading buffer is based on a triethanolamine buffered ready-to-use solution, in which the standard sodium dodecylsulphate (SDS) has been replaced by lithium dodecylsulphate (LDS). At low temperatures, LDS is much better soluble than SDS. Hence, no crystallisation of LDS takes place, and protein stability as well as band resolution is significantly enhanced. Additionally, the formulation of Roti®-Load 3 (LDS) has been optimised for ready-made gels, particularly Roti®-PAGE gels, but also ready-made gels of other standard suppliers. For reducing conditions, Roti®-Load 3 (LDS) may be supplemented with 20 µl/ml DTT solution (1 M) or with β-mercaptoethanol.

Contains LDS (approx. 4 % w/v), glycerol (approx. 40 % v/v) and Ficoll 400 (approx. 4 % w/v), plus phenol red (approx. 0,025 % w/v) and Coomassie® G250 (approx. 0,025 % w/v). Triethanolamine buffered.

3359.1	10 ml	glass	19,90 €

Selecting a suitable Roti®-Load gel loading buffer for proteins

Roti®-Load 1 is suitable **for all PAGE standard gels**. It has denaturing and reducing properties.

Roti®-Load 2 is suitable **for protein complexes, secondary structures and native gels**. It has denaturing properties, but it does not have reducing properties. It is possible to enrich the buffer solution with reducing agents such as ß-Mercaptoethanol or DTT.

Roti®-Load 3 is suitable **for native gels, precast gels and cooled gels**. The buffer solution contains LDS. Unlike SDS, LDS does not crystallise out at low temperatures. In addition, the buffer solution is optimally adapted for precast gels. Roti®-Load 3 has denaturing properties, but does not have reducing properties. It is possible to enrich the buffer solution with reducing agents such as ß-Mercaptoethanol or DTT.

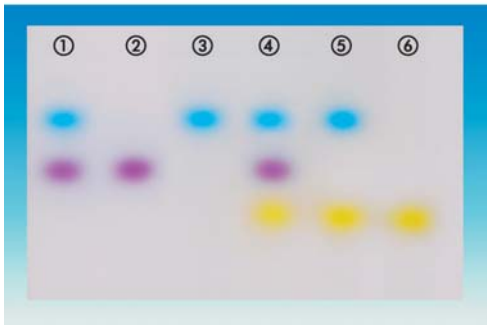
Glycerine is the standard reagent for increasing the density of samples.

SDS (sodium dodecyl sulphate), LDS (lithium dodecyl sulphate) are anionic surfactants. They form a negatively charged mantle around the protein molecules, which results in a denaturing effect. This process is reversible. Irreversible denaturation only occurs if the samples are boiled. Negative charging allows the molecules to be separated during electrophoresis.

ß-mercaptoethanol, DTT (dithiothreitol) are reducing agents which split disulphide bridges in protein molecules. Increased unfolding of the molecule occurs. This process is reversible.

Gel Loading Buffers for Nucleic Acids

ready-to-use



The ROTH gel loading buffers are special buffers for nucleic acid electrophoresis. Each batch is tested for its functionality in electrophoresis. The gel loading buffers are ready-to-use solutions, which may be used directly.

Roti®-Load DNA buffer solutions contain Tris, sodium acetate and EDTA, with additional tracking dyes. For increasing the density when loading the gel, they are available in three different variations - with glycerol, ficoll and saccharose.

Roti®-Load RNA buffer solution contains formamide, MOPS, sodium acetate, EDTA and formaldehyde and bromophenol blue, and has been adjusted to pH 7,0. Due to the included ethidium bromide, the DNA is stained already during gel loading.

Roti®-Load DNAstain is a new generation of gel loading buffers providing fluorescent and non-toxic staining of DNA even during gel loading (see also next page).

Product	Application	Conc.	Dye	Incl. DNA stain	Figure	Art. No.	Pack Qty.	€
Roti®-Load DNA (with glycerol)	Standard applications, routine gels	6x	BP, XC	-	①	**X904.1**	5 x 1,8 ml	34,95
Roti®-Load DNA 1x (with glycerol)	Standard applications, pelleted DNA	1x	BP, XC	-	①	**0100.1**	5 x 1,0 ml	29,60
Roti®-Load DNA (with ficoll)	Small amounts of DNA, especially sharp bands	6x	BP, XC	-	①	**X905.1**	5 x 1,8 ml	38,20
Roti®-Load DNA (with saccharose)	Big sample volumes, big fragments	6x	BP	-	②	**T847.1**	5 x 1,0 ml	57,55
Roti®-Load DNA short-run (with glycerol)	Short separation distances, fast gels	6x	BP	-	②	**0095.1**	5 x 1,8 ml	38,20
Roti®-Load DNA short-run 1x (with glycerol)	Short separation distances, fast gels, pelleted DNA	1x	BP	-	②	**0099.1**	5 x 1,0 ml	28,95
Roti®-Load DNA small (with glycerol)	Small or very big fragments	6x	XC	-	③	**HP03.1**	5 x 1,8 ml	41,40
Roti®-Load DNA orange 1 (with glycerol)	Very short separation distances, small fragments, high concentrated or High Resolution agarose	6x	OG	-	⑥	**HP04.1**	5 x 1,8 ml	45,05
Roti®-Load DNA-orange 2 (with glycerol)	Mixture of small and big fragments	6x	XC, OG	-	⑤	**HP05.1**	5 x 1,8 ml	45,05
Roti®-Load DNA-tricolor (with glycerol)	Broad size range, high flexibility	6x	BP, XC, OG	-	④	**HP06.1**	5 x 1,8 ml	45,05
Roti®-Load RNA*	Separation of RNA fragments	1,3x	BP, EB	-	②	**T848.1**	2 x 0,5 ml	55,80
Roti®-Load DNAstain 1	Simultaneous gel staining, bigger fragments	6x	BP, XC, EG	yes	①	**5783.1**	1,0 ml	34,30
						5783.2	5 x 1,0 ml	103,10
Roti®-Load DNAstain 2	Simultaneous gel staining, medium fragments	6x	XC, OG, EG	yes	⑤	**5784.1**	1,0 ml	34,30
						5784.2	5 x 1,0 ml	103,10
Roti®-Load DNAstain 3	Simultaneous gel staining, small fragments	6x	OG, EG	yes	⑥	**6472.1**	1 ml	34,30
						6472.2	5 x 1 ml	103,10

* BP = Bromphenol blue XC = Xylene cyanole OG = Orange G EG=EvaGreen® EB = Ethidium bromide

* **Danger** H302-H315-H317-H319-H341-H350-H360FD-H373

Selecting a suitable Roti®-Load gel loading buffer for Nucleic Acids

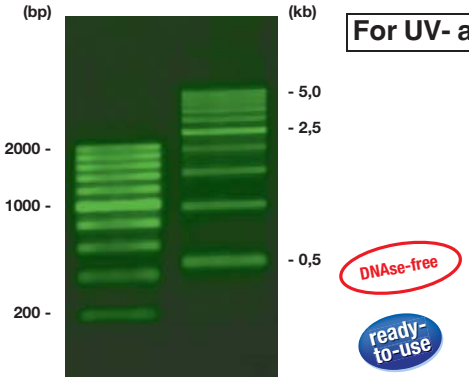
Care should be taken to ensure that the dyes contained in the gel stop before smallest relevant DNA bands. This ensures that the buffer can be stopped in time. However, the selected dyes may overlay the bands shown. In this case, select a loading buffer that does not contain any unwanted dyes.

Bromophenol blue and xylene cyanol can be used as colour markers in all **standard gels**. If a relevant band is overlaid by one of these colour markers, choose a gel loading buffer containing Orange G. If **small fragments** are to be assayed, the gel loading buffer should contain Orange G in order to mark the run. If relevant bands are overlaid, however, a choice can be made between bromophenol blue or xylene cyanol depending on the size of the bands. A loading buffer without xylene cyanol is usually used for assaying **large fragments**.

Glycerine is the standard reagent for increasing the density of samples.

Ficoll® 400 produces particularly well-defined bands.

Sucrose provides the greatest increase in density.



For UV- and blue light

Roti®-Load DNAstain

6x conc. gel loading buffer, ready-to-use, DNAse-free

DNA-gel loading buffer with fluorescent DNA-dye EvaGreen®.
Storage temp.: -20 °C • Transport temp.: room temp.

- Alternative for ethidium bromide, non-toxic, non-mutagen
- Nearly as sensitive as ethidium bromide, up to 1,5 ng/mm² nucleic acid
- For use with common broad-band ethidium bromide photo filters
- Excitation possible via UV light (320 nm) and blue light (~470 nm)
- Compatible with all usual down-stream applications

New, versatile reagent for gel loading and simultaneous staining of double stranded nucleic acid in agarose- and polyacrylamide gels. Roti®-Load DNAstain detects up to 0,2 ng per band, and is, therefore, as sensitive as ethidium bromide. Due to its most simple application as gel loading buffer it reduces the time needed for gel analysis significantly. This innovative reagent contains the intercalating dye EvaGreen®, which has been developed specifically for DNA analysis. DNA integrity is not influenced by EvaGreen®; hence, gel eluted DNA may directly be applied to standard down-stream applications, like, e.g., ligation, PCR, transformation, transfection etc. without interfering effects. Due to the low membrane permeability of the dye, Roti®-Load DNAstain is non mutagenic, non toxic, and environment friendly. Roti®-Load DNAstain can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, nucleic acid-bound Roti®-Load DNAstain emits a brightly coloured green fluorescence (525 nm) that may be documented by all usual broadband ethidium bromide- or SYBR® Green foto filters.
The **figure** depicts 50 ng DNA per band, or 75 ng (1000 bp and 2,5 kb), respectively. Each lane has been loaded and concurrently stained using 1 µl Roti®-Load DNAstain.

Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
1 ml is sufficient for running and staining of approx. 500 lanes.

Roti®-Load DNAstain 1

Contains: Tris, EDTA, bromophenol blue, xylencyanol, EvaGreen®.
Recommended for staining of dsDNA- and dsRNA-fragments of over 500 bp.

5783.1	1,0 ml	plastic	34,30 €
5783.2	5 x 1,0 ml	plastic	103,10 €

Roti®-Load DNAstain 2

Contains: Tris, EDTA, Orange G, xylencyanol, EvaGreen®.
Recommended for staining of dsDNA- and dsRNA-fragments of 100-2000 bp.

5784.1	1,0 ml	plastic	34,30 €
5784.2	5 x 1,0 ml	plastic	103,10 €

Roti®-Load DNAstain 3

Contains: Tris, EDTA, Orange G, EvaGreen®.
Recommended for staining of dsDNA- and dsRNA-fragments of under 500 bp.

6472.1	1 ml	plastic	34,30 €
6472.2	5 x 1 ml	plastic	103,10 €

Running distance in bp of xylene cyanol (XC) and bromophenol blue (BPB), with respect to agarose, gel concentration and buffer system used.

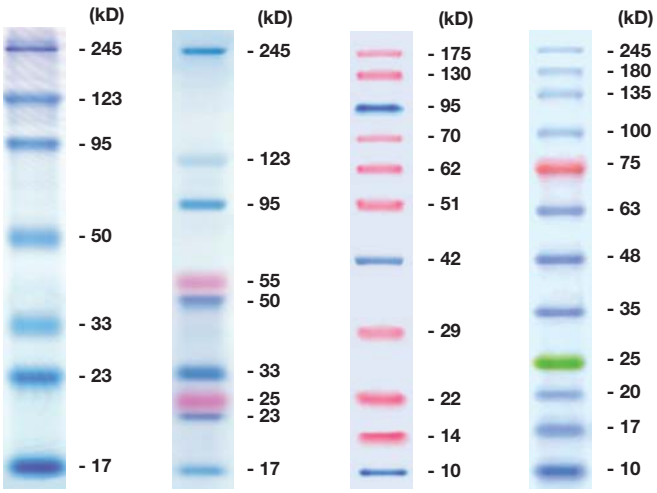
3810 Standard		0.3 %	0.5 %	1 %	1.5 %
1xTAE	XC	16 000	6 200	2 800	1 300
	BPB	1 600	500	300	150
1xTBE	XC	12 000	4 200	1 800	900
	BPB	1 300	400	200	70
2267 NEEO		0.5 %	1 %	1.5 %	2 %
1xTAE	XC	16 000	6 100	2 800	1 300
	BPB	1 650	500	300	150
1xTBE	XC	12 000	4 100	1 800	850
	BPB	1 350	400	200	70
HP67 Agarose Tablets		0.5 %	1 %	1.5 %	2 %
1xTAE	XC	15 000	5 000	2 600	1 500
	BPB	1 800	650	400	200
1xTBE	XC	11 000	4 000	1 800	800
	BPB	1 100	350	150	60
6352 GTQ		0.5 %	1 %	1.5 %	2 %
1xTAE	XC	15 000	5 000	2 600	1 500
	BPB	1 800	650	400	200
1xTBE	XC	11 000	4 000	1 800	800
	BPB	1 100	350	150	60
T846 Broad Range		0.3 %	0.7 %	1.2 %	1.7 %
1xTAE	XC	30 000	11 200	3 900	1 700
	BPB	4 000	1 200	520	300
1xTBE	XC	18 000	10 000	4 500	1 800
	BPB	2 200	950	450	200
3771 Pulsed-Field		1 %	2 %	3 %	4 %
1xTAE	XC	24 800	13 000	6 100	2 600
	BPB	3 550	2 050	760	400
1xTBE	XC	19 400	10 000	4 000	1 900
	BPB	2 550	1 500	500	250
HP30 HR PLUS		1 %	2 %	3 %	4 %
1xTAE	XC	2 500	1 000	400	200
	BPB	250	150	100	60
1xTBE	XC	1 500	600	200	120
	BPB	100	60	50	<50
K297 High Resolution		2 %	3 %	4 %	5 %
1xTAE	XC	600	300	160	100
	BPB	100	80	40	25
1xTBE	XC	400	150	80	50
	BPB	<50	<50	<20	<20
6351 Low Melt		1 %	1.5 %	2 %	2.5 %
1xTAE	XC	2 800	1 350	720	410
	BPB	425	225	120	75
1xTBE	XC	1 600	800	400	200
	BPB	200	80	40	20
HP31 LM / PCR		2 %	3 %	4 %	5 %
1xTAE	XC	600	300	120	60
	BPB	100	80	40	20
1xTBE	XC	400	150	60	40
	BPB	50	40	20	10-20
HP45 Super LM		1 %	1.5 %	2 %	2.5 %
1xTAE	XC	2 800	1 350	720	410
	BPB	425	225	120	75
1xTBE	XC	1 600	800	400	200
	BPB	200	80	40	20

Protein Markers Roti®-Mark

Perfect separation behaviour in the gel. Protein markers from Roth are acylated and pre-reduced, for optimal running behaviour in the gel. For each batch, intensity of bands is optimised and electrophoretically tested. All protein markers are offered as ready-to-use solutions which may be applied directly to the gel.

Protein Markers, prestained

Marker	PRESTAINED	BICOLOR	BI-PINK	TRICOLOR
Art. No.	T852 (fig. 1)	2806 (fig. 2)	8269 (fig. 3)	8271 (fig. 4)
Size Range (kD)	17 - 245	17 - 245	10 - 175	10 - 245
Number of Fragments	7	9	11	12
Reinforced band at (kD)	-	-	-	-
Quantitation	not recomm.	not recommended	not recommended	not recommended
Staining	blue prestained	blue prestained	pink prestained	blue prestained
Additional reference bands	-	2 pink prestained bands (25 kD, 55 kD)	3 blue prestained bands (10 kD, 40 kD, 90 kD)	2 prestained bands (25 kD green, 75 kD red)
Detection in Western-Blot	no detection	no detection	no detection	no detection
Number of Lanes in minigel	200 / ml	200 / ml	200 / ml	200 / ml
Delivery	ready-to-use	ready-to-use	ready-to-use	ready-to-use



Roti®-Mark PRESTAINED ①

ready-to-use

Protein marker, prestained
Size range: 17-245 kD
Number of protein bands: 7
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H319

The proteins of this marker are prestained. Roti®-Mark PRESTAINED is, therefore, an ideal size marker for controlling the gel run and for quick and reliable evaluation of transfer efficiency during Western Blot.
Fig.: 12 % SDS-PAGE (Tris)

T852.3	100 µl	plastic	53,65 €
T852.1	250 µl	plastic	89,80 €
T852.2	4 x 250 µl	plastic	313,90 €

Please note: Reliable size determination of proteins cannot be performed using prestained markers. For this, we recommend the use of our unstained marker Roti®-Mark 10-150 PLUS (Art. No. X879) with one prestained protein.

Roti®-Mark BICOLOR ②

ready-to-use

Protein marker, prestained
Size range: 17-245 kD
Number of protein bands: 9
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H319

Protein marker including bicolour-prestained proteins of 17 up to 245 kD. In order to visualise separation during the gel run and for better orientation in the gel, two proteins of approx. 25 and 55 kD have been prestained in red in addition to the blue coloured bands. All proteins excel by having a very even running behaviour and form distinct bands. The marker is designed as ready-to-use solution for direct application to the gel.
Fig.: 4-20 % gradient SDS-PAGE (Tris)

2806.1	100 µl	plastic	55,40 €
2806.2	250 µl	plastic	100,55 €

Roti®-Mark BI-PINK ③

ready-to-use

Protein marker, prestained
Size range: 10-175 kD
Number of protein bands: 11
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Protein marker including bicolour-prestained proteins of 10 up to 175 kD. In order to visualise separation during the gel run and for better orientation in the gel, three proteins of approx. 10, 40 and 90 kD have been prestained in blue in addition to the pink coloured bands. All proteins excel by having a very even running behaviour and form distinct bands. The marker is designed as ready-to-use solution for direct application to the gel.
Fig.: 15 % SDS-PAGE (Tris)

8269.1	500 µl	plastic	151,05 €

Roti®-Mark TRICOLOR ④

ready-to-use

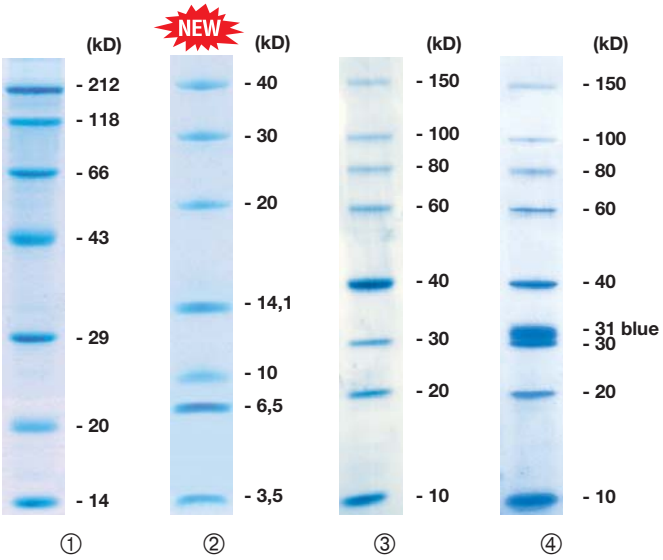
Protein marker, prestained
Size range: 10-245 kD
Number of protein bands: 12
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Protein marker including tricolour-prestained proteins of 10 up to 245 kD. In order to visualise separation during the gel run and for better orientation in the gel, two proteins of approx. 25 and 75 kD have been prestained in green and red, respectively, in addition to the blue coloured bands. All proteins excel by having a very even running behaviour and form distinct bands. The marker is designed as ready-to-use solution for direct application to the gel.
Fig.: 4-20 % gradient SDS-PAGE (Tris)

8271.1	500 µl	plastic	151,05 €

Protein Markers, unstained

Marker	STANDARD	PETIT	10-150	10-150 PLUS
Art. No.	T851 (fig. 1)	9299 (fig. 2)	T850 (fig. 3)	X879 (fig. 4)
Size Range (kD)	14 - 212	3,5 - 40	10 - 150	10 - 150
Number of Fragments	7	7	8	9
Reinforced band at (kD)	43	-	40	40
Quantitation	recommended	recommended	recommended	recommended
Staining	unstained	unstained	unstained	1 blue prestained band (30 kD)
Detection in Western-Blot	no detection	no detection	detection by anti-His possible	detection by anti-His possible
Number of Lanes in minigel	200 / ml	200 / ml	200 / ml	200 / ml
Delivery	ready-to-use	ready-to-use	ready-to-use	ready-to-use



Roti®-Mark STANDARD ①

ready-to-use

Protein marker, not prestained
Size range: 14-212 kD
Number of protein bands: 7
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H319

Roti®-Mark STANDARD is an ideal protein-size marker for routine applications. Proteins are solubilised in nonreducing buffer acc. to Laemmli.
Fig.: 12 % SDS-PAGE (Tris)

T851.3	200 µl	plastic	32,15 €
T851.1	1 ml	plastic	90,20 €
T851.2	4 x 1 ml	plastic	317,15 €

Roti®-Mark PETIT ②

NEW ready-to-use

Protein marker, not prestained
Size range: 3,5-40 kD
Number of protein bands: 7
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Roti®-Mark PETIT is a finely graded protein marker for small size range. It consists of four genetically engineered proteins with defined, regular molecular weight and, in addition, of three native proteins for better visualization of the small size range. The marker is dissolved in non-reducing Laemmli buffer and can be used directly.
Roti®-Mark PETIT is an ideal addition to Roti®-Mark 10-150 (Art.-No. T850).
Fig.: 16,5 % SDS-PAGE (Tris-Tricine)

9299.1	100 µl	plastic	57,00 €
9299.2	500 µl	plastic	166,65 €

Roti®-Mark 10-150 ③

ready-to-use

Protein marker, not prestained
Size range: 10-150 kD
Number of protein bands: 8
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H319

Roti®-Mark 10-150 consists of a set of genetically engineered proteins with defined, regular molecular weight. The proteins are not glycosylated and therefore display homogeneous electrophoretic behaviour. An enhanced 40 kD band provides easy orientation in the gel.
Roti®-Mark 10-150 has been assembled from a set of **His-tagged, recombinant proteins** that may be detected during Western-Blot analysis using anti-His antibodies.
Fig.: 4-20 % gradient SDS-PAGE (Tris)

T850.1	500 µl	plastic	109,55 €
T850.2	100 µl	plastic	47,85 €

Roti®-Mark 10-150 PLUS ④

ready-to-use

Protein marker with additional prestained protein
Size range: 10-150 kD
Number of protein bands: 9
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

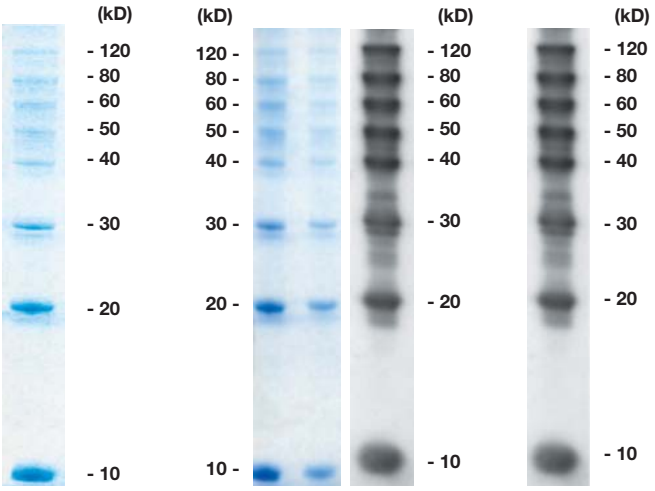
Warning H319

Reliable size determination as well as control of running behaviour and transfer.
This marker represents an advanced version of marker Roti®-Mark 10-150 and is supplemented with an additional prestained carbo anhydrase (approx. 31 kD). Roti®-Mark 10-150 PLUS consists of a set of genetically engineered proteins with defined, regular molecular weight. The proteins are not glycosylated and therefore display homogeneous electrophoretic behaviour. Whilst in prestained markers the apparent molecular size in the gel may differ from the actual size of the proteins, Roti®-Mark 10-150 PLUS exhibits a strictly size-dependent running behaviour. The additional prestained protein enables easy control of the run as well as of the subsequent transfer. Therefore, this marker adds the benefits of prestained protein markers to a reliable determination of the molecular weight of separated proteins. The enhanced 40 kD-band allows easy orientation in the gel.
Roti®-Mark 10-150 PLUS has been assembled from a set of **His-tagged, recombinant proteins** that may be detected during Western-Blot analysis using anti-His antibodies.
Fig.: 4-20 % gradient SDS-PAGE (Tris)

X879.1	500 µl	plastic	133,85 €
X879.2	100 µl	plastic	53,65 €

Protein Markers for Western blotting

Marker	WESTERN
Art. No.	0948 (fig. 5)
Size Range (kD)	10 - 120
Number of Fragments	8
Reinforced band at (kD)	20
Quantitation	recommended
Staining	unstained
Detection in Western-Blot	detection by anti marker protein HRP conjugate
Number of Lanes in minigel	200 / ml
Delivery	ready-to-use



⑤ ⑥ ⑦

Roti®-Mark WESTERN-Marker ⑤

ready-to-use

Protein marker, not prestained
Size range: 10-120 kD
Number of protein bands: 8
Number of lanes/ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H319

Finely graded protein marker for medium size range. The unstained proteins enable correct size evaluation in gel. The marker-specific antibody Roti®-Mark WESTERN HRP-conjugate (Art. No. 0949.1) enables the marker to be detected directly in Western-Blot and stained through chemoluminescence or colour reaction. Consequently you will obtain the ladder size directly on your printout, X-ray film or membrane - this rules out the possibility of any errors through inaccurate transfer of the bands. Marker proteins are solubilised in a non-reducing buffer acc. to Laemmli.
Fig.: 12 % SDS-PAGE (Tris), 10 µl marker solution.

0948.1	500 µl	plastic	177,40 €

Instructions for use
can be found on the Internet next to the product description.

Roti®-Mark WESTERN Set ⑥

ready-to-use TIP

Set of protein marker and antibody for gel and Western-Blot
Size range: 10-120 kD
Number of protein bands: 8
Number of lanes: approx. 100 or 10 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H319

Finely graded protein marker for medium size range and for detection in gel and on the Western-Blot membrane. The marker itself consists of unstained proteins and therefore enables correct size evaluation in gel (left figure). The marker-specific antibody Roti®-Mark WESTERN HRP- conjugate (rabbit) enables the marker to be detected directly in Western- Blot and stained through chemoluminescence or colour reaction. Antibody incubation is performed in parallel with the incubation of your protein- specific antibodies and therefore saves any additional work and expense. The marker bands are also automatically stained (right figure) during subsequent detection by horseradish-peroxidase. Consequently you will obtain the correct ladder size directly on your printout, X-ray film or membrane, ruling out the possibility of any errors through inaccurate transfer of the bands. Marker proteins are solubilised in a non-reducing buffer acc. to Laemmli. Roti®-Mark WESTERN Marker can be bought seperately under Art. No. 0948.1 and Roti®-Mark WESTERN HRP conjugate under Art. No. 0949.1.

Left hand fig.: 12 % minigel, 10 µl and 5 µl marker solution, respectively.
Right hand fig.: Chemoluminescence detection via Roti-Lumin, Art. No. P078.1. Proteins were run in a 12 % minigel and transferred onto a Roti®-PVDF-Membran. 5 µl Roti®-Mark WESTERN Marker and Roti®-Mark WESTERN HRP conjugate diluted by 1:2.500.

0947.2	1 mini kit	plastic	37,55 €
0947.1	1 kit	plastic	299,95 €

Roti®-Mark WESTERN HRP Conjugate ⑦

0,2 mg/ml
For HRP mediated detection of Roti®-Mark WESTERN Marker.
Storage temp.: -20 °C • Transport temp.: room temp.

Anti-Roti®-Mark WESTERN marker protein/HRP conjugate made from rabbit serum. The antibody is aimed specifically at the marker proteins of the Roti®-Mark WESTERN marker (Art. No. 0948.1) and is used mixed together with your protein-specific antibody. The marker bands are then also automatically stained during subsequent detection by horseradish-peroxidase. The figure shows chemoluminescence detection of the Roti®-Mark WESTERN marker (5 µl) with Roti®-Mark WESTERN HRP-conjugate (diluted 1:2.500) using Roti®-Lumin (Art. No. P078.1) after separation on a 12 % minigel and transfer onto a Roti®-PVDF-membrane. The solution has been stabilised with PBS and BSA. The antibody can be used in dilutions of 1:500 to 1:5.000 and is adequate at a volume of 5 ml buffer for up to 250 assays. Short-term storage for a few weeks is possible at +4 °C.
We recommend you aliquot and preserve the antibody at -20 °C or -80 °C for longer-term storage.

0949.1	500 µl	glass	180,60 €

▶ Reagents for Western Blot & ELISA see chapter Biochemistry - Western & ELISA!

DNA Markers

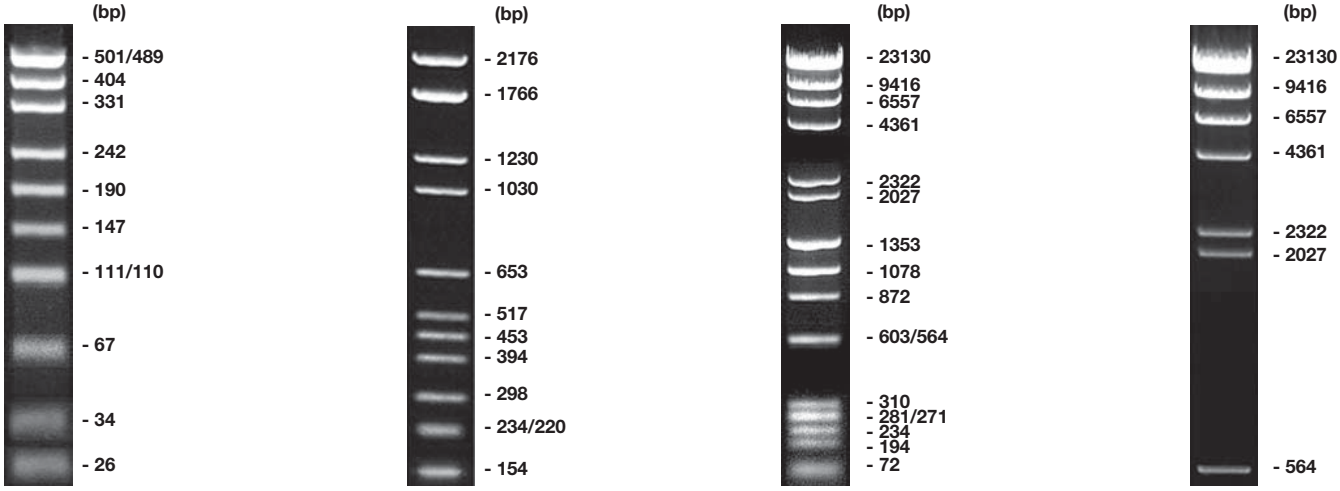
Roth offers a multifaceted marker range including DNA markers for each application required. Our DNA-markers produce sharp, clear bands. Terminally, the unregular markers carry sticky *Eco*R I sites and, therefore, end-labelling methods can be applied easily.

The DNA-markers are supplied ready-to-use or in lyophilised form. Gel loading buffer for dissolving the lyophilised DNA-fragments is included. Roti®-Load DNA with glycerol (Art. No. 0100.1), or the specially designed short-run-loading buffer (Art. No. 0099.1) is used as gel loading buffer.

Unevenly Distributed DNA Markers

These markers are recommended for DNA quantitation in the gel.
DNA amounts of all bands are depicted in the included instructions-for-use.

Marker	pUC19-Marker ready-to-use	pUC19/MspI	pBR328-Marker ready-to-use	pBR328 Mix I	Lambda Hind III / phiX Hae III Marker	Lambda Hind III Marker
Art. No.	X901 (fig. 1)	T149 (fig. 2)	X902 (fig. 3)	T146 (fig. 4)	CP49 (fig. 5)	X910 (fig. 6)
Size range (bp)	26 - 501	26 - 501	154 - 2176	154 - 2176	72 - 23130	125 - 23130
Number of fragments	10	10	11	11	17	8
Reinforced band at (bp)	-	-	-	-	-	-
Quantitation	recommended	recommended	recommended	recommended	recommended	recommended
Number of lanes in minigel	200 / ml	200 / 100 µg	200 / ml	200 / 100 µg	200 / 100 µg	200 / 100 µg
Delivery	ready-to-use	lyophilised	ready-to-use	lyophilised	lyophilised	lyophilised



①+② ③+④ ⑤ ⑥

pUC19-Marker ready-to-use ①

ready-to-use

DNA marker ready-to-use
Size range: 26-501 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.
The marker was manufactured using pUC19-DNA and restriction endonuclease *Msp* I.
Made from natural plasmids: fragment sizes can be validated!
DNA-ladder for analysis of small DNA fragments. The concentration of the individual fragments is equimolar so that rough quantification of the analysed DNA is possible.
The ready-to-use pUC19-marker has already been dissolved in 1x concentrated gel loading buffer Roti®-Load DNA (with glycerol, Art. No. 0100.1) and can be used directly. It has a concentration of 0,1 µg DNA/µl marker-solution.
Fig.: 1 % agarose (NEEO, Art. No. 2267) + 2 % Synergel™ (Art. No. 0184)

X901.1	500 µl (50 µg)	plastic	54,75 €
X901.2	4 x 500 µl (4 x 50 µg)	plastic	190,85 €

pUC19/Msp I ②

DNA marker + gel loading buffer
Size range: 26-501 bp
Number of fragments: 10
Number of lanes per 100 µg: approx. 200 (mini gels)
Storage temp.: -20 °C • Transport temp.: room temp.
The marker was manufactured by using pUC19-DNA and restriction endonuclease *Msp* I.
Made from natural plasmids: fragment sizes can be validated!
DNA-ladder for analysis of small DNA fragments. The concentration of the individual fragments is equimolar so that rough quantification of the analysed DNA is possible.
Fig.: 1 % agarose (NEEO, Art. No. 2267) + 1 % Synergel™ (Art. No. 0184)
The DNA marker is supplied in lyophilised form. Sample buffer for dissolving the lyophilised DNA-fragments is included.

T149.1	50 µg + gel loading buffer	plastic	68,30 €
T149.2	4 x 50 µg + gel loading buffer	plastic	213,95 €

pBR328-Marker ready-to-use ③

ready-to-use

DNA marker ready-to-use

Size range: 154-2176 bp
Number of fragments: 11
Number of lanes per ml: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

The marker was manufactured by mixing fragments obtained by restriction digest of pBR328 using the endonucleases *Hinf* I and *Bgl* I.
Made from natural plasmids: fragment sizes can be validated!
DNA-ladder for analysis of small DNA fragments. The concentration of the individual fragments is equimolar so that rough quantitation of the analysed DNA is possible.
The ready-to-use pBR328-marker has been dissolved in 1x concentrated gel loading buffer Roti®-Load DNA (with glycerol) and can be used directly. It has a concentration of 0,1 µg DNA/µl marker-solution.
Fig.: 1,5 % agarose (NEEO, Art. No. 2267)

X902.1	500 µl (50 µg)	plastic	57,55 €
X902.2	4 x 500 µl (4 x 50 µg)	plastic	213,95 €

pBR328 Mix I ④

DNA marker + gel loading buffer

Size range: 154-2176 bp
Number of fragments: 11
Number of lanes per 100 µg: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

The marker was manufactured by mixing fragments obtained by restriction digest of pBR328 using the endonucleases *Hinf* I and *Bgl* I.
Made from natural plasmids: fragment sizes can be validated!
DNA-ladder for analysis of small DNA fragments. The concentration of the individual fragments is equimolar so that rough quantitation of the analysed DNA is possible.
Fig.: 1,5 % agarose (NEEO, Art. No. 2267)
The DNA marker is supplied in lyophilised form. Sample buffer for dissolving the lyophilised DNA-fragments is included.

T146.1	50 µg + gel loading buffer	plastic	67,65 €

Lambda Hind III / phiX Hae III Marker ⑤

DNA marker + gel loading buffer

Size range: 72-23130 bp
Number of fragments: 17
Number of lanes per 100 µg: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Versatile marker for depiction of all standard DNA fragment lengths.
By mixing high molecular weight Lambda (*Hind* III) fragments with short-sequence phiX-174 (*Hae* III) fragments a marker was designed which covers a broad range from 200 bp up to 20 kb. Most fragments are distributed in an equimolar way, additionally allowing rough DNA quantification in the gel. Due to this equimolarity, however, the smallest bands of 125 bp, 118 bp and 72 bp can not be detected efficiently in standard gels.
Optimal results are obtained with a running distance of approx. 10 cm.
The marker was manufactured by restricting unmethylated DNA with the restriction endonucleases *Hind* III and *Hae* III. Depending on the application, the lyophilised marker can be resolubilised directly in the sterile-filtered 1x-gel loading buffer Roti®-Load DNA (with glycerol) (Art. No. 0100.1) or in TE-buffer.
Fig.: 1 % agarose (NEEO, Art. No. 2267).
Additional bands at 125, 118 and 72 bp.

CP49.1	50 µg + gel loading buffer	plastic	126,35 €

Lambda Hind III Marker ⑥

DNA marker + gel loading buffer

Size range: 125-23130 bp
Number of fragments: 8
Number of lanes per 100 µg: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

The marker was manufactured by using unmethylated Lambda-DNA and restriction endonuclease *Hind* III.
Classical standard for analysis of middle-range DNA fragments. Since the marker is produced by restriction digest of Lambda-DNA, fragments are mostly distributed in an equimolar way (with the exception of the 4361 bp fragment), additionally allowing rough quantification of the DNA analysed. Depending on the application, the lyophilised marker can be resolubilized directly in the sterile-filtered 1x-gel loading buffer Roti®-Load DNA (with glycerol) (Art. No. 0100.1) or in TE-buffer.
Fig.: 1 % agarose (NEEO, Art. No. 2267)

X910.1	100 µg + gel loading buffer	plastic	53,25 €

▶ DNA-quantitation standards QSK
see page 1194

Tips for estimating the amount of DNA in agarose gels

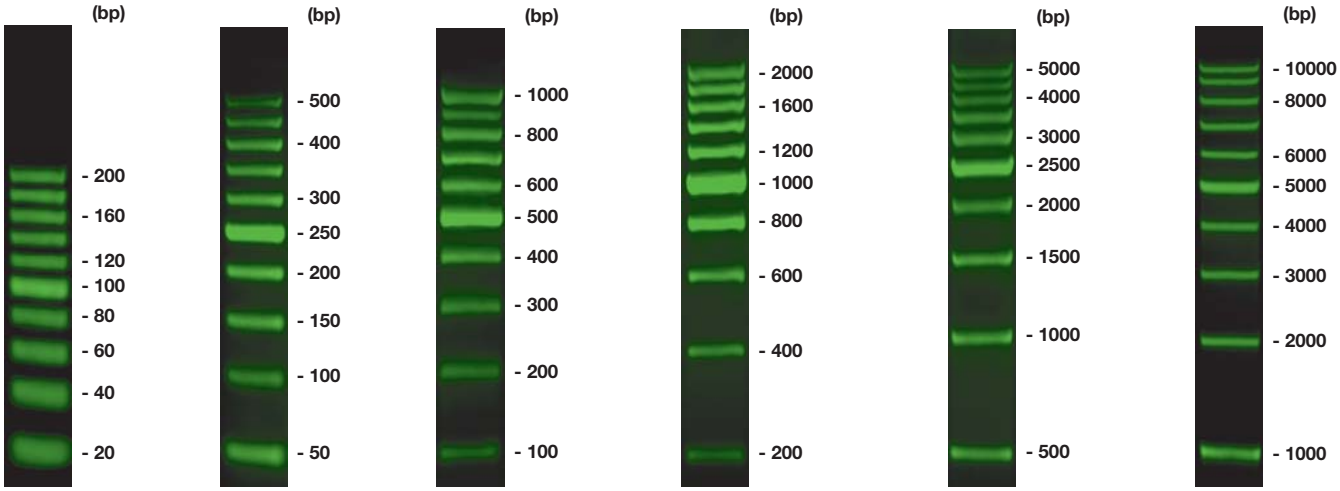
- Please make sure to quantitatively dissolve the comparative DNA (e.g. the marker) in buffer, in order to obtain the full DNA-concentration.
- Allow the gel to run far enough so that the bands have adequate space, the DNA can then disperse in the bands and stain well.
- Stain the gel thoroughly - we recommend staining after the gel run. Staining the DNA by adding ethidium bromide to the agarose will not achieve an even distribution in the gel and is frequently not quantitative.
- Apply several lanes of comparative-DNA with different quantities so that various bands can be compared. A calibration curve may also be plotted to determine the exact concentration.
- For comparison it is best to use bands of similar size to your DNA (maximum ±50 % of the fragment length).
- Ethidium bromide is integrated much more effectively between the base pair stacks in linear DNA than in cyclic DNA. Therefore, please make sure that the conformation of the DNA whose concentration you wish to estimate is identical to that of the comparative DNA. In the event of cyclic DNA, i.e. isolated plasmids, cyclic DNA should also be used, e.g. plasmid-DNA pUC19 (Art. No. X911.1) or pBR322 (Art. No. X912.1). If you are using a DNA-marker as a comparative DNA and wish to measure cyclic DNA, you should initially linearize an aliquot of the DNA through restriction digestion and apply the preparation to the gel.
- In the event of a Lambda/*Hind* III marker: Do not use the 4.4 kb band of the marker for concentration analysis, as it is often not quantitatively present but coupled to the large fragment via the cos-site. Should you require the 4.4 kb band, please take care to heat the marker prior to applying (5 minutes at 65 °C).
- Only use the large marker fragments of a Lambda marker for concentration estimation when your fragments are in the same size range. Many visual systems do not depict the staining of the large bands proportionally to the DNA-amount.

Tips for use of DNA length markers

- Storage: Store marker in small aliquots at -20 °C. One aliquot can be stored at +4 °C for permanent use.
- Application amount: Apply more marker when markers with higher band numbers are used. Applied amount can be reduced, however, for short separation distances. Application on polyacrylic amide gels may be reduced to ⅕ to ½ of the marker amount used for agarose gels.
- Fast running gels: Roth markers are established with respect to high separation efficiency even when applying high voltages. Be sure, however, to use sufficient and fresh gel running buffer made with water of good quality.
- "Falsely" running bands: Under extreme conditions, (e.g. high voltages, short running distances, salt content in the probes >150 mM) implausible results may occur, which are often caused by partial strand separation of the DNA. For amendments we recommend: a) Supplementation of the marker with restriction enzyme buffer in order to increase the salt content, b) use lower separation voltages, c) make sure to efficiently remove evolving heat, e.g. by cooling the gel prior to or during the run.

Evenly Distributed DNA Markers with Fluorescent Stain

Marker	20 bp-DNA-Fluoro-Ladder	50 bp-DNA-Fluoro-Ladder	100 bp-DNA-Fluoro-Ladder	200 bp-DNA-Fluoro-Ladder	500 bp-DNA-Fluoro-Ladder	1 kbp DNA-Fluoro-Ladder
Art. No.	8262 (fig. 1)	8263 (fig. 2)	8264 (fig. 3)	8265 (fig. 4)	8266 (fig. 5)	8267 (fig. 6)
Size range (bp)	20 - 200	50 - 500	100 - 1000	200 - 2000	500 - 5000	1000 - 10000
Number of fragments	10	10	10	10	10	10
Reinforced band at (bp)	100	250	500	1000	2500	5000
Färbung	fluorescent/green	fluorescent/green	fluorescent/green	fluorescent/green	fluorescent/green	fluorescent/green
Quantitation	possible	possible	possible	possible	possible	possible
Number of lanes in minigel	200 / ml	200 / ml	200 / ml	200 / ml	200 / ml	200 / ml
Delivery	ready-to-use	ready-to-use	ready-to-use	ready-to-use	ready-to-use	ready-to-use



① ② ③ ④ ⑤ ⑥

20 bp-DNA-Fluoro-Ladder ①

ready-to-use

DNA-Marker ready-to-use,
prestained with DNA fluorescent dye
Size range: 20-200 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

Regular DNA ladder for the analysis of very small DNA fragments. Delivered in *ready-to-use* format for direct application to gels. The 100 bp fragment has been enhanced for easy analysis of the gel. Orange G was included as tracking dye. The bands of the marker are prestained with the fluorescent dye EvaGreen®, which has been developed specifically for DNA analysis. Due to the low membrane permeability of the dye, the marker is non mutagenic, non-toxic, and environment friendly. It can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, the nucleic acid-bound dye emits a brightly coloured green fluorescence that may be documented by all usual broadband ethidium bromide filters or SYBR® Green foto filters.
Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
The 20 bp-DNA-Fluoro-Ladder is an ideal addition to the with EvaGreen® prestained gel loading buffer Roti®-Load DNAstain 3 (Art. No. 6472).

8262.1	500 µl (50 µg)	124,20 €

50 bp-DNA-Fluoro-Ladder ②

ready-to-use

DNA-Marker ready-to-use,
prestained with DNA fluorescent dye
Size range: 50-500 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

Regular DNA ladder for the analysis of small DNA fragments. Delivered in *ready-to-use* format for direct application to gels. The 250 bp fragment has been enhanced for easy analysis of the gel. Orange G was included as tracking dye.
The bands of the marker are prestained with the fluorescent dye EvaGreen®, which has been developed specifically for DNA analysis. Due to the low membrane permeability of the dye, the marker is non mutagenic, non-toxic, and environment friendly. It can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, the nucleic acid-bound dye emits a brightly coloured green fluorescence that may be documented by all usual broadband ethidium bromide filters or SYBR® Green foto filters.
Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
The 50 bp-DNA-Fluoro-Ladder is an ideal addition to the with EvaGreen® prestained gel loading buffer Roti®-Load DNAstain 3 (Art. No. 6472).

8263.1	500 µl (50 µg)	109,15 €

100 bp-DNA-Fluoro-Ladder ③

ready-to-use

DNA-Marker ready-to-use,
prestained with DNA fluorescent dye
Size range: 100-1000 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

Regular DNA ladder for the analysis of small DNA fragments. Delivered in ready-to-use format for direct application to gels. The 500 bp fragment has been enhanced for easy analysis of the gel. Orange G and xylene cyanole were included as tracking dyes.
The bands of the marker are prestained with the fluorescent dye EvaGreen®, which has been developed specifically for DNA analysis. Due to the low membrane permeability of the dye, the marker is non mutagenic, non-toxic, and environment friendly.
It can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, the nucleic acid-bound dye emits a brightly coloured green fluorescence that may be documented by all usual broadband ethidium bromide filters or SYBR® Green foto filters.
Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
The 100 bp-DNA-Fluoro-Ladder is an ideal addition to the with EvaGreen® prestained gel loading buffer Roti®-Load DNAstain 2 (Art. No. 5784).

8264.1	500 µl (50 µg)	99,45 €

500 bp-DNA-Fluoro-Ladder ⑤

ready-to-use

DNA-Marker ready-to-use,
prestained with DNA fluorescent dye
Size range: 500-5000 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

Regular DNA ladder for the analysis of DNA fragments. Delivered in *ready-to-use* format for direct application to gels. The 2500 bp fragment has been enhanced for easy analysis of the gel. Bromophenol blue and xylene cyanole were included as tracking dyes.
The bands of the marker are prestained with the fluorescent dye EvaGreen®, which has been developed specifically for DNA analysis. Due to the low membrane permeability of the dye, the marker is non mutagenic, non-toxic, and environment friendly. It can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, the nucleic acid-bound dye emits a brightly coloured green fluorescence that may be documented by all usual broadband ethidium bromide filters or SYBR® Green foto filters.
Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
The 500 bp-DNA-Fluoro-Ladder is an ideal addition to the with EvaGreen® prestained gel loading buffer Roti®-Load DNAstain 1 (Art. No. 5783).

8266.1	500 µl (50 µg)	77,30 €

200 bp-DNA-Fluoro-Ladder ④

ready-to-use

DNA-Marker ready-to-use,
prestained with DNA fluorescent dye
Size range: 200-2000 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

Regular DNA ladder for the analysis of DNA fragments. Delivered in *ready-to-use* format for direct application to gels. The 1000 bp fragment has been enhanced for easy analysis of the gel. Bromophenol blue and xylene cyanole were included as tracking dyes.
The bands of the marker are prestained with the fluorescent dye EvaGreen®, which has been developed specifically for DNA analysis. Due to the low membrane permeability of the dye, the marker is non mutagenic, non-toxic, and environment friendly. It can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, the nucleic acid-bound dye emits a brightly coloured green fluorescence that may be documented by all usual broadband ethidium bromide filters or SYBR® Green foto filters.
Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
The 200 bp-DNA-Fluoro-Ladder is an ideal addition to the with EvaGreen® prestained gel loading buffer Roti®-Load DNAstain 1 (Art. No. 5783).

8265.1	500 µl (50 µg)	88,70 €

1 kbp-DNA-Fluoro-Ladder ⑥

ready-to-use

DNA-Marker ready-to-use,
prestained with DNA fluorescent dye
Size range: 1000-10000 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

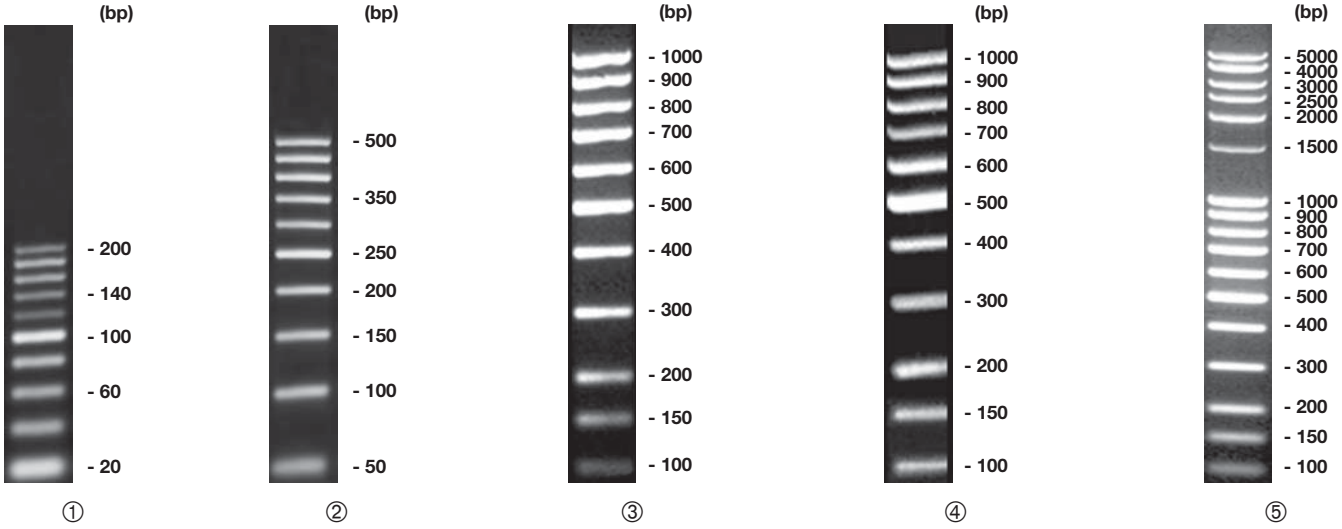
Regular DNA ladder for the analysis of big DNA fragments. Delivered in *ready-to-use* format for direct application to gels. The 5 kb fragment has been enhanced for easy analysis of the gel. Bromophenol blue and xylene cyanole were included as tracking dyes.
The bands of the marker are prestained with the fluorescent dye EvaGreen®, which has been developed specifically for DNA analysis. Due to the low membrane permeability of the dye, the marker is non mutagenic, non-toxic, and environment friendly. It can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, the nucleic acid-bound dye emits a brightly coloured green fluorescence that may be documented by all usual broadband ethidium bromide filters or SYBR® Green foto filters.
Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
The 1 kb-DNA-Fluoro-Ladder is an ideal addition to the with EvaGreen® prestained gel loading buffer Roti®-Load DNAstain 1 (Art. No. 5783).

8267.1	500 µl (50 µg)	67,65 €

▶ **DNA-gel loading buffers** with fluorescent dye EvaGreen® see chapter Electrophoresis - Gel Loading Buffers for Nucleic Acids!

Evenly Distributed DNA Markers (Unstained)

Marker	20 bp-DNA Ladder	50 bp-DNA Ladder	100 bp-DNA Ladder equimolar	100 bp-DNA Ladder equalized	100 bp-DNA Ladder extended
Art. No.	2805 (fig. 1)	2810 (fig. 2)	T834 (fig. 3)	T833 (fig. 4)	T835 (fig. 5)
Size range (bp)	20 - 200	50 - 500	100 - 1000	100 - 1000	100 - 5000
Number of fragments	10	10	11	11	17
Reinforced band at (bp)	100	250	500	500	500
Quantitation	possible	possible	recommended	possible	possible
Number of lanes in minigel	200 / ml	200 / ml	200 / 100 µg	500 / 100 µg	160 / 100 µg
Delivery	ready-to-use	ready-to-use	lyophilised	lyophilised	lyophilised



20 bp-DNA-Ladder ①

ready-to-use

DNA marker ready-to-use
Size range: 20-200 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Regular DNA ladder for the analysis of very small DNA fragments. Delivered in ready-to-use format for direct application to gels. The 100 bp fragment has been enhanced for easy analysis of the gel. All fragments are quantified, enabling quantitation of sample DNA in the gel. In order to avoid overlay of bands by bromophenol blue or xylene cyanol, Orange G was included as dye. We recommend use of this marker on the following special agaroses: High Resolution (Art. No. K297), HR-PLUS (Art. No. HP30), LM/PCR (Art. No. HP31), or an agarose with additional Synergel™ (Art. No. 0184). The 20 bp DNA-Ladder is highly compatible with the 100 bp DNA-Ladder *equimolar* (Art. No. T834). The two markers can easily be combined, resulting in a highly versatile ladder from 20 bp up to 1000 bp (right lane in figure). **Fig.:** 1,4 % agarose (High Resolution, Art. No. K297) + 0,8 % Synergel™ (Art. No. 0184) in 1 x TAE.

2805.1	500 µl (50 µg)	plastic	110,20 €

50 bp-DNA-Ladder ②

ready-to-use

DNA marker ready-to-use
Size range: 50-500 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

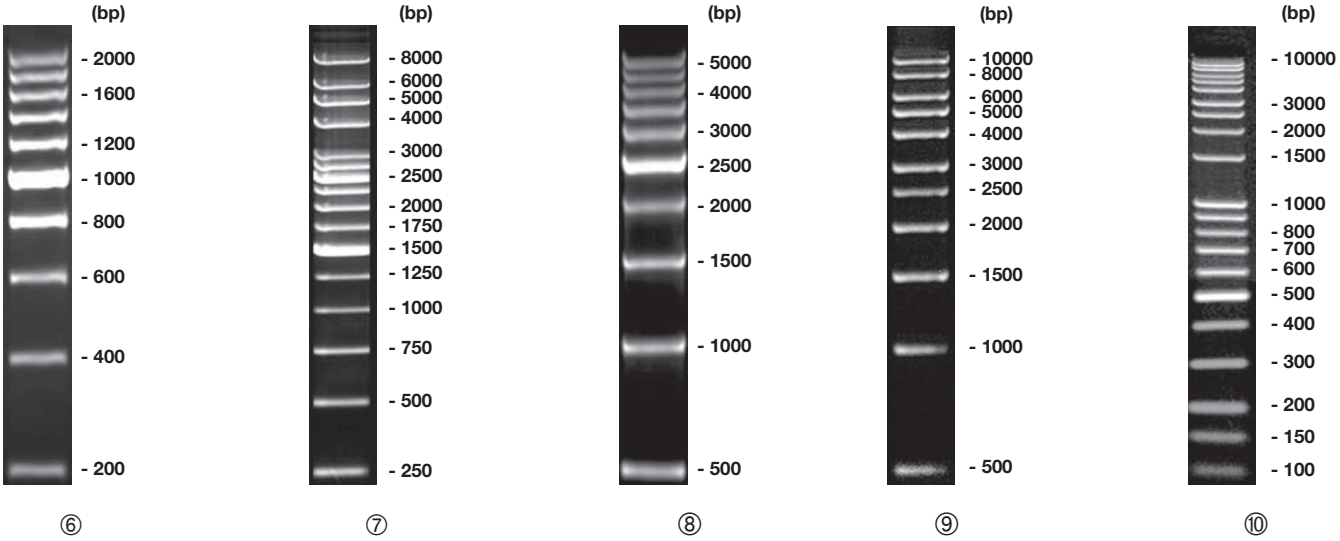
Regular DNA ladder for the analysis of small DNA fragments. Delivered in ready-to-use format for direct application to gels. The 250 bp fragment has been enhanced for easy analysis of the gel. All fragments are quantified, enabling quantitation of sample DNA in the gel. In order to avoid overlay of bands by bromophenol blue or xylene cyanol, Orange G was included as dye. We recommend use of this marker on the following special agaroses: High Resolution (Art. No. K297), HR-PLUS (Art. No. HP30), LM/PCR (Art. No. HP31), or an agarose with additional Synergel™ (Art. No. 0184). The 50 bp DNA-Ladder is highly compatible with the 100 bp DNA-Ladder *equimolar* (Art. No. T834). The two markers can easily be combined, resulting in a highly versatile ladder from 50 bp up to 1000 bp (right lane in figure). **Fig.:** 1,1 % agarose (High Resolution, Art. No. K297) + 0,8 % Synergel™ (Art. No. 0184) in 1 x TAE.

2810.1	500 µl (50 µg)	plastic	90,20 €

For direct detection of the marker DNA in the gel under UV- or blue light we recommend to use lyophilized marker DNA. The marker DNA is first solubilized in sterile water or 1xTE buffer, then Roti®-Load DNAstain (6x conc.) is added. The so prepared marker may be aliquoted and stored at -20 °C.

Roti®-Load DNAstain contains a fluorecent dye which may be excited by UV- or blue light, emitting at 525 nm.

Marker	200 bp-DNA Ladder	250 bp-DNA Ladder	500 bp-DNA Ladder	1 kbp DNA Ladder	DNA Ladder combi
Art. No.	8272 (fig. 6)	T918 (fig. 7)	8273 (fig. 8)	Y014 (fig. 9)	CL22 (fig. 10)
Size range (bp)	200 - 2000	250 - 8000	500 - 5000	500 - 10000	100 - 10000
Number of fragments	10	16	10	11	20
Reinforced band at (bp)	1000	1500, 2500	2500	-	500
Quantitation	possible	-	possible	-	-
Number of lanes in minigel	200 / ml	200 / 100 µg	200 / ml	200 / 100 µg	200 / 140 µg
Delivery	ready-to-use	lyophilised	ready-to-use	lyophilised	lyophilised



⑥ ⑦ ⑧ ⑨ ⑩

100 bp-DNA-Ladder *equimolar* ③

DNA ladder + gel loading buffer

Size range: 100-1000 bp
Number of fragments: 11
Number of lanes per 100 µg: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Routine marker for small fragments.

The individual bands of the marker are present in the mixture in the same molar concentration (equimolar).
Fig.: 1,8 % agarose (NEEO, Art. No. 2267)
The DNA-ladder is supplied in lyophilised form.
Sample buffer for dissolving the lyophilised DNA-fragments is included.

T834.1	50 µg + gel loading buffer	plastic	68,30 €
T834.2	4 x 50 µg + gel loading buffer	plastic	263,40 €

100 bp-DNA-Ladder *equalized* ④

DNA ladder + gel loading buffer

Size range: 100-1000 bp
Number of fragments: 11
Number of lanes per 100 µg: approx. 500 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Ideal for analysis of fragments ≤500 bp.

The DNA-quantity per band was set in such a way that the intensity of the individual bands is comparable (equalized).
Fig.: 1,8 % agarose (NEEO, Art. No. 2267)
The DNA-ladder is supplied in lyophilised form.
Sample buffer for dissolving the lyophilised DNA-fragments is included.

T833.1	20 µg + gel loading buffer	plastic	67,20 €
T833.2	4 x 20 µg + gel loading buffer	plastic	261,25 €

100 bp-DNA-Ladder *extended* ⑤

DNA ladder + gel loading buffer

Size range: 100-5000 bp
Number of fragments: 17
Number of lanes per 100 µg: approx. 160 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Fragment sizes 100 to 1000 bp are equimolar.
Fig.: 1,8 % agarose (NEEO, Art. No. 2267)
The DNA-ladder is supplied in lyophilised form.
Sample buffer for dissolving the lyophilised DNA-fragments is included.

T835.1	50 µg + gel loading buffer	plastic	68,70 €
T835.2	4 x 50 µg + gel loading buffer	plastic	263,40 €

200 bp-DNA-Ladder ⑥

ready-to-use

DNA marker ready-to-use

Size range: 200-2000 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

Storage temp.: -20 °C • Transport temp.: room temp.

Regular DNA ladder for the analysis of DNA fragments. Delivered in *ready-to-use* format for direct application to gels. The 1000 bp fragment has been enhanced for easy analysis of the gel. All fragments are quantified, enabling quantitation of sample DNA in the gel. Bromophenol blue and xylene cyanol are included as tracking dyes. We recommend use of this marker on the following special agaroses: HR-PLUS (Art. No. HP30), LM/PCR (Art. No. HP31), or an agarose with additional Synergel™ (Art. No. 0184).
The 200 bp DNA-Ladder is highly compatible with the 20 bp DNA-Ladder (Art. No. 2805). The two markers can easily be combined, resulting in a highly versatile ladder from 20 bp up to 2000 bp .

8272.1	500 µl (50 µg)	80,55 €

250 bp-DNA-Ladder ⑦

DNA ladder + gel loading buffer

Size range: 250-8000 bp
Number of fragments: 16
Number of lanes per 100 µg: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Universal marker for size analysis of plasmids and DNA-insertions. Two fragments of 1500 and 2500 bp have been reinforced for easy orientation in the gel. The DNA amount per band has been optimised in such a way that a small running distance and low amounts of marker are sufficient for optimum separation.
Fig.: 1,8 % agarose (NEEO, Art. No. 2267)
The ladder is supplied in lyophilised form. Sample buffer for dissolving the lyophilised DNA-fragments is included.

T918.1	50 µg + gel loading buffer	plastic	74,10 €

500 bp-DNA-Ladder ⑧

DNA marker ready-to-use

Size range: 500-5000 bp
Number of fragments: 10
Number of lanes per ml: approx. 200 (Minigel)

Storage temp.: -20 °C • Transport temp.: room temp.

Regular DNA ladder for the analysis of DNA fragments. Delivered in *ready-to-use* format for direct application to gels. The 2500 bp fragment has been enhanced for easy analysis of the gel. All fragments are quantified, enabling quantitation of sample DNA in the gel. Bromophenol blue and xylene cyanol are included as tracking dyes. We recommend use of this marker on the following special agaroses: GTQ (Art. No. 6352), Broad Range (Art. No. T846), or an agarose with additional Synergel™ (Art. No. 0184).
The 500 bp DNA-Ladder is highly compatible with the 50 bp DNA-Ladder (Art. No. 2810). The two markers can easily be combined, resulting in a highly versatile ladder from 50 bp up to 5 kb.

8273.1	500 µl (50 µg)	64,40 €

1 kbp DNA-Ladder ⑨

DNA ladder + gel loading buffer

Size range: 500-10000 bp
Number of fragments: 11
Number of lanes per 100 µg: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Universal marker for electrophoretic separation of fragments between 500 bp and 10 kb, optimally suited for size determination of inserts, plasmids, and restricted DNA. The mass of the larger fragments was reduced, allowing to obtain clear and distinct bands with short running distances even for the large marker fragments.
The terminal sticky *Eco*R I-restriction sites allow simple labelling of the marker fragments via end-labelling techniques.
The 1 kbp DNA-ladder is highly compatible with the 100 bp DNA-ladder (equalised: T833.1).
Fig.: 1.2 % agarose (NEEO, Art. No. 2267). Additional band at 125 bp.
The DNA-ladder is supplied in lyophilised form.
Sample buffer for dissolving the lyophilised DNA-fragments is included.

Y014.1	50 µg + gel loading buffer	plastic	32,15 €
Y014.2	4 x 50 µg + gel loading buffer	plastic	111,30 €

Instructions for use
can be found on the Internet next to the product description.

DNA-Ladder combi ⑩

DNA marker + gel loading buffer

Size range: 100-10000 bp
Number of fragments 20
Number of lanes per 40 µg + 100 µg: approx. 200 (mini gels)

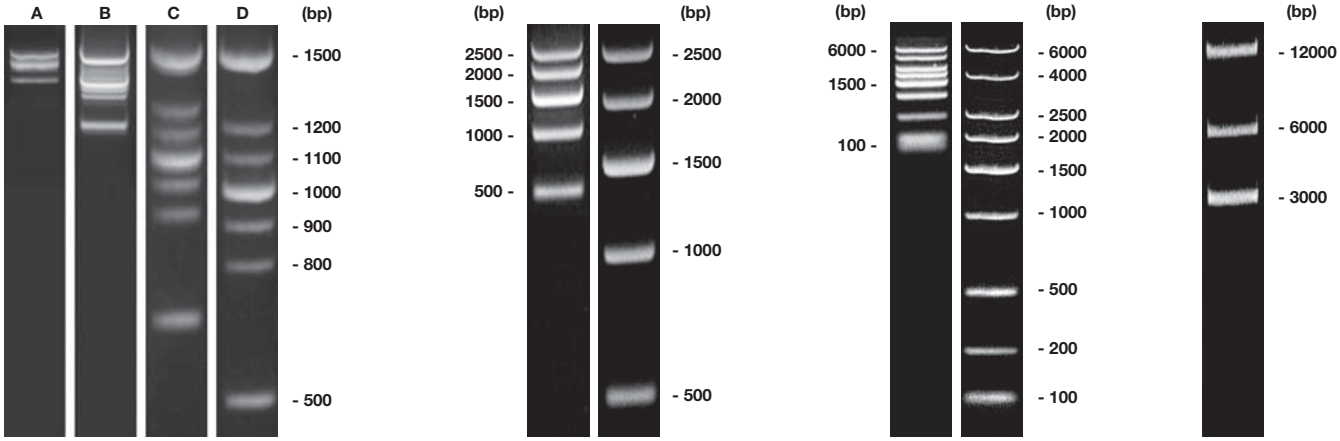
Storage temp.: -20 °C • Transport temp.: room temp.

Versatile DNA-marker combination for gels and DNA-fragments of different size. DNA-ladder combi combines the advantages of the 100 bp ladder, equalized (Art. No. T833), with the versatile 1 kbp DNA-ladder (Art. No. Y014). Subsequently we now have a marker set that completely covers both the medium size range up to 10 kb (see figure of Y014) as well as enabling clear size analysis in the small fragment range. The two markers come in separate tubes to ensure high flexibility in the laboratory. They can, therefore, be used separately or combined. The bands below 500 bp were enhanced aligning their intensity in the gel to the large fragments.
The 500 bp band was specially enhanced for easy orientation in the gel.
The **figure** shows a gel mixture of 0,9 % Agarose + 0,5 % Synergel® with (left to right): 0,4 µg 100 bp Ladder, equalized + 0,3 µg 1 kbp Ladder; 0,5 µg 1 kbp Ladder, 0,4 µg 100 bp Ladder, equalized. The DNA-ladder is supplied in lyophilised form. Sample buffer for dissolving the lyophilised DNA-fragments is included.

CL22.1	20 µg + 50 µg + gel loading buffer	plastic	98,80 €

DNA Markers for Short Runs

Marker	PCR-Marker DNAscore	DNA-Marker short run 1	DNA-Marker short run extended	DNA-Marker ccc-Plasmid
Art. No.	T917 (fig. 1)	0146 (fig. 2)	CL05 (fig. 3)	0149 (fig. 4)
Size range (bp)	500 - 1500	500 - 2500	100 - 6000	3000 - 12000
Number of fragments	7	5	9	3
Reinforced bands at (bp)	500, 1000, 1500	1500	1500	-
Quantitation	possible	possible	possible	-
Number of lanes in minigel	200 / 100 µg	400 / 100 µg	300 / 100 µg	1000 / 100 µg
Delivery	lyophilised	lyophilised	lyophilised	lyophilised



① ② ③ ④

PCR-Marker DNA*score* ①

DNA marker + gel loading buffer

Size range: 500-1500 bp
Number of fragments: 7
Reinforced bands: 500 bp, 1000 bp, 1500 bp
Band for DNA quantitation: 1000 bp
Number of lanes per 100 µg: approx. 200 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

PCR-Marker DNAscore resolves extremely quickly and is therefore excellent for analysing PCR-fragments and for routine-analysis.
The 500 bp, 1000 bp and 1500 bp bands have been reinforced in their intensity for speedy and simple orientation.
The special 1000 bp band allows the marker to be used for quantifying in gel. Depending on the resolved segment, the marker changes its appearance (see **figure**):
A) 1,0 cm: The marker shows three bands (500 bp, 1000 bp, 1500 bp).
B) 1,5 cm: Four satellite bands flank the 1000-bp-band.
C) 3-4 cm: All bands are resolved. Efficient size analysis of fragments with a difference of 50 bp is possible.
D) 6-7 cm: The marker can also be used for quantfying after approx. 6 cm run: the 1000-bp-band corresponds to140 ng DNA (when loading 0,5 µg DNA-marker).

T917.1	50 µg + gel loading buffer	plastic	74,75 €

DNA-Marker short-run 1 ②

DNA marker + gel loading buffer

Size range: 500-2500 bp
Number of fragments: 5
Number of lanes per 100 µg: approx. 400 (mini gels)

The perfect DNA-marker for very short gel running distances and high-through-put approaches.

Storage temp.: -20 °C • Transport temp.: room temp.

Best results are already obtained at 18 mm running distance in a 1,5 % agarose gel (see figure). The fragment mass is optimised for very short runs. The 1500 bp fragment has been enhanced for easy analysis of the gel.
Fig.: 1,5 % agarose (NEEO, Art. No. 2267). Left - running distance 18 mm, Right - running distance 40 mm.

0146.1	50 µg + gel loading buffer	plastic	65,05 €

DNA-Marker short-run *extended* ③

DNA marker + gel loading buffer

Size range: 100-6000 bp
Number of fragments: 9
Number of lanes per 100 µg: approx. 300 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

New DNA marker, optimised for all standard applications in the lab. Due to the lesser number of fragment bands, the short-run, extended DNA-Marker separates very efficiently even on very short running distances, making it a versatile tool also for high-throughput and short-term electrophoresis. Best results are already obtained at 15 mm running distance / 7 minutes runtime in a 1,5 % agarose gel with 0,3 µg DNA loading per lane (see **figure**). The fragment mass is optimised for very short runs and the enhanced 1500 bp fragment provides easy orientation for analysis.
Fig.: Left - 1,5 % agarose (NEEO, Art. No. 2267), running distance 15 mm. Right - 1,2 % agarose, running distance 35 mm.

CL05.1	50 µg + gel loading buffer	plastic	77,30 €

DNA-Marker ccc-plasmid ④

DNA marker + gel loading buffer

Size range: 3000-12000 bp
Number of fragments: 3
Number of lanes per 100 µg: approx. 1000 (mini gels)

A “covalently closed circle“ DNA-marker for rapid determination of plasmid size and estimation of plasmid concentration following DNA-preparation.

Storage temp.: -20 °C • Transport temp.: room temp.

The excellent separation efficiency of the marker even on short running distances allows for the application in high-throughput approaches. Best results are already obtained at 20 mm running distance in a 1,2 % agarose gel (see figure).
Fig.: 1,2 % agarose (NEEO, Art. No. 2267), running distance 20 mm.

0149.1	10 µg + gel loading buffer	plastic	56,45 €

The DNA-ladders are supplied in lyophilised form. A short-run-optimised sample buffer for dissolving the lyophilised DNA-fragments is included (Art. No. 0099.1).

Staining of Protein Gels

ROTH provides a large selection of high-quality staining kits and reagents for proteins, differing in their sensitivity and range of application.
The table below will help you to select the staining method best suitable for your particular application.

Summary Staining of Protein Gels

Staining	Sensitivity	Description
Roti®-Black P	1 ng/mm²	**Silver** staining kit. Highly sensitive. Simple, fast and reproducible.
Roti®-Blue	10 ng/mm²	Coomassie-solution for colloidal staining of proteins. **Staining not required**. Non-fixing staining for protein gel elution possible. Proteomics-compatible.
Roti®-Blue quick	10 ng/mm²	Solution for **rapid**, highly specific **staining** of proteins. **Destaining not required.** Non-fixing staining, compatible with blotting and Proteomics.
Roti®-White	15 ng/mm²	**Zinc** staining. Fast and reversible. Proteins can be transferred onto a blotting membrane after staining. Protein gel elution possible.
Rotiphorese®-Blue R	50 ng/mm²	**Coomassie** staining solution concentrate
Coomassie Blue G250 (C.I. 42655)	60 ng/mm²	Dye for performing Coomassie staining. OD_{max} = 595
Coomassie Blue R250 (C.I. 42660)	50 ng/mm²	Dye for performing Coomassie staining. OD_{max} = 550

Suitability of protein stainings

Staining	Sensitivity	Rapid Gel Analysis	Gel Drying	Elution/ Transfer	2D-Gels	MS-Analysis
Roti®-Black P	1 ng/mm²	-	+++	-	+++	-
Roti®-Blue	10 ng/mm²	-	+++	+++	-	+++
Roti®-Blue quick	10 ng/mm²	+++	+++	++	-	++
Roti®-White	15 ng/mm²	+	-	+++	-	+
Roti®-Blue R	50 ng/mm²	+++	+	-	-	-

+++: recommended +: suitable -: not recommended

▶ Gel staining trays and other accessories see page 1162

Instructions for use
can be found on the Internet next to the product description.

ready-to-use

Roti®-Blue quick

ready-to-use 1x conc. solution
Solution for rapid, sensitive staining of protein gels.
Storage temp.: +4 °C

- Particularly fast, specific staining
- First bands are visible within 3 mins.
- No background - no destaining necessary
- Very simple application without heating, methanol, or acetic acid
- Stabilised for a longer shelf life

Roti®-Blue quick provides a new, very fast staining method for proteins in polyacrylamide gels. Due to the modern formulation, the dye binds highly specifically to proteins, but not to the gel matrix, hence eliminating the need to destain the gel. First bands are clearly visible within 3 mins.!

Protein amount / band	Approximate staining duration
≥1 µg	3 mins.
≥100 ng	15 mins.
≥10 ng	60 mins.

The sensitivity of staining equals that of Roti®-Blue (Art. No. A152), so bands of 10 ng protein can be detected.
Roti®-Blue quick is, therefore, approx. 5times more sensitive than standard Coomassie staining solutions. Roti®-Blue quick staining is also fully compatible with usual down-stream applications like, membrane transfer & Western blotting, MS analysis (incl. MALDI) and protein gel elution.

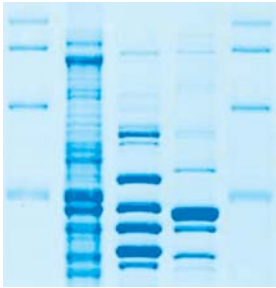


Figure:
SDS-PAGE with 3 µl Roti®-Mark Standard and samples.
Staining duration: 20 mins.

1 l solution is sufficient for approx. 40 mini gels.

4829.1	250 ml	glass	60,10 €
4829.2	1 l	glass	205,90 €
Original pack 6 x 1 l			195,61/1 l

ready-to-use

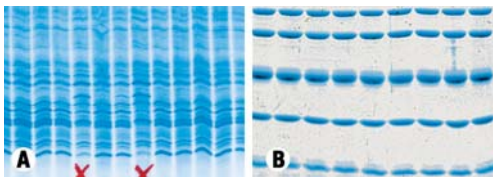
Roti®-Blue

5x concentrated

Colloidal Coomassie staining solution for protein gels.
Storage temp.: +20 °C

- Most simple application
- No destaining necessary
- 5 x more sensitive than coomassie R250

Roti®-Blue is a colloidal coomassie brilliant blue G250 staining agent for proteins in polyacrylamid gels. Its colloidal features enable the staining agent to be bound to the proteins with high specificity and only minimally to the gel matrix. There is no longer any need for the extensive washing steps for background decoloring. Roti®-Blue is approximately 5 x more sensitive than standard coomassie staining solutions. Staining time takes 2 to 12 hours depending on the desired band intensity.
Due to the fact that proteins may be stained without fixing the gel, membrane transfer and gel elution are still possible following staining.
Particularly well suited for staining prior to MS-analyses (e.g. MALDI) and prior to gel elution.



Figures:
A: Horizontal IEF for determination of wheat-varieties.
With kind permission of R. Knoblauch, LTZ Referat 23, Karlsruhe
B: SDS-PAGE Roti®-Mark Standard.

1 l concentrate is sufficient for 50 mini gels.

A152.2	250 ml	plastic	28,95 €
A152.1	1 l	plastic	84,40 €
Original pack 6 x 1 l			80,18/1 l

Brilliant blue G 250 (C.I. 42655)

For preparing staining solution for protein analysis in gel electrophoresis.
Coomassie blue G 250
$C_{47}H_{48}N_3O_7S_2Na$
M 854,03 g/mol
Do not use for staining of membranes following protein transfer.

9598.1	10 g	glass	26,35 €
9598.2	100 g	plastic	138,70 €

Safety data sheets
can be found on the Internet next to the product description.

ready-to-use

Rotiphorese® Blue R

Brillant Blue R concentrate

For Coomassie staining of protein gels.

Danger H225-H370-H315-H319-H311+H331+H301

Concentrate for easy preparation of Coomassie Blue R staining solutions. Rotiphorese®-blue is ideal for staining proteins in SDS-PAGE gels. It saves any tedious weighing of staining powder and having to prepare the mixture.

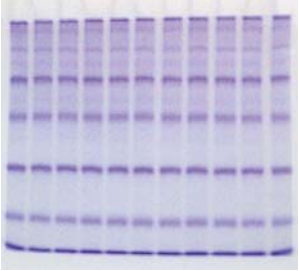


Figure:
Gel stained by Rotiphorese®-Blue R, 12 % PAA in Tris, Roti®-Mark STANDARD (Art. No. T851).

Concentrate contains Coomassie Blue R, methanol and pure acetic acid. Rotiphorese® concentrate Blue R can be diluted with 400-600 ml deionised water to obtain the following compositions:

Dilution with water	**397.5 ml**	**507.5 ml**	**602.5 ml**
yields staining solution	approx. 1 l	approx. 1.1 l	approx. 1.2 l
methanol	50 %	45 %	41.5 %
pure acetic acid	10 %	9 %	8.3 %
water	39.75 %	45.78 %	50 %
Blue R	**0.25 %**	**0.22 %**	**0.2 %**

Dilution can be carried out in the supplied bottle.
The solution should be filtered before use.

600 ml concentrate are sufficient for approx. 12 mini gels.

3074.1	600 ml	glass	29,60 €

Brilliant Blue R 250 (C.I. 42660)

For preparing staining solution for protein analysis in gel electrophoresis.
Coomassie Brillant Blue R 250
$C_{45}H_{44}N_3NaO_7S_2$
M 825,99 g/mol
Only conditionally use for staining of membranes after protein transfer.

3862.1	10 g	glass	21,75 €
3862.2	100 g	glass	85,90 €

▶ White light-light boxes see page 734

Roti®-Black P

silver staining kit for proteins

Danger H272-H301+H311+H331-H314-H317-H341-H350-H370-H410

- Sensitive silver staining
- Transparent gel
- Reliable results

Roti®-Black is a kit for speedy, reproducible silver staining of proteins in free and foil-supported gels.
High sensitivity in combination with very low background enables detection of proteins from 1 ng/mm² on. 1 kit is adequate for staining 10 gels. Staining can be performed in unsupported gels without methanol. Included is an easy-to-follow instruction manual which will guarantee reliable results.

This Kit contains sodium thiosulphate (Art. No. L534), silver nitrate (Art. No. L535), empty test tubes (Art. No. L536), formaldehyde (Art. No. L537), and sodium carbonate (Art. No. L538).
Contents of this Kit may not be bought separately. Shipped without racket.

L533.1	for 10 gels of 10 ml vol. each	68,70 €
L533.2	for 10 gels of 40 ml vol. each	83,75 €

Roti®-Bleach

decolorisation kit for silver staining

Storage temp.: +20 °C

Easy decolorising of overstained silver gels in foil-supported or free PAA gels. The new staining consistency is firmly preserved.
Suitable for both, DNA- and protein gels.

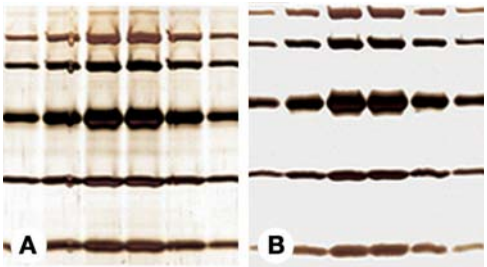


Figure:
A) Overstained silver gel
B) Same gel after subsequent optimisation with Roti®-Bleach

This Kit contains sodium thiosulphate (Art. No. N767) and potassium hexacyanoferrate (Art. No. N768).
Contents of this Kit may not be bought separately. Shipped without racket.

N766.1	for 10 gels with 10 ml or 5 gels with 40 ml vol. each	56,90 €

Silver staining of proteins and DNA-gels

Roti®-Black silver staining kits have been optimized to provide you with the most sensitive staining possible. Adding **thiosulfate** during the sensibilization and generation process reduces the background and increases contrast (acc. to Blum *et al.*, (1987) *Electrophoresis* 8:93-9). **Formaldehyde** should preferably be fresh when applied and it reduces the silver ions (Ag^+) to so-called silver seed crystals.

We recommend to:

- Wash the gels carefully after each step otherwise there may be side reactions in the form of stains, spots, increased background or secondary bands.
- Fix the gels carefully. Inadequate fixation impairs band formation and increases the background. Fresh and high-quality fixatives should be used and adapted to the volume and duration of gel strength.

Silver nitrate

≥99,9 %, for staining of proteins, Proteicolor®

$AgNO_3$

M 169,88 g/mol

Danger H272-H314-H400-H410

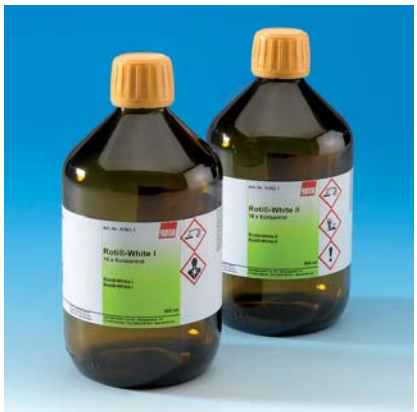
Proteicolor® is a special quality silver nitrate for reproducible staining of proteins and 1,2 Diol-groups, of glycoproteins and polysaccharides in polyacrylamide and agarose gels. Staining with Proteicolor® can also be used for highly sensitive identification of RNA and DNA.

6207.1	50 g	plastic	124,20 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Coomassie Gel Staining

Basics and mechanisms of Coomassie dyes



Roti®-White

zinc staining kit for protein gels

Storage temp.: +20 °C

Danger H302-H314-H361-H400-H410

Roti®-White is a kit for reverse staining of proteins in gels. Proteins which can be stained with Coomassie only with difficulty are frequently stainable with Roti®-White.
Background turns white and the areas in the gel, where proteins can be located, remain transparent. Membrane transfer as well as protein elution can be performed subsequently without reservation. Since diffusion of proteins is restricted in the gel after staining with Roti®-White, analyses may be interrupted prior to the transfer elution. Detection limit is 15 ng/mm².

Please note:
Roti®-White is not applicable to all ready-made gels.
We recommend using Rotiphorese® ready-to-use gel solutions.

This Kit contains Roti®-White 1 (Art. No. K061), and Roti®-White 2 (Art. No. K062). Contents of this Kit may not be bought separately. Sufficient for 50 gels with up to 24 ml.

K063.1	1 kit	83,75 €

Gel Staining Trays

Compatible with all standard staining methods

- tightly-sealing, recessed lids
- can be stacked safely and without slipping on the shaker

The staining trays, available in two sizes, are a practical and cheap alternative to plastic household bowls. The asymmetric array of the marking on the edges and drainage outlets on all corners guarantee easy handling and simple orientation of gel.

① The **PP** (polypropylene) trays are heat-resistant, **microwave-proof** and excellent for staining protein/peptide gels.

Type	Material	Inner-Dimensions L x W x H (mm)	Art. No.	Pack Qty.	€
MINI	PP	113 x 75 x 25	**CP57.1**	20	85,50
MIDI	PP	143 x 100 x 25	**CP58.1**	20	113,95

Staining of DNA Gels

Nucleic acid dyes for agarose and acrylamide gels, for laboratories and practical applications. We offer you high-quality stains with high sensitivity (silver stains), standard stains (ethidium bromide) in user-friendly dropper bottles, and non-toxic green-fluorescent dyes for blue or UV light. The following table provides an overview of the various stains and their respective sensitivity levels.

Summary Staining of Nucleic Acid in Gels

Staining	Sensitivity	Description
Roti®-Black N	<0.1 ng/mm²	**Silver** staining of DNA polyacrylic amide gels, visible under white light.
Roti®-Black NSeq	<0.1 ng/mm²	**Silver** staining of DNA sequencing gels, visible under white light.
Roti®-Load DNAStain	1.5 ng/mm²	Sensitive, non-toxic **fluorescent** staining of DNA (excitation 320 nm and 490 nm/blue light). Combined with gel loading buffer for fragments >500 bp (DNAstain 1), 100-2000 bp (DNAstain 2), or <500 bp (DNAstain 3).
Roti®-GelStain	1.5 ng/mm²	Sensitive **fluorescent** staining of DNA (excitation: 290-320 nm wave length). Non-toxic, non-carcinogenic.
Ethidium bromide solution	1.5 ng/mm²	Quick standard staining of nucleic acid, **fluorescent** (excitation: 254-360 nm wave length).
Roti®-Methylen blue staining concentrate	10 ng/mm²	Reversible, non-toxic **blue** staining of DNA, visible under white light.

Colorimetric Staining of Nucleic Acids in Gels

Roti®-Black N

silver staining kit for DNA-polyacrylamide gels

Danger H272-H301+H311+H331-H314-H317-H341-H350-H370-H410

- Ultra-sensitive
- Easy-to-follow guide
- Transparent gel

Roti®-Black N is a kit for ultra-sensitive and reproducible staining of DNA in polyacrylamide gels.
Detection limit for DNA is <0.1 ng/mm². Roti®-Black N is, therefore, an excellent alternative to using radioactivity or bioluminescent systems.
Roti®-Black N results in an intensive staining of nucleic acids, yet the gel matrix remains highly transparent. The enclosed instruction manual is easy to follow and guarantees reliable results.
This Kit contains silver nitrate (Art. No. N770), formaldehyde (Art. No. N771), sodium thiosulphate (Art. No. N772), sodium carbonate (Art. No. N774), and stop solution (Art. No. N773).
Contents of this Kit may not be bought separately. Shipped without racket.

N769.1	for 10 gels of max. 10 ml gel volume	85,90 €
N769.2	for 10 gels of max. 40 ml gel volume	150,40 €

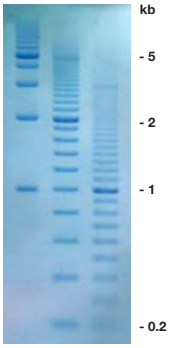
Roti®-Black NSeq

silver staining kit for sequencing gels

Danger H272-H301+H311+H331-H314-H317-H341-H350-H370-H410

Roti®-Black NSeq is a kit for ultra-sensitive and reproducible staining of DNA in denaturing and non-denaturing gels.
Detection limit <0.1 ng/mm².
Roti®-Black NSeq is the ideal choice for detecting minute DNA amounts in sequencing gels (Microsatellite-DNA or SSLP – simple sequence length polymorphisms). The enclosed instruction manual is easy to follow and guarantees reliable results. The gels are stained on the glass plate.
This Kit contains silver nitrate (Art. No. P082), formaldehyde (Art. No. P083), sodium thiosulphate (Art. No. P084), sodium carbonate (Art. No. P085), and stop solution (Art. No. P086).
Contents of this Kit may not be bought separately. Shipped without racket.

P081.1	for 10 gels of max. 48 ml gel volume	126,35 €



ready-to-use

Roti®-Methylene blue staining concentrate

For reversible staining of DNA in agarose gels, 200x concentrate.
Storage temp.: +4 °C

Danger H225-H302

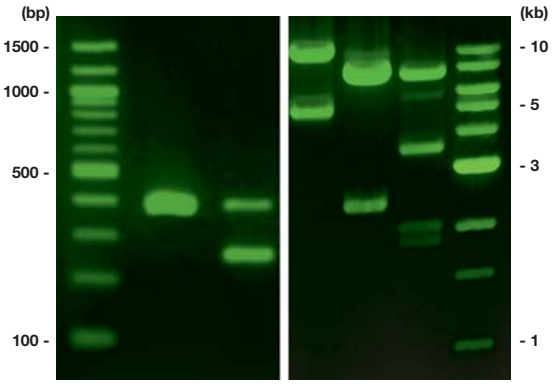
- Highly reversible alternative to ethidium bromide
- High sensivity (in minimum 10 ng/band)
- No transilluminator required
- Solution can be used repeatedly
- Sufficient for more than 50 mini gels

The staining solution was specially developed for sensitive staining of DNA in agarose gels. Sensitivity reaches up to 10 ng per DNA-band. Staining can be conducted in a simple staining bowl, a transilluminator is not required. The diluted staining solution can be used several times.
Roti®-Methylene blue staining concentrate binds to the negativly charged DNA backbone by salt bridges formed through quaternary ammonia complexes. The staining is very easy to remove by washing or replacement by salts.
Applications: DNA agarose gels, DNA polyacrylic amide gels, reversible staining of Southern- and Northern-blots.
12 ml Roti®-methylene blue staining concentrate is sufficient for more than 50 mini gels.

0648.1	3 ml	plastic	33,25 €
0648.2	12 ml	plastic	100,95 €

Non-Toxic Fluorescent Staining of Nucleic Acids in Gels

Non-toxic and non-carcinogenic dyes for fluorescent staining of nucleic acids in agarose gels. Highly sensitive and applied just like ethidium bromide. Resulting brightly-green signals may be detected by ethidium bromide broadband photo filters.
Tip: Roti®-Load DNAstain for excitation by blue light.



ready-to-use

Roti®-GelStain

Fluorescent staining, ready-to-use, for electrophoresis

For non-toxic fluorescent staining of nucleic acids in agarose gels.
Storage temp.: +4 °C
Roti®-GelStain is a new, versatile staining reagent for detection of all nucleic acids in agarose gels.

- Alternative for ethidium bromide, non-toxic, non-mutagen
- Nearly as sensitive as ethidium bromide, up to 1,5 ng/mm² nucleic acid
- For use with common broad-band ethidium bromide photo filters
- Compatible with all usual down-stream applications

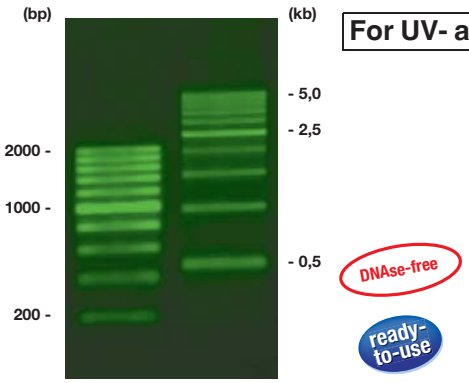
The dye may be used exactly in the same way as ethidium bromide - for staining in-gel, staining through running buffer, or post-run staining -, and may replace this toxic and potentially mutagen reagent completely.
Roti®-GelStain detects up to 1,5 ng/mm² nucleic acid, which is approx. 0,2 ng per band, and is, therefore, nearly as sensitive as ethidium bromide.
When bound to nucleic acids in agarose gels, Roti®-GelStain emits a brightly green fluorescence that may be documented by all usual broad-band ethidium bromide or SYBR® Green foto filters. Roti®-GelStain is compatible with all standard down-stream applications and has been successfully tested for use with gel extraction, ligation, transformation and transfection.

The **figure** depicts amplicons of a mouse genotyping (left), and restriction digested DNA (right), respectively, separated in 2,5 and 1 % agarose Roti®garose NEEO with Roti®-GelStain (5 µl / 100 ml agarose).
Pictures were taken using standard ethidium bromide photo filters.
With kind permission of Prof. R. Slany, Dept. of Genetics, Friedrich Alexander University, Erlangen.

Excitation maximum (bound to DNA): 290-320 nm
Emission maximum (bound to DNA): 515 nm
Suitable for staining of dsDNA, ssDNA and RNA.

1 ml is sufficient for staining of approx. 600 minigels (with 30 ml agarose each).

3865.1	1 ml	plastic	84,40 €
3865.2	5 x 1 ml	plastic	385,95 €



Roti®-Load DNAstain

6x conc. gel loading buffer, ready-to-use, DNAse-free

DNA-gel loading buffer with fluorescent DNA-dye EvaGreen®.
Storage temp.: -20 °C • Transport temp.: room temp.

- Alternative for ethidium bromide, non-toxic, non-mutagen
- Nearly as sensitive as ethidium bromide, up to 1,5 ng/mm² nucleic acid
- For use with common broad-band ethidium bromide photo filters
- Excitation possible via UV light (320 nm) and blue light (~470 nm)
- Compatible with all usual down-stream applications

New, versatile reagent for gel loading and simultaneous staining of double stranded nucleic acid in agarose- and polyacrylamide gels. Roti®-Load DNAstain detects up to 0,2 ng per band, and is, therefore, as sensitive as ethidium bromide. Due to its most simple application as gel loading buffer it reduces the time needed for gel analysis significantly. This innovative reagent contains the intercalating dye EvaGreen®, which has been developed specifically for DNA analysis. DNA integrity is not influenced by EvaGreen®; hence, gel eluted DNA may directly be applied to standard down-stream applications, like, e.g., ligation, PCR, transformation, transfection etc. without interfering effects. Due to the low membrane permeability of the dye, Roti®-Load DNAstain is non mutagenic, non toxic, and environment friendly. Roti®-Load DNAstain can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Rotiphorese® PROfessional runVIEW, Art. No. 4849.1). When excited, nucleic acid-bound Roti®-Load DNAstain emits a brightly coloured green fluorescence (525 nm) that may be documented by all usual broadband ethidium bromide- or SYBR® Green foto filters.
The **figure** depicts 50 ng DNA per band, or 75 ng (1000 bp and 2,5 kb), respectively. Each lane has been loaded and concurrently stained using 1 µl Roti®-Load DNAstain.

Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
1 ml is sufficient for running and staining of approx. 500 lanes.

Roti®-Load DNAstain 1

Contains: Tris, EDTA, bromophenol blue, xylencyanol, EvaGreen®.
Recommended for staining of dsDNA- and dsRNA-fragments of over 500 bp.

5783.1	1,0 ml	plastic	34,30 €
5783.2	5 x 1,0 ml	plastic	103,10 €

Roti®-Load DNAstain 2

Contains: Tris, EDTA, Orange G, xylencyanol, EvaGreen®.
Recommended for staining of dsDNA- and dsRNA-fragments of 100-2000 bp.

5784.1	1,0 ml	plastic	34,30 €
5784.2	5 x 1,0 ml	plastic	103,10 €

Roti®-Load DNAstain 3

Contains: Tris, EDTA, Orange G, EvaGreen®.
Recommended for staining of dsDNA- and dsRNA-fragments of under 500 bp.

6472.1	1 ml	plastic	34,30 €
6472.2	5 x 1 ml	plastic	103,10 €

Eva Green® Fluorescent Dye

NEW

for electrophoresis, 100x concentrated

For fluorescent staining of nucleic acids in agarose- and polyacrylamide gels.
Storage temp.: -20 °C • Transport temp.: room temp.

- Direct addition to DNA sample
- For excitation with UV light and blue light
- Non-toxic alternative for ethidium bromide

EvaGreen® is a staining reagent for detection of double stranded nucleic acid in agarose- and polyacrylamide gels. The dye is added directly to the DNA/Loading buffer mixture and then loaded onto the gel. EvaGreen® bounds to nucleic acids emitting a brightly coloured fluorescence.
The sensitivity reaches up to 0,2 ng per band.
EvaGreen® is an intercalating fluorescent dye, but due to its low membrane permeability it is non mutagenic, non-toxic, and environment friendly.
EvaGreen® has been developed specifically for gentle DNA analysis. DNA integrity is not influenced; hence, gel eluted DNA may directly be applied to standard down-stream applications, like, e.g., ligations, PCR, transformation, transfection etc. without interfering effects.
EvaGreen® can be excited by UV- and blue light, making it fully compatible with standard UV-transilluminators as well as with modern blue-light illumination (see also Roti®-PROfessional runVIEW, Art. No. 4849.1). The gels may be documented by all usual broadband ethidium bromide- or SYBR® Green foto filters.
Excitation maximum (bound to DNA): approx. 320 nm and 470-500 nm
Emission maximum (bound to DNA): 525 nm
500 µl is sufficient for running and staining of approx. 500 lanes.

8905.1	500 µl	plastic	80,55 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Roti®-Load-DNAstain / EvaGreen®
Data on mutagenicity and environmental safety

Ethidium bromide

In spite of newly developed fluorescent staining reagents ethidium bromide remains the standard staining technic for nucleic acid in electrophoresis. Ethidium bromide is a carcinogenic substance which shouldn't come in contact with skin.
In order to minimise this danger we offer ready-to-use ethidium bromide solution in dropper bottles for easy handling and maximum safety.

Excitation maxima (unbound): 210 nm, 285 nm, 470 nm
Excitation maxima (bound to DNA): 330 nm, 500 nm
Excitation possible via DNA at 254 nm
Emission maximum: 605 nm

Ethidium bromide solution 0,025 % in dropper bottle

ready-to-use

aqueous solution (250 µg/ml)

For staining of DNA or RNA in agarose gels during electrophoresis.

Application:
Two drops will suffice for staining a 50 ml agarose gel.
Add directly to melted agarose.
Please store in the dark!

HP47.1	15 ml	plastic	27,85 €
HP47.2	5 x 15 ml	plastic	99,45 €

Ethidium bromide solution 0,5 % in dropper bottle

ready-to-use

aqueous solution (5 mg/ml)

For counterstaining of nuclei in histology and cytology.
For staining of DNA/RNA after electrophoresis.

Warning H332

Application:
In order to prepare a staining solution add 5 drops of ethidium bromide solution to 500 ml water, buffer, or electrophoresis running buffer, respectively.
Nuclei / nucleic acids are stained red.
Please store in the dark!

HP46.1	15 ml	plastic	27,85 €
HP46.2	5 x 15 ml	plastic	99,45 €

Ethidium bromide solution 1 %

ready-to-use

1 % solution in water (10 mg/ml)

Homidium bromide, 3,8-Diamino-5-ethyl-6-phenylphenanthridinium bromide

Warning H332-H341

Stock solution for fluorescent detection of nucleic acids.
Detection limit: 1.5 ng/mm^2.
Please store in the dark!

2218.1	10 ml	glass	9,90 €
2218.4	15 ml	dropp. bottle	27,85 €
2218.2	30 ml	glass	21,00 €
2218.3	100 ml	glass	51,10 €

Ethidium bromide

≥98 %

For DNA-staining.

Homidium bromide, 3,8-Diamino-5-ethyl-6-phenylphenanthridinium bromide

$C_{21}H_{20}BrN_3$

M 394,33 g/mol

Storage temp.: +20 °C

Danger H330-H341-H302

Fluorescent dye with specific DNA binding capacity. Intercalates between base pair stacks of dsDNA, causing weaker staining of ssDNA or RNA.
For staining of DNA/RNA in gels and for counterstaining of nuclei in histological and cytological analyses. Store in the dark!
Excitation maximum: 518 nm
Emission maximum: 605 nm

7870.1	1 g	glass	21,40 €
7870.2	5 g	glass	83,75 €

Disposure of Ethidium Bromide

Sekuroka® Decon-Bags

Absorber bags for removing ethidium bromide from liquids.

Sekuroka® Decon-Bags are a simple method for removal of ethidium bromide from solutions. The bags contain a special type of activated carbon which absorbs ethidium bromide effectively and safely. One bag can absorb 2.5 mg ethidium bromide. Efficiency is >99 %. The application is extremely simple: Place the absorber bag in the ethidium bromide solution, incubate for 24 hours under stirring and dispose of the bag as hazardous waste in accordance with local regulations.
Bag size: 6 x 2.5 cm.
Also suitable for absorption of propidium iodide, PicoGreen® and SYBR® Green!

T856.2	10 Bags	27,45 €
T856.1	50 Bags	113,85 €
T856.3	250 Bags	493,45 €

▶ Gel Documentation System see page 1166

▶ Transilluminators, UV-hand-held lamps and UV-hand-held magnifiers see chapter Labware - Optical Instruments Lamps!

Ethidium bromide is a strong mutagenic and toxic substance. For your own safety, always wear gloves and respiratory protection to prevent contamination when working with this substance. After use, dispose of solutions correctly. They may not be discarded into the environment.

The following procedure is recommended (acc. to INSERM, Dossier prevention, Number 2, 2nd Ed., September 88):

1. Collect and dispose of as hazardous waste.
2. Break down EtBr with potassium permanganate and HCl (P. Quillardet, M. Hofnung, *Trends Genet.* 4,89 [1988]).
3. Break down EtBr with hypophosphoric acid and sodium nitrite (Lunn and Sansone; *Analyt. Biochem.* 162, 453-458 [1987]).
4. Absorption of EtBr with Amberlite® XAD-16 (Lunn and Sansone) or with activated carbon (Bensaude, O. Method, *Trends Genet.* 4, 89-90 [1988]) from the solution.

We recomment disposure by **Sekuroka® Decon-Bags** (Art. No. T856)

Horizontal Electrophoresis: Systems & Modules

A large range of different electrophoresis chambers for agarose or acrylamide gel electrophoresis is available.

- Corrosion-free, gold-plated contacts. Conducting cables are linked directly to the safety lid, current flow is automatically stopped by opening the lid.
- The safety lid can only be closed in one direction, a mix-up of orientation is excluded
- The platinum electrodes are protected by a special construction
- Our entire range of electrophoresis chambers is CE-certified
- For all chambers a wide range of accessories is available, such as combs, spacers and gel casting trays
- All gel casting trays are **UV-transparent**

Depending on the model, the gels can be cast directly in the chamber or on a special gel casting tray.
The different combs can be adjusted in height and are available in three or four colour-coded thicknesses.

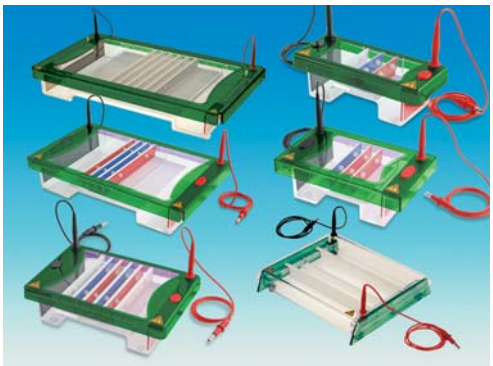
Overview of Horizontal Electrophoresis Units acc. to Gel Size

Gel Size	Suitable for	Unit	Art. No.
6 x 7.5 cm	Agarose	MINIeasy	N562.1
7 x 7 cm	Agarose	PROfessional I	2788.1
8 x 10 cm	Agarose	MINIeasy	N817.1
10 x 10 cm	Agarose	PROfessional II	2799.1
10 x 11.5 cm	Agarose	MIDI 1	N576.1
15 x 15 cm	Agarose	PROfessional III	2850.1
15 x 15 cm	Agarose	PROfessional runVIEW	4849.1
15 x 15 cm	Agarose	MIDI PLUS	HP70.1
15 x 7 to 15 x 20 cm	Agarose	VARIA 1	AE17.1
20 x 20 cm	Agarose	PROfessional IV	2941.1
20 x 20 cm	Agarose	MIDI 2	N596.1
20 x 20 cm	Agarose	MIDI 2 cooled	N618.1
24 x 20 cm	Acetate	PROfessional Acetate	3099.1
25 x 25 cm	Agarose, IEP, Membrane	MULTI (flat bed)	CP51.1
25 x 30 cm	Agarose	MAXI	N610.1
25 x 30 cm	Agarose	MAXI cooled	N619.1
26 x 32 cm	Agarose	PROfessional V	3000.1

TIP

Maximum voltage for horizontal gels:
10 V/cm gel length

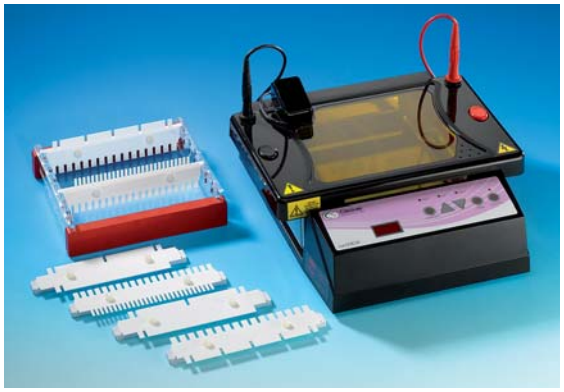
Rotiphorese®-PROfessional - Product Line for Lab Bench and Student´s Courses



- Made of robust acrylic glass
- High-grade quality
- Injection moulded without bonding
- Absolutely leak proof
- Extremely easy to operate
- Wide range of accessories
- Easily replaceable electrodes
- Excellent value for money
- UV-transparent gel trays

- **PROfessional run VIEW *real-time* Electrophoresis**

Real-time Electrophoresis under Blue Light



Rotiphorese® Unit PROfessional runVIEW

Gel size (w x l): 15 x 15 cm
Dimensions gel unit (w x l x h): 26.5 x 17.5 x 9 cm
Number of samples: max. 210 samples (using 6 comb slots)
Buffer volume: 500 ml

- **All-in-one system for real-time electrophoresis:** unit, power supply and illuminator combined
- Watch your bands migrate through the gel in blue light - without mutagen or retina damaging effects
- Recommended for use with Roti®-Load DNAStain (green), compatible with ethidium bromide (red) and SYBR® Green (green)
- First choice for rapid gel analysis, gel elution and all control gels
- The unit Rotiphorese® PROfessional III (Art. No. 2850.1) may be customised by the runView Base station (Art. No. 4850.1)

Innovative, new all-in-one system for electrophoresis - with integrated Power Supply and illuminator. Stained DNA is made visible during the run by excitation with blue light of 470 nm wave length and a special lid with integrated emission filter for green fluorescence. Another special lid with an intergrated ethidium bromide filter is available as accessory (Art. No 8549.1). DNA stained during the run by Roti®-Load DNAStain (green), ethidium bromide (red), or SYBR® Green (green), can be watched in real-time without having damaging effects caused by short wave lengths.

Unit under blue light, without lid

Unit under blue light, with green-filtering lid

Delivery incl. Rotiphorese® PROfessional runVIEW Base (base station with integrated blue light and power supply), horizontal gel unit Rotiphorese® PROfessional III, special lid for blue light with integrated spectral emission filter (green filter) and electrophoresis power leads (4 mm plugs), 1 UV-transparent gel casting tray (15 x 15 cm) with gel casting gates, and eight double sided combs: 2x 4-sample / 16-sample (1 mm); 4x 20- / 28-sample (1 mm, multichannel compatible); 1x 4- / 16-sample (3 mm); 1x 20- / 28-sample (3 mm, multichannel compatible).

Art. No.	Pack Qty.	€
4849.1	1 unit	1686,70

▶ For technical data see product description on the Internet!

Rotiphorese® PROfessional runVIEW Base

Base station for real-time electrophoresis.

The device is a combination of power supply and blue light illuminator. The special lid is suitable for detection of green fluorescent dyes. For optimal supplement we recommend electrophoresis unit Rotiphorese® PROfessional III (Art.-No. 2850.1).

The special lid is also separately available (Art. No. 8557.1), as well a lid for red fluorescent dyes (Art. No. 8549.1).

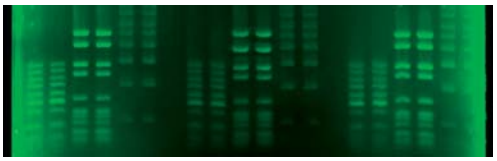
Delivery incl. power supply with blue light illuminator, power cord, special lid with integrated spectral emission filter for green fluorescence.

Type	Art. No.	Pack Qty.	€
Rotiphorese® PROfessional runVIEW Base	**4850.1**	1 unit	1525,45

Rotiphorese® PROfessional runVIEW lid

Replacement lids for Rotiphorese® Unit PROfessional runVIEW (4849.1) and Rotiphorese® PROfessional runVIEW Base (4850.1). Two special lids for blue light with integrated spectral emission filter (orange and yellow). In combination with the runVIEW unit they make stained DNA visible during the run.

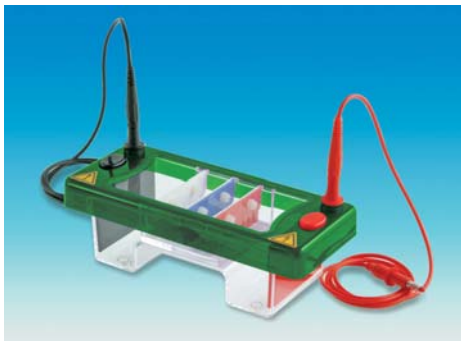
Type	Colour filter insert	Application	Art. No.	Pack Qty.	€
Lid with red filter	orange	red fluorescent dyes	**8549.1**	1 unit	188,15
Lid with green filter	yellow	green fluorescent dyes	**8557.1**	1 unit	147,30



Marker DNA with Roti®-Load DNAstain under blue light (green filter lid). Picture taken during the run. 100 bp Ladder, pBR328 MixI and 1 kbp Ladder (1.2 µg each) in 1 % agarose / 0.5x TBE.

Marker DNA with Roti®-Load DNAstain under blue light (red filter lid). Picture taken during the run. pBR328 MixI and 1 kbp Ladder (1.2 µg each) in 1 % agarose / 0.5x TBE.

PROfessional Units



Rotiphorese® Unit PROfessional I

Gel size (w x l): 7 x 7 cm
Unit dimensions (w x l x h): 21 x 9 x 9 cm
Number of samples: max. 32 samples (using 2 comb slots)
Buffer volume: 225 ml

- First choice for rapid single-bench analyses
- Seven different combs available in four thicknesses, including preparative combs with broad wells
- Gel trays with 7 and 10 cm length available
- Compatible with multi-channel pipettors (see table)

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), 1 UV-transparent gel casting tray (7 x 7 cm) with gel casting gates, and two combs (1 mm, 8 teeth).

Art. No.	Pack Qty.	€
2788.1	1 unit	504,20

Accessories:

PROfessional I Gel casting tray 7 x 7 cm	**2784.1**	1 tray	50,75
PROfessional I Gel casting tray 7 x 10 cm	**2785.1**	1 tray	64,30
PROfessional I Gel casting dams	**2765.1**	1 pair	53,70
PROfessional I Positive electrode	**2767.1**	1 electr.	85,50
PROfessional I Negative electrode	**2769.1**	1 electr.	85,50

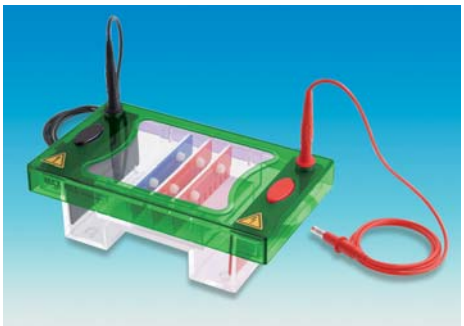
PROfessional I combs

Sample volume for a 5 mm thick gel							
	1 + 1**	2 + 2**	4 + 2**	8	10	12*	16
0.75 mm	152 µl	68 µl	36 µl	19 µl	14 µl	10 µl	7 µl
1.0 mm	203 µl	90 µl	48 µl	25 µl	18 µl	14 µl	10 µl
1.5 mm	304 µl	135 µl	72 µl	37 µl	27 µl	20 µl	15 µl
2.0 mm	405 µl	180 µl	96 µl	50 µl	36 µl	27 µl	20 µl

*Compatible with multi-channel pipettors

**Comb with especially broad wells + narrow marker well (for preparative gels)

Wells	1 + 1	2 + 2	4 + 2	8	10	12	16
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
0,75 mm	**2737.1**	**2738.1**	**2739.1**	**2740.1**	**2741.1**	**2742.1**	**2743.1**
1,0 mm	**2744.1**	**2745.1**	**2746.1**	**2747.1**	**2748.1**	**2749.1**	**2750.1**
1,5 mm	**2751.1**	**2752.1**	**2753.1**	**2754.1**	**2755.1**	**2756.1**	**2757.1**
2,0 mm	**2758.1**	**2759.1**	**2760.1**	**2761.1**	**2762.1**	**2763.1**	**2764.1**
Pack Qty.	1	1	1	1	1	1	1
€	35,50	35,50	35,50	35,50	35,50	35,50	35,50



Rotiphorese® Unit PROfessional II

Gel size (w x l): 10 x 10 cm
Unit dimensions (w x l x h): 22 x 12.5 x 9 cm
Number of samples: max. 80 samples (using 4 comb slots)
Buffer volume: 300 ml

- First choice for all rapid routine analyses
- Seven different combs available in four thicknesses, including preparative combs with broad wells
- Gel trays with 7 and 10 cm length available
- Compatible with multi-channel pipettors (see table)

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), 1 UV-transparent gel casting tray (10 x 10 cm) with gel casting gates, and two combs (1 mm, 16 teeth).

Art. No.	Pack Qty.	€
2799.1	1 unit	557,95

Accessories:

PROfessional II Gel casting tray 10 x 7 cm	**3147.1**	1 tray	69,35
PROfessional II Gel casting tray 10 x 10 cm	**3148.1**	1 tray	79,25
PROfessional II Gel casting dams	**3146.1**	1 pair	67,75
PROfessional II Positive electrode	**3141.1**	1 electr.	97,30
PROfessional II Negative electrode	**3142.1**	1 electr.	97,30

Colour	Comb thickness
black	0.75 mm
white	1.0 mm
red	1.5 mm
blue	2.0 mm

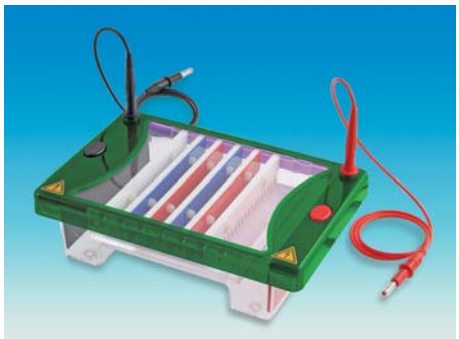
PROfessional II combs

Sample volume for a 5 mm thick gel							
	2 + 2**	4 + 2**	8	10*	12	16	20*
0.75 mm	118 µl	57 µl	30 µl	20 µl	17 µl	12 µl	10 µl
1.0 mm	158 µl	77 µl	41 µl	27 µl	23 µl	16 µl	14 µl
1.5 mm	236 µl	115 µl	61 µl	41 µl	34 µl	24 µl	20 µl
2.0 mm	315 µl	153 µl	81 µl	54 µl	45 µl	32 µl	27 µl

*Compatible with multi-channel pipettors

**Comb with especially broad wells + narrow marker well (for preparative gels)

Wells	2 + 2	4 + 2	8	10	12	16	20
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
0,75 mm	**3150.1**	**3151.1**	**3157.1**	**3158.1**	**3161.1**	**3177.1**	**3178.1**
1,0 mm	**3181.1**	**3188.1**	**3202.1**	**3203.1**	**3204.1**	**3206.1**	**3208.1**
1,5 mm	**3212.1**	**3213.1**	**3219.1**	**3220.1**	**3222.1**	**3227.1**	**3229.1**
2,0 mm	**3230.1**	**3233.1**	**3234.1**	**3238.1**	**3239.1**	**3244.1**	**3245.1**
Pack Qty.	1	1	1	1	1	1	1
€	41,40	41,40	41,40	41,40	41,40	41,40	41,40



Rotiphorese® Unit PROfessional III

Gel size (w x l): 15 x 15 cm
Unit dimensions (w x l x h): 26.5 x 17.5 x 9 cm
Number of samples: max. 210 samples (using 6 comb slots)
Buffer volume: 500 ml

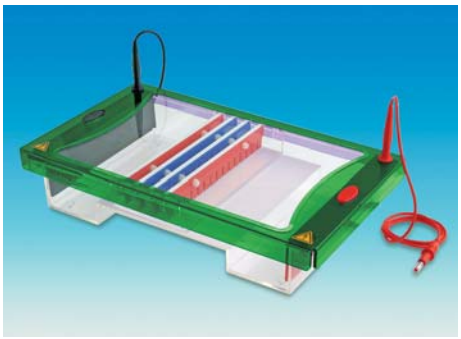
- First choice for all standard analyses
- For high flexibility in application: Gel trays with 7, 10 and 15 cm length available
- Seven different combs available in four thicknesses, including preparative combs with broad wells
- Compatible with multi-channel pipettors (see table)
- For real-time electrophoresis upgradeable with Rotiphorese® PROfessional runVIEW Base (Art. No. 4850.1)

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), 1 UV-transparent gel casting tray (15 x 15 cm) with gel casting gates, and two combs (1 mm, 20 teeth).

Art. No.	Pack Qty.	€
2850.1	1 unit	579,45

Accessories:

PROfessional III Gel casting tray 15 x 7 cm	**3250.1**	1 tray	86,00
PROfessional III Gel casting tray 15 x 10 cm	**3251.1**	1 tray	86,00
PROfessional III Gel casting tray 15 x 15 cm	**3252.1**	1 tray	86,00
PROfessional III Gel casting dams	**3262.1**	1 pair	70,85
PROfessional III Positive electrode	**3247.1**	1 electr.	106,45
PROfessional III Negative electrode	**3248.1**	1 electr.	106,45



Rotiphorese® Unit PROfessional IV

Gel size (w x l): 20 x 20 cm
Unit dimensions (w x l x h): 39.5 x 23 x 9 cm
Number of samples: max. 500 samples (using 10 comb slots)
Buffer volume: 1200 ml

- For large gels or higher sample numbers
- For high flexibility in application: Gel trays with 10, 20 and 25 cm length available
- Eight different combs available in four thicknesses, including preparative combs with broad wells
- With practical and easy-to-use gel cooling, independently of water supply or temperature baths
- Compatible with multi-channel pipettors (see table)

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), 1 UV-transparent gel casting tray (20 x 20 cm) with gel casting gates, and two combs (1 mm, 20 teeth).

Art. No.	Pack Qty.	€
2941.1	1 unit	800,90

Accessories:

PROfessional IV Gel casting tray 20 x 10 cm	**3392.1**	1 tray	118,25
PROfessional IV Gel casting tray 20 x 20 cm	**3393.1**	1 tray	118,25
PROfessional IV Gel casting tray 20 x 25 cm	**3394.1**	1 tray	162,35
PROfessional IV Gel casting dams	**3397.1**	1 pair	79,05
PROfessional IV cooling set	**3386.1**	1 set	151,60
PROfessional IV Positive electrode	**3390.1**	1 electr.	124,70
PROfessional IV Negative electrode	**3391.1**	1 electr.	124,70

PROfessional III combs

Sample volume for a 5 mm thick gel							
	4 + 2**	10	12	16*	20	28*	35
0.75 mm	91 µl	34 µl	30 µl	20 µl	16 µl	8 µl	7 µl
1.0 mm	122 µl	45 µl	41 µl	27 µl	21 µl	11 µl	10 µl
1.5 mm	182 µl	68 µl	61 µl	41 µl	32 µl	17 µl	15 µl
2.0 mm	243 µl	90 µl	81 µl	54 µl	43 µl	32 µl	20 µl

*Compatible with multi-channel pipettors

**Comb with especially broad wells + narrow marker well (for preparative gels)

Wells	4 + 2	10	12	16	20	28	35
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
0,75 mm	**3263.1**	**3266.1**	**3269.1**	**3270.1**	**3276.1**	**3281.1**	**3283.1**
1,0 mm	**3302.1**	**3308.1**	**3309.1**	**3312.1**	**3317.1**	**3332.1**	**3334.1**
1,5 mm	**3339.1**	**3347.1**	**3350.1**	**3365.1**	**3368.1**	**3370.1**	**3372.1**
2,0 mm	**3373.1**	**3374.1**	**3378.1**	**3379.1**	**3381.1**	**3382.1**	**3384.1**
Pack Qty.	1	1	1	1	1	1	1
€	43,00	43,00	43,00	43,00	43,00	43,00	43,00

PROfessional IV combs

Sample volume for a 5 mm thick gel								
	4 + 2**	16	20*	25	30	36*	40*	50
0.75 mm	115 µl	30 µl	20 µl	16 µl	13 µl	11 µl	8 µl	8 µl
1.0 mm	153 µl	41 µl	27 µl	21 µl	17 µl	14 µl	11 µl	10 µl
1.5 mm	230 µl	61 µl	41 µl	32 µl	26 µl	22 µl	17 µl	16 µl
2.0 mm	306 µl	81 µl	54 µl	42 µl	34 µl	29 µl	23 µl	21 µl

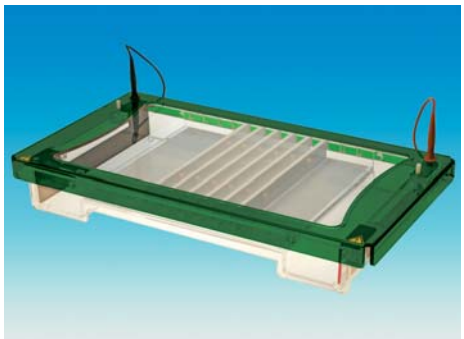
*Compatible with multi-channel pipettors

**Comb with especially broad wells + narrow marker well (for preparative gels)

Wells	4 + 2	16	20	25	30	36	40	50
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
0,75 mm	**3401.1**	**3409.1**	**3410.1**	**3413.1**	**3414.1**	**3416.1**	**3417.1**	**3419.1**
1,0 mm	**3422.1**	**3427.1**	**3428.1**	**3430.1**	**3431.1**	**3432.1**	**3435.1**	**3437.1**
1,5 mm	**3438.1**	**3440.1**	**3441.1**	**3442.1**	**3443.1**	**3444.1**	**3445.1**	**3446.1**
2,0 mm	**3447.1**	**3449.1**	**3450.1**	**3452.1**	**3453.1**	**3454.1**	**3456.1**	**3458.1**
Pack Qty.	1	1	1	1	1	1	1	1
€	57,85	57,85	57,85	57,85	57,85	57,85	57,85	57,85

TIP

Maximum sample size depends on the height of the gel.
Rule of thumb (all values in mm):
Max. sample per well = Broadth of teeth x comb thickness x (gel height - 3)



Rotiphorese® Unit PROfessional V

Gel size (w x l): 26 x 32 cm
Unit dimensions (w x l x h): 50 x 28 x 9 cm
Number of samples: max. 672 samples (using 12 comb slots)
Buffer volume: 1400 ml

- For very long gels or high sample numbers
- For high flexibility in application:
  Gel trays with 16, 24 and 32 cm length available
- With practical and easy-to-use gel cooling, independently of water supply or temperature baths
- Compatible with multi-channel pipettors (see table)

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), 1 UV-transparent gel casting tray (26 x 32 cm), and six combs (1 mm, 28 teeth). For sealing of the tray during gel pouring we recommend to use the temperature stable Sekuroka®-adhesive tape, Art. No. L035.1

Art. No.	Pack Qty.	€
3000.1	1 unit	1177,15

Accessories:

PROfessional V Gel casting tray 26 x 16 cm	**3019.1**	1 tray	202,05
PROfessional V Gel casting tray 26 x 24 cm	**3020.1**	1 tray	218,25
PROfessional V Gel casting tray 26 x 32 cm	**3021.1**	1 tray	238,65
PROfessional V cooling set	**3009.1**	1 set	191,35
PROfessional V Positive electrode	**3001.1**	1 electr.	151,60
PROfessional V Negative electrode	**3002.1**	1 electr.	151,60

Rotiphorese® Unit PROfessional Acetate

Max size of analysis (w x l): 24 x 20 cm
Unit dimensions (w x l): 30 x 30 cm

- Compact high resolution system for electrophoresis of acetate strips and membranes
- Suitable for both standard and wet cellulose acetate electrophoresis
- For high flexibility in application

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), adjustable support for different lengths of membrane strips.

Art. No.	Pack Qty.	€
3099.1	1 unit	654,70

PROfessional gel casting dams (example)

PROfessional V combs

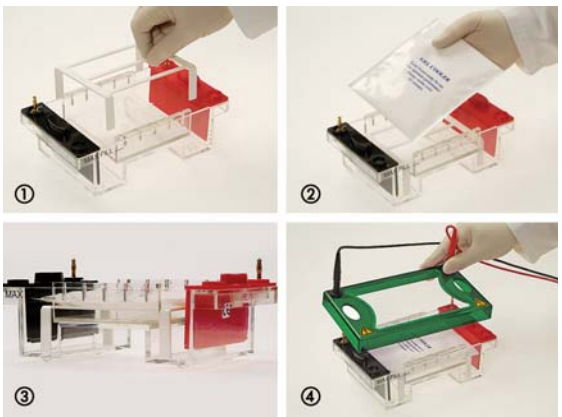
Sample volume for a 5 mm thick gel		
	28*	56*
0.75 mm	25 µl	10 µl
1.0 mm	34 µl	14 µl
1.5 mm	51 µl	20 µl
2.0 mm	68 µl	27 µl

*Compatible with multi-channel pipettors

Wells	28	56
Thickness	Art. No.	Art. No.
0,75 mm	**3023.1**	**3024.1**
1,0 mm	**3027.1**	**3031.1**
1,5 mm	**3038.1**	**3055.1**
2,0 mm	**3056.1**	**3058.1**
Pack Qty.	1	1
€	79,05	79,05

Convenient Gel Cooling System

Larger Rotiphorese®-PROfessional units may be cooled by a highly efficient and very easy to applicate cooling system via precooled pads.



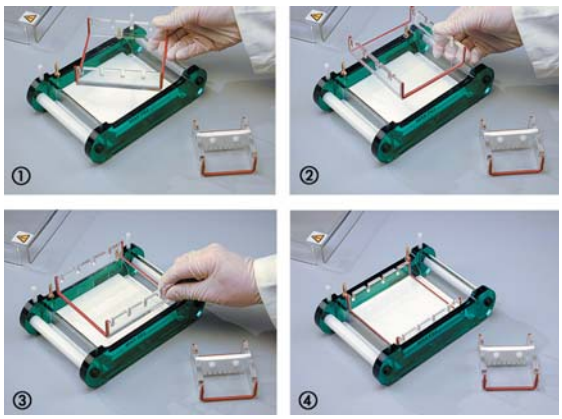
① Set cooling frame into buffer-filled chamber covering the gel
② Load gel and carefully apply precooled cool pack
③ Side view
④ Add lid and start gel run

The Classic Line - Compact Horizontal Electrophoresis Chambers

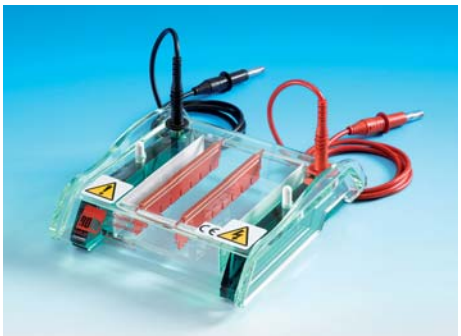
- High-grade quality
- Firmly standing
- Robust construction made of acrylic glass
- Chemically bonded contact points
- Platinum electrodes are protected by a special construction
- Wide range of accessories
- UV-transparent gel trays

Convenient in-Tank Gel Pouring

Big benefit: Several instruments of the classic line allow very convenient in-tank gel pouring - fast and definitely leak-proof.



① Remove the gel tray from the chamber. Turn the tray by 90°.
② Press the tray carefully into the chamber so that the silicone rubber forms a tight, leak-free seal with the walls of the chamber. Pour slightly precooled agarose into the tray.
③ Allow the agarose to polymerise, then lift the tray from the chamber and insert it back by positioning it in the direction of the run.
④ The gel is ready for sample loading and for electrophoresis.



MINI*easy* Electrophoresis Unit

Gel size (w x l): 8 x 10 cm
Unit dimensions (w x l x h): 13.5 x 15 x 3 cm
Number of samples: max. 32 samples (using 2 comb slots)
Buffer volume: 50 ml

- Complete gel chamber for speedy analysis
- The entire chamber can be placed on a UV-transilluminator
- Low buffer quantity needed
- Tank-gel casting (casting tray cannot be removed)

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), two gel casting gates and two combs (1.5 mm; 8 teeth).

Art. No.	Pack Qty.	€
N817.1	1 unit	428,95

Accessories:

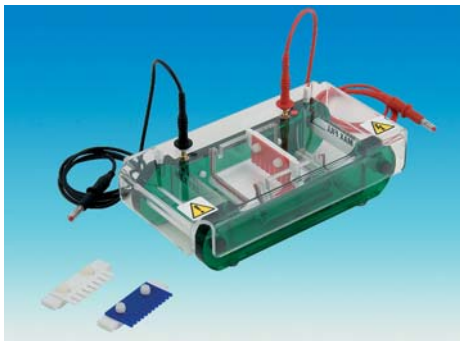
MINI*easy* Gel casting gates	**N818.1**	1 pair	25,70

MINI*easy* Combs

	No. of teeth	Broadth of teeth (mm)	Space between teeth (mm)
MINI easy	8	10	2
	12	6	2
	16	4	2

Wells	8	12	16
Thickness	Art. No.	Art. No.	Art. No.
1,0 mm	**N820.1**	**N821.1**	**N819.1**
1,5 mm	**N823.1**	**N824.1**	**N822.1**
Pack Qty.	1	1	1
€	32,05	32,05	32,05

▶ Compatible Power Supplies see page 1161



MINI Electrophoresis Unit

Gel size (w x l): 6 x 7.5 cm
Unit dimensions (w x l x h): 13 x 24 x 6.5 cm
Number of samples: max. 32 samples (using 2 comb slots)
Buffer volume: 325 ml

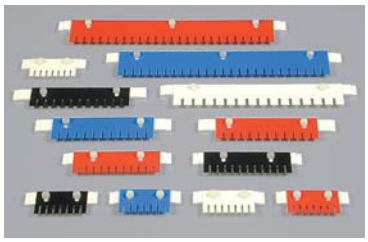
- Platinum electrodes are protected from damage by a special construction
- Four different combs available in three thicknesses
- Compatible with multi-channel pipettors (combs with 12 teeth)
- Convenient in tank-gel casting!

Delivery incl. horizontal gel tank, safety lid with integral power leads (4 mm plugs), removable gel casting tray, two combs (1 mm, 8 teeth).

Art. No.	Pack Qty.	€
N562.1	1 unit	471,95

Accessories:

MINI Gel casting tray	**N575.1**	1 tray	85,40
Approx. 1 m silicone sealing hose	**T811.1**	1 pieces	21,00



Colour	Comb thickness
black	0.75 mm
white	1.0 mm
red	1.5 mm
blue	2.0 mm

MINI Combs

	No. of teeth	Broadth of teeth (mm)	Space between teeth (mm)
MINI	8	4.5	2
	12*	2.5	2
	16	2.2	1

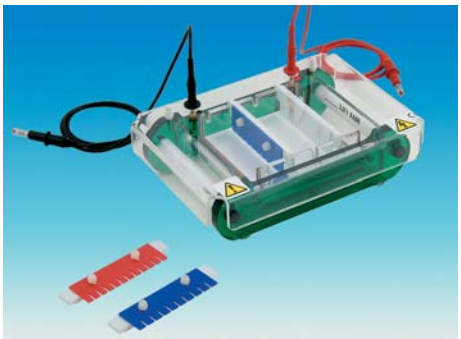
*Compatibel with multi-channel pipettors

Wells Thickness	8 Art. No.	12 Art. No.	16 Art. No.
1,0 mm	**N564.1**	**N565.1**	**N566.1**
1,5 mm	**N568.1**	**N569.1**	**N570.1**
2,0 mm	**N572.1**	**N573.1**	**N574.1**
Pack Qty.	1	1	1
€	42,95	42,95	42,95

MINI External Casting Unit

For casting max. three gels outside the chamber.
Simply insert the gel casting trays into the casting unit.
No additional sealing required.

Art. No.	Pack Qty.	€
T828.1	1 unit	89,80



MIDI 1 Electrophoresis Unit

Gel size (w x l): 10 x 11.5 cm
Unit dimensions (w x l x h): 16.5 x 23 x 6.5 cm
Number of samples: max. 80 samples (using 4 comb slots)
Buffer volume: 450 ml

- Platinum electrodes are protected from damage by a special construction
- Six different combs available in three thicknesses
- Compatible with multi-channel pipettors (see table)
- Convenient in tank-gel casting!

Delivery incl. horizontal gel tank, safety lid with integral power leads (4 mm plugs), removable gel casting tray, two combs (1 mm, 16 teeth).

Art. No.	Pack Qty.	€
N576.1	1 unit	536,45

Accessories:

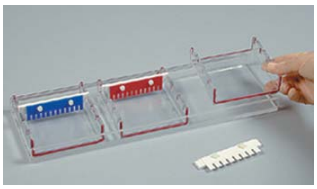
MIDI 1 Gel casting tray	**N595.1**	1 tray	96,25
Approx. 1 m silicone sealing hose	**T811.1**	1 pieces	21,00

MIDI 1 Combs

	No. of teeth	Broadth of teeth (mm)	Space between teeth (mm)
MIDI 1	8	9	2.5
	10*	7	2
	12	5.5	2
	16	3.6	2
	20*	3	1.5

*Compatibel with multi-channel pipettors

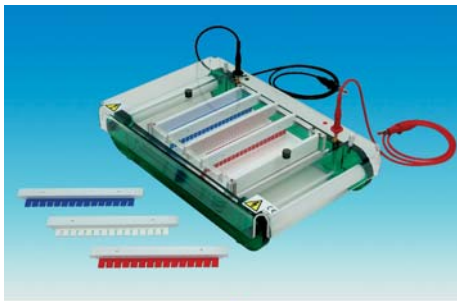
Wells	8	10	12	16	20
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
1,0 mm	**N578.1**	**N579.1**	**N580.1**	**N581.1**	**N582.1**
1,5 mm	**N584.1**	**N585.1**	**N586.1**	**N587.1**	**N588.1**
2,0 mm	**N590.1**	**N591.1**	**N592.1**	**N593.1**	**N594.1**
Pack Qty.	1	1	1	1	1
€	45,10	45,10	45,10	45,10	45,10



MIDI 1 External Casting Unit

For casting max. three gels outside the chamber.
Simply insert the gel casting trays into the casting unit.
No additional sealing required.

Art. No.	Pack Qty.	€
T829.1	1 unit	106,45



MIDI PLUS Electrophoresis Unit

Gel size (w x l): 15 x 15 cm
Unit dimensions (w x l x h): 21.5 x 33.5 x 7 cm
Number of samples: max. 120 samples (using 4 comb slots)
Buffer volume: 1200 ml

- Platinum electrodes are protected from damage by a special construction
- Convenient in buffer recirculation
- Eight different combs available in three thicknesses, including preparative combs with broad wells
- Compatible with multi-channel pipettors (see table)
- Gold standard for all routine gels in the lab

Delivery incl. horizontal gel chamber, safety lid with integral power leads (4 mm plugs), two connections for buffer recirculation, removable gel casting tray with gel casting gates, and two combs (1 mm, 16 teeth).

Art. No.	Pack Qty.	€
HP70.1	1 unit	719,20

Accessories:

MIDI PLUS Gel casting tray incl. gates	**HP71.1**	1 tray	203,20
MIDI PLUS Gel casting gates	**HP72.1**	1 pair	69,35
Approx. 1 m silicone sealing hose	**T811.1**	1 pieces	21,00

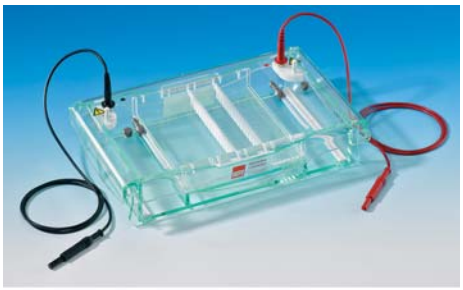
MIDI PLUS Combs

	No. of teeth	Broadth of teeth (mm)	Space between teeth (mm)
MIDI PLUS	1+1**	138	2
	2+1**	68	2
	4+1**	33	2
	10	12.8	2
	16*	6.4	2
	20	5.9	2
	25	3.5	2
	30*	2.5	2

*Compatibel with multi-channel pipettors

**Combs with extremely wide wells (for preparative gels)

Wells	1+1	2+1	4+1	10	16	20	25	30
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
1,0 mm	**HP73.1**	**HP74.1**	**HP75.1**	**HP76.1**	**HP77.1**	**HP78.1**	**HP79.1**	**HP80.1**
1,5 mm	**HP81.1**	**HP82.1**	**HP83.1**	**HP84.1**	**HP85.1**	**HP86.1**	**HP87.1**	**HP88.1**
2,0 mm	**HP89.1**	**HP90.1**	**HP91.1**	**HP92.1**	**HP93.1**	**HP94.1**	**HP95.1**	**HP96.1**
Pack Qty.	1	1	1	1	1	1	1	1
€	55,40	55,40	55,40	55,40	55,40	55,40	55,40	55,40



VARIA 1 Electrophoresis Unit

Gel size (w x l): variable, 15 x 7 to 15 x 20 cm
Unit dimensions (w x l x h): 31.5 x 19 x 7 cm
Number of samples: max. 60/90/120/180 samples (using 2/3/4/6 comb slots in a 7/10/15/20 cm long gel tray)
Buffer volume: 700 ml

- Superior flexibility in one chamber through 4 gel trays of different lengths
- Convenient in buffer recirculation
- Asymmetric electrode offset preventing accidental polarity reversal
- Colour coded combs with five different tooth sizes
- Developed by Scientists for Scientists

Delivery incl. horizontal gel tank, safety lid with integral power leads (4 mm plugs), two connections for buffer circulation, two gel casting gates, four removable gel casting trays of 7, 10, 15 and 20 cm length, respectively, two combs (1 mm, 15 teeth).

Art. No.	Pack Qty.	€
AE17.1	1 pieces1 unit	611,70

Accessories:

VARIA Gel casting tray 15 x 7 cm without gates	**AE74.1**	1 tray	77,30
VARIA Gel casting tray 15 x 10 cm without gates	**AE75.1**	1 tray	96,15
VARIA Gel casting tray 15 x 15 cm without gates	**AE76.1**	1 tray	110,75
VARIA Gel casting tray 15 x 20 cm without gates	**AE77.1**	1 tray	138,70
VARIA Gel casting gates	**0108.1**	1 pair	42,95

VARIA 1 Combs

	No. of teeth	Broadth of teeth (mm)	Space between teeth (mm)
VARIA 1	10	12.8	2
	16*	6.4	2
	20	5.9	2
	25	3.2	2
	30*	2.5	2

*Compatibel with multi-channel pipettors

Wells	10	20	25	30
Thickness	Art. No.	Art. No.	Art. No.	Art. No.
1,0 mm	**0085.1**	**0089.1**	**0090.1**	**0091.1**
1,5 mm	**-**	**0105.1**	**0106.1**	**-**
2,0 mm	**-**	**0128.1**	**0129.1**	**-**
Pack Qty.	1	1	1	1
€	59,70	59,70	59,70	59,70

MIDI 2 Electrophoresis Unit

Gel size (w x l): 20 x 20 cm
Unit dimensions (w x l x h): 27 x 47.5 x 8 cm
Number of samples: max. 160 samples (using 4 comb slots)
Buffer volume: 2200 ml

- Platinum electrodes are protected from damage by a special construction
- Convenient in buffer recirculation
- Four different combs available in three thicknesses
- Compatible with multi-channel pipettors (see table)
- Very robust unit, optimised for large standard gels
- Available with cooled base plate

Delivery incl. horizontal gel tank, safety lid with integral power leads (4 mm plugs), two connections for buffer recirculation, removable gel casting tray, two gel casting gates and two combs (1 mm, 16 teeth)

Type	Art. No.	Pack Qty.	€
MIDI 2 standard model	**N596.1**	1 pieces	805,20
MIDI 2 with cooled base plate	**N618.1**	1 pieces	1020,20

Accessories:

MIDI 2 Gel casting tray incl. gates	**N609.1**	1 tray	209,65
MIDI 2 Gel casting gates	**T812.1**	1 pair	107,00
Approx. 1 m silicone sealing hose	**T811.1**	1 pieces	21,00

MAXI Electrophoresis Unit

Gel size (w x l): 25 x 30 cm
Unit dimensions (w x l x h): 33 x 56 x 9 cm
Number of samples: max. 624 samples (using 12 comb slots)
Buffer volume: 3000 ml

- Platinum electrodes are protected from damage by a special construction
- Convenient in buffer recirculation
- Two different combs available in three thicknesses
- Compatible with multi-channel pipettors (see table)
- Optimised for very high sample numbers and for long separation distance
- Available with cooled base plate

Delivery incl. horizontal gel tank, safety lid with integral power leads (4 mm plugs), two connections for buffer recirculation, removable gel casting tray, two gel casting gates and six combs (1 mm, 26 teeth).

Type	Art. No.	Pack Qty.	€
MAXI standard model	**N610.1**	1 pieces	1127,70
MAXI with cooled base plate	**N619.1**	1 pieces	1288,95

Accessories:

MAXI Gel casting tray 30 cm incl. gates	**N617.1**	1 tray	252,65
MAXI Gel casting gates	**T813.1**	1 pair	108,60
Approx. 1 m silicone sealing hose	**T811.1**	1 pieces	21,00

MIDI 2 Combs

	No. of teeth	Broadth of teeth (mm)	Space between teeth (mm)
MIDI 2	16	8.5	3
	20*	7	2
	28	4.8	2
	40*	2.75	2

*Compatibel with multi-channel pipettors

Wells	16	20	28	40
Thickness	Art. No.	Art. No.	Art. No.	Art. No.
1,0 mm	**N597.1**	**N598.1**	**N599.1**	**N600.1**
1,5 mm	**N601.1**	**N602.1**	**N603.1**	**N604.1**
2,0 mm	**N605.1**	**N606.1**	**N607.1**	**N608.1**
Pack Qty.	1	1	1	1
€	59,15	59,15	59,15	59,15

MAXI Combs

	No. of teeth	Broadth of teeth (mm)	Space between teeth (mm)
MAXI	26*	7	2
	52*	3	1.5

*Compatible with multi-channel pipettors

Wells	26	52
Thickness	Art. No.	Art. No.
1,0 mm	**N611.1**	**N612.1**
1,5 mm	**N613.1**	**N614.1**
2,0 mm	**N615.1**	**N616.1**
Pack Qty.	1	1
€	80,65	80,65

Instructions for use
can be found on the Internet next to the product description.

IEF

Flat Bed Electrophoresis Unit MULTI

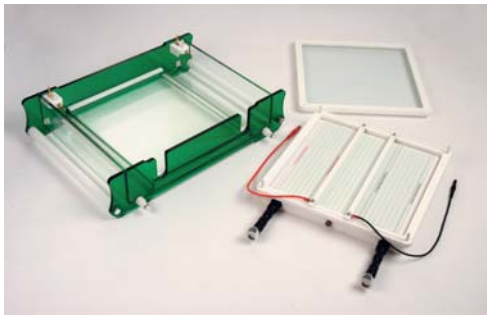
For all precast horizontal gels and for Iso Electric Focussing
Gel size (w x l): max. 25 x 25 cm
Unit dimensions (w x l x h): 46 x 41 x 11.5 cm
Number of samples: variable

- For high voltage electrophoresis up to 5000 Volt
- Variable applications using tank mounted electrodes or adjustable electrodes for wicked horizontal gels/IEF
- Including cooling unit and buffer drainage system
- Superior separation quality and robust construction

Technical data:
Length 46 cm, width tank only 34 cm, width incl. cooling connectors 43 cm, height 11.5 cm, weight 9.6 kg.
We recommend using Circulation Cooler Accel 250 (Art. No. PE51.1) and Power Supply EV 233 (Art. No. A541.1).

Delivery incl. horizontal flat bed electrophoresis chamber with buffer chambers and integral electrodes, safety lid, one removable ceramic cooling plate (27 cm width x 27 cm length), one glass electrode frame, one adjustable anode- and cathode electrode, glass electrode weight, drainage tubing (outer ∅ 12 mm), cable set (2 mm plug) and adapter pair for 4 mm socket.

Art. No.	Pack Qty.	€
CP51.1	1	1826,45



MULTI Accessories

Type	Art. No.	Pack Qty.	€
Ceramic cooling plate 27 x 27 cm	**CP54.1**	1	536,45
Glass electrode frame	**CP55.1**	1	403,15
Anode electrode	**CP52.1**	1	310,70
Cathode electrode	**CP53.1**	1	310,70

Vertical Electrophoresis Systems & Modules

- Simultaneous electrophoresis of minimum two gels
- Inner buffer volume ensures even distribution of heat in gel and prevents "smiling"
- Gel casting module enables speedy and simultaneous casting of two gels
- **Suitable for standard ready-to-use gels**

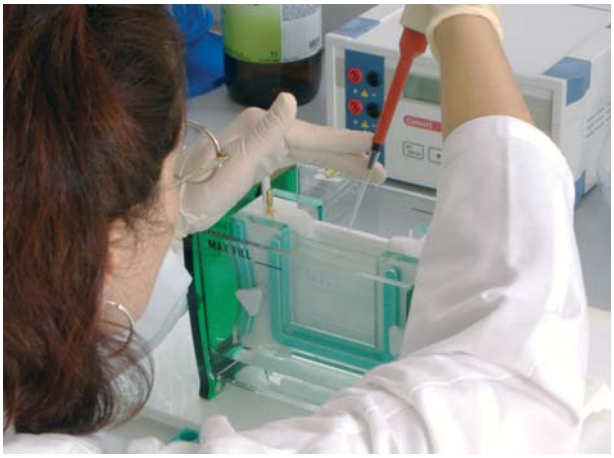
Wide field of application
- Separation of proteins, nucleic acids and peptides
- Isoelectric focussing
- Electro-transfer of proteins and nucleic acids

Safety lid with integral power leads
Orientation cannot be mixed up as the lid can only be closed if properly used. Power supply is automatically interrupted when lid is opened.

Platinum electrodes - gold-plated, corrosion-free contacts
Electrodes are made of pure platinum. They are protected by a special construction and can be replaced easily by the user.

Colour coding of spacers and combs
Regular colour coding of spacers and combs facilitates selection of the right tool during gel preparation, preventing assembly of wrong components.

Colour	Thickness	Application
violet	0,5 mm	for ultra finely resolved bands
black	0,75 mm	for finely resolved bands
white	1,0 mm	standard
red	1,5 mm	for bigger sample volumina and gels of 2nd dimension
blue	2,0 mm	for big sample volumina and preparative gels



Rotiphorese®-PROclamp - Units with Clamping System for Vertical Electrophoresis

- Double electrophoresis unit - **for running of up to 4 gels in parallel**
- With fast-clamping technique - for rapid and easy-to-handle insertion of glass plates and gels
- MINI: Compatible with all major brands of 10 x 10 to 8 x 10 cm precast gels
- Effective buffer cooling independent of running water or chillers
- Colour coded spacers and combs in 5 thicknesses available - 0,5 up to 2 mm
- Extensive range of accessories available incl. glass plates with fixed spacers and blotting modules
- Compatible with multi-channel pipettors (combs are marked *)
- Version MINI for 10 x 10 cm gels, version MAXI for 20 x 20 cm gels

Tight and leak-proof insertion of glass plates in seconds - by modern **fast-clamping techniques:** (MINI: clamps, MAXI: wave).

① Position running module on bench surface
② Insert glass plates (incl. spacers) from above
③ Tighten clamps - Ready-to-go!

Rotiphorese® Units PROclamp MINI

Glass plates (w x l): 10 x 10 cm
Max. sample capacity per gel: 20
Buffer volume (upper / lower tank): 100 ml/300 ml
Unit dimensions (w x l x h): 19 x 13 x 15 cm

- Double electrophoresis unit - **for running of up to 4 gels in parallel**
- With fast-clamping technique
- Compatible with all major brands of 10 x 10 to 8 x 10 cm precast gels
- Effective buffer cooling independent of running water or chillers
- Colour coded spacers and combs in 5 thicknesses available - 0,5 up to 2 mm
- Extensive range of accessories available incl. glass plates with fixed spacers and blotting module (Art. No. 3517.1)
- Compatible with multi-channel pipettors (combs are marked *)

Delivery incl. (basic equipment):
1 vertical electrophoresis chamber incl. buffer tank, safety lid incl. cable (4 mm plugs) and 1 running module for electrophoresis of up to 4 gels in parallel, dummy plate for run of one gel only and gel cooling set. For run of 3 or 4 gels, please additionally order PROclamp MINI notched glass plates with fixed spacers (thickness 1 mm: Art. No. 3563.1) and suitable combs, e. g. Art. No. 3638.1.

Complete Set with accessories and gel casting module
Additionally included: 2 glass plates with fixed spacers (thickness 1 mm), 2 notched glass plates, 2 combs (thickness 1 mm, 12 wells), gel opener and 1 gel casting module for rapid and leak-proof gel casting.

Art. No.	Pack Qty.	€
3501.1	1 unit	940,65

Set with Accessories
Additionally included: 2 glass plates with fixed spacers (thickness 1 mm), 2 notched glass plates, 2 combs (thickness 1 mm, 12 wells), gel opener.

Art. No.	Pack Qty.	€
3502.1	1 unit	858,95

Set for precast gels (without further accessories)

Art. No.	Pack Qty.	€
3503.1	1 unit	805,20

Accessories:

PROclamp MINI buffer tank without lid	**3509.1**	1 tank	153,75
PROclamp MINI running module	**3504.1**	1 module	471,95
PROclamp MINI lid for buffer tank	**3511.1**	1 lid	108,60
PROclamp MINI gel casting module	**3506.1**	1 module	213,95
Replacement rubber mat for gel casting module	**3507.1**	1 mat	60,15
PROclamp MINI cooling set	**3512.1**	1 set	48,60

PROclamp MINI Glass Plates

Type	Width (mm)	Length (mm)	Thickness (mm)	Art. No.	Pack Qty.	€
Standard glass plates	100	100	2	**3528.1**	1 pair	26,25
Notched glass plates	100	100	2	**3522.1**	1 pair	37,10
Dummy plate	100	100	5	**3520.1**	1 plate	21,20

PROclamp MINI Spacers

With labelled upper side

Thickness (mm)	Width (mm)	Length (mm)	Art. No.	Pack Qty.	€
0,5	12	101	**3570.1**	1 pair	21,75
0,75	12	101	**3573.1**	1 pair	21,75
1,0	12	101	**3578.1**	1 pair	21,75
1,5	12	101	**3579.1**	1 pair	21,75
2,0	12	101	**3584.1**	1 pair	21,75

PROclamp MINI Standard Glass Plates

(100 x 100 mm) with fixed spacers

Thickness (mm)	Art. No.	Pack Qty.	€
0,5	**3531.1**	1 pair	34,35
0,75	**3537.1**	1 pair	34,35
1,0	**3542.1**	1 pair	34,35
1,5	**3547.1**	1 pair	34,35
2,0	**3548.1**	1 pair	34,35

PROclamp MINI Notched Glass Plates

(100 x 100 mm) with fixed spacers, for pouring of double-gels

Thickness (mm)	Art. No.	Pack Qty.	€
0,5	**3552.1**	1 pair	56,90
0,75	**3561.1**	1 pair	56,90
1,0	**3563.1**	1 pair	56,90
1,5	**3567.1**	1 pair	56,90
2,0	**3568.1**	1 pair	56,90

PROclamp MINI Combs

	Max. sample volume per well						
	1+1**	5	8	10*	12	16*	20
0,5 mm	325 µl	50 µl	30 µl	20 µl	18 µl	13 µl	10 µl
0,75 mm	500 µl	70 µl	40 µl	30 µl	25 µl	20 µl	15 µl
1,0 mm	650 µl	100 µl	60 µl	40 µl	35 µl	25 µl	20 µl
1,5 mm	1000 µl	140 µl	80 µl	60 µl	50 µl	40 µl	30 µl
2,0 mm	1300 µl	200 µl	120 µl	80 µl	70 µl	50 µl	40 µl

*Compatibel with multi-channel pipettors

**Comb with especially broad well + narrow marker well (for preparative gels)

Wells	1+1	5	8	10	12	16	20
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
0,5 mm	**3585.1**	**3587.1**	**3593.1**	**3595.1**	**3597.1**	**3598.1**	**3599.1**
0,75 mm	**3600.1**	**3605.1**	**3606.1**	**3610.1**	**3612.1**	**3614.1**	**3615.1**
1,0 mm	**3622.1**	**3623.1**	**3632.1**	**3633.1**	**3638.1**	**3640.1**	**3641.1**
1,5 mm	**3642.1**	**3644.1**	**3649.1**	**3656.1**	**3657.1**	**3658.1**	**3659.1**
2,0 mm	**3662.1**	**3664.1**	**3665.1**	**3667.1**	**3668.1**	**3672.1**	**3674.1**
Pack Qty.	1	1	1	1	1	1	1
€	32,60	32,60	32,60	32,60	32,60	32,60	32,60

▶ Compatible Gel Multicaster for pouring of 6 and 12 gels see page 1163

Rotiphorese® Unit PROclamp MAXI

Glass plates (w x l): 20 x 20 cm
Max. sample capacity per gel: 48
Buffer volume (upper/lower tank): 640 ml/1000 ml
Unit dimensions (w x l x h): 30 x 18 x 27 cm

- For large-format vertical gel electrophoresis (20 x 20 cm)
- Double electrophoresis unit - **for running of up to 4 gels in parallel**
- Innovative new wave-screw-clamp technology
- Detachable inner cooling coil for optional cooling
- Spacers and combs in 4 thicknesses available - 0,75 up to 2 mm
- Compatible with multi-channel pipettors (combs are marked *)
- Extensive range of accessories available incl. glass plates with fixed spacers and blotting module (5816.1)

Delivery incl.: 1 vertical electrophoresis chamber incl. buffer tank, safety lid incl. 2 cables (4 mm plugs), detachable cooling coil, and 1 running module for running of up to 4 gels in parallel. For run of 3 or 4 gels, please additionally order PROclamp MAXI notched glass plates with fixed spacers (thickness 1 mm: Art. No. 5906.1) and suitable combs, for example Art. No. 5957.1.

Accessories included: 2 standard glass plates with fixed spacers (thickness 1 mm), 2 notched glass plates, 1 dummy plate (for run of one gel only), 2 combs (thickness 1 mm, 24 wells), 4 yellow wave-clamps for electrophoresis with 3 or 4 gels (substitute green clamps), and 1 gel casting module for rapid and leak-proof gel casting.

Art. No.	Pack Qty.	€
5769.1	1 unit	1450,20

Accessories:

PROclamp MAXI running module	**5786.1**	1 module	600,95
PROclamp MAXI gel casting module	**5792.1**	1 module	282,75
Sealing pads for PROclamp MAXI gel casting module	**5793.1**	1 set	80,65
PROclamp MAXI buffer tank (w/o lid and cooling coil)	**5807.1**	1 tank	579,45
PROclamp MAXI lid for buffer tank (incl. cables)	**5809.1**	1 lid	270,90
PROclamp MAXI cooling coil	**5812.1**	1 coil	209,65

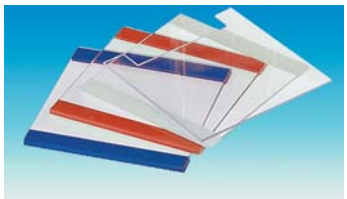
PROclamp MAXI Glass Plates

Type	Width (mm)	Length (mm)	Thickness (mm)	Art. No.	Pack Qty.	€
Standard glass plates	200	200	4	**5870.1**	1 pair	40,35
Notched glass plates	200	200	4	**5871.1**	1 pair	75,80
Dummy plate	200	200	10	**5875.1**	1 plate	26,90

PROclamp MAXI Spacers

With labelled upper side

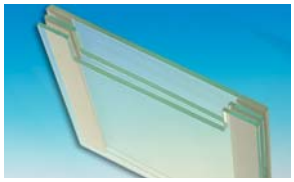
Thickness (mm)	Width (mm)	Length (mm)	Art. No.	Pack Qty.	€
0,75	19	200	**5908.1**	1 pair	30,05
1,0	19	200	**5917.1**	1 pair	30,05
1,5	19	200	**5921.1**	1 pair	30,05
2,0	19	200	**5922.1**	1 pair	30,05



PROclamp MAXI Standard Glass Plates

(200 x 200 mm) with fixed spacers

Thickness (mm)	Art. No.	Pack Qty.	€
0,75	**5877.1**	1 pair	64,00
1,0	**5878.1**	1 pair	64,00
1,5	**5893.1**	1 pair	64,00
2,0	**5897.1**	1 pair	64,00



PROclamp MAXI Notched Glass Plates

(200 x 200 mm) with fixed spacers, for pouring of double-gels

Thickness (mm)	Art. No.	Pack Qty.	€
0,75	**5904.1**	1 pair	103,75
1,0	**5906.1**	1 pair	103,75
1,5	**6011.1**	1 pair	102,15
2,0	**6020.1**	1 pair	102,15

PROclamp MAXI Combs

	Max. sample volume per well							
	1+1**	5	10	18*	24	30	36*	48
0,75 mm	1100 µl	160 µl	80 µl	40 µl	30 µl	25 µl	20 µl	15 µl
1,0 mm	1500 µl	200 µl	100 µl	50 µl	40 µl	35 µl	25 µl	20 µl
1,5 mm	2200 µl	320 µl	160 µl	80 µl	60 µl	50 µl	40 µl	30 µl
2,0 mm	3000 µl	400 µl	200 µl	100 µl	80 µl	70 µl	50 µl	40 µl

*Compatibel with multi-channel pipettors

**Comb with especially broad wells + narrow marker well (for preparative gels)

Wells	1+1	5	10	18	24	30	36	48
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
0,75 mm	**5925.1**	**5928.1**	**5934.1**	**5936.1**	**5940.1**	**5941.1**	**5944.1**	**5947.1**
1,0 mm	**5949.1**	**5952.1**	**5953.1**	**5955.1**	**5957.1**	**5959.1**	**5960.1**	**5961.1**
1,5 mm	**5962.1**	**5964.1**	**5967.1**	**5968.1**	**5969.1**	**5970.1**	**5971.1**	**5972.1**
2,0 mm	**5974.1**	**5977.1**	**5981.1**	**5983.1**	**5984.1**	**5999.1**	**6005.1**	**6007.1**
Pack Qty.	1	1	1	1	1	1	1	1
€	41,50	41,50	41,50	41,50	41,50	41,50	41,50	41,50

▶ Compatible Tank-Blotting modules for PROclamp MINI and MAXI see page 1168

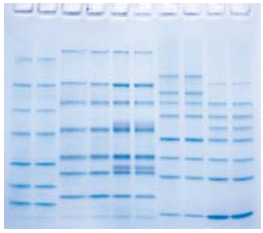
The Classic Line - Compact Vertical Electrophoresis Chambers with Glass Plate Stops

- Double electrophoresis unit - **for running of up to 2 gels in parallel**
- High-grade quality and robust, made of acrylic glass
- With glass plate stops
- MINI: compatible with most 10 x 10 cm ready made gels (max. width 10,0 cm)
- Chemically bonded contact points
- Wide range of accessories
- Coolable versions with reliable water cooled system
- Version MINI for 10 x 10 cm gels, version MAXI for 20 x 20 cm gels, and 33 x 45 cm unit for sequencing gels

Modular system

Tanks are compatible with different electrophoresis modules, keeping costs and space to a minimum. The electrophoresis units are available as *standard* and as *coolable* device.

Different versions of MINI and MAXI vertical dual plate electrophoresis chambers are available. The **full version** includes the buffer tank (standard or coolable), the running module for gel run and a gel casting module including glass plates and combs for immediate electrophoresis.



▶ Roti®-Page ready-made gels, compatible with Roth' vertical units, see page 1109

MINI Vertical Dual Plate Electrophoresis Units

Glass plates (w x l): 10 x 10 cm
Max. sample capacity per gel: 20
Buffer volume (upper/lower tank): 100 ml/300 ml
Unit dimensions (w x l x h): 20 x 15 x 14 cm

With glass plate stops – for reliable pouring of gels and optimised results

- Double electrophoresis unit - **for running of up to 2 gels in parallel**
- High-grade quality and robust, made of acrylic glass
- Compatible with most 10 x 10 cm ready made gels (max. width 10,0 cm)
- Chemically bonded contact points
- Coolable versions with reliable water cooled system

Delivery incl. 1 vertical electrophoresis chamber with buffer tank, lid and cables (4 mm plugs), 1 running module for simultaneous electrophoresis of two gels. The chamber is available as *standard* and as *coolable* device.
Accessories included:
2 glass plates, 2 separate spacer pairs (spacer thickness 1 mm), 2 notched glass plates, 1 dummy plate (for electrophoresis of one gel only), 2 combs (12 teeth, 1 mm thick).

Y001.1 and Y002.1: With additional gel casting module.

Standard, with buffer tank, running module, gel casting module and accessories

Art. No.	Pack Qty.	€
Y001.1	1 pieces1 unit	912,70

Coolable, with buffer tank, running module, gel casting module and accessories

Art. No.	Pack Qty.	€
Y002.1	1 pieces1 unit	1127,70

Standard, without gel casting module, with buffer tank, running module and accessories

Art. No.	Pack Qty.	€
Y003.1	1 pieces1 unit	697,70

Coolable, without gel casting module, with buffer tank, running module and accessories

Art. No.	Pack Qty.	€
Y004.1	1 pieces1 unit	912,70

Accessories:

MINI Buffer tank without lid	**Y005.1**	1 tank	461,20
MINI Coolable buffer tank without lid	**Y006.1**	1 tank	553,65
Spare lid for MINI buffer tank	**Y009.1**	1 lid	170,95
MINI Running module	**Y007.1**	1 module	590,20
U-shaped fixing plate with seals for MINI running module	**Y010.1**	2 plates	149,45
Seals for MINI running module	**Y011.1**	2 sets	98,80
Spare screws for MINI running module	**Y012.1**	4 screws	54,85
MINI Gel casting module	**Y008.1**	1 module	267,70
Sealing pads for MINI gel casting module	**Y013.1**	1 set	21,40
Platinum spare electrode ∅ 0.2 mm, 650 mm	**T794.1**	650 mm	127,95

MINI Vertical Glass Plates

Compatible with the current models, Art. No. Y001.1 to Y004.1

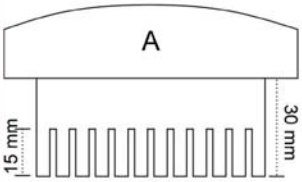
Type	Art. No.	Pack Qty.	€
Standard glass plates (10 x 10 cm)	**0513.1**	2 plates	35,30
Notched glass plates (10 x 10 cm)	**0520.1**	2 plates	74,75
Dummy plate	**0537.1**	1 plate	24,75

MINI Vertical Spacers

Thickness (mm)	Width (mm)	Length (mm)	Art. No.	Pack Qty.	€
0,75	12	100	**N624.1**	2 spacers	27,85
1,0	12	100	**N625.1**	2 spacers	27,85
1,5	12	100	**N626.1**	2 spacers	27,85
2,0	12	100	**N627.1**	2 spacers	27,85

MINI Vertical Glass Plates with Fixed Spacers

Thickness (mm)	Glass plate (mm)	Art. No.	Pack Qty.	€
0,75	100 x 100	**0523.1**	1 pair	73,05
1,0	100 x 100	**0530.1**	1 pair	73,05
1,5	100 x 100	**0531.1**	1 pair	73,05
2,0	100 x 100	**0536.1**	1 pair	73,05

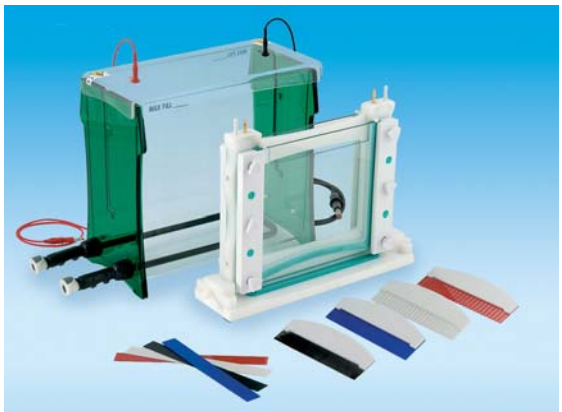


MINI Vertical Combs

	No. of teeth	Broadth of teeth (mm)	Height of teeth(mm)
MINI (A)	8*	5.5	15
	10	4	15
	12	4	15
	16*	2.5	15
	20	2	15

*Compatibel with multi-channel pipettors

Wells	8	10	12	16	20
Thickness	Art. No.	Art. No.	Art. No.	Art. No.	Art. No.
0,75 mm	**0550.1**	**N638.1**	**N639.1**	**N640.1**	**0558.1**
1,0 mm	**0554.1**	**N643.1**	**N644.1**	**N645.1**	**0570.1**
1,5 mm	**0555.1**	**N648.1**	**N649.1**	**N650.1**	**0595.1**
2,0 mm	**0556.1**	**N653.1**	**N654.1**	**N655.1**	**0597.1**
Pack Qty.	1	1	1	1	1
€	39,70	40,25	40,25	40,25	39,70



MAXI Vertical Dual Plate Electrophoresis Units

Glass plates (w x l): 20 x 20 cm
Max. sample capacity per gel: 48
Buffer volume (upper/lower tank): 650 ml/1000 ml
Unit dimensions (w x l x h): 28,5 x 15 x 27,5 cm

With glass plate stops – for reliable pouring of gels and optimised results

- Double electrophoresis unit - **for running of up to 2 gels in parallel**
- High-grade quality and robust, made of acrylic glass
- Chemically bonded contact points
- Coolable versions with reliable water cooled system

Delivery incl. 1 vertical electrophoresis chamber with buffer tank, lid and cables (4 mm plugs), 1 running module for simultaneous electrophoresis of two gels. The chamber is available as *standard* and as *coolable* device.
Accessories included: 2 glass plates, 2 separate spacer pairs (spacer thickness 1 mm), 2 notched glass plates, 1 dummy plate (for electrophoresis of one gel only), 2 combs (24 teeth, 1 mm thick).

X950.1 and X951.1: With additional gel casting module.

Standard, with buffer tank, running module, gel casting module and accessories.

Art. No.	Pack Qty.	€
X950.1	1	1331,95

Coolable, with buffer tank, running module, gel casting module and accessories.

Art. No.	Pack Qty.	€
X951.1	1	1607,15

Standard, without gel casting module, with buffer tank, accessories and running module

Art. No.	Pack Qty.	€
X952.1	1	1127,70

Coolable, without gel casting module, with buffer tank, accessories and running module

Art. No.	Pack Qty.	€
X953.1	1	1364,20

Accessories:

MAXI Buffer tank without lid	**X954.1**	1 tank	750,35
MAXI Coolable buffer tank without lid	**X955.1**	1 tank	858,95
Spare lid for MAXI buffer tank	**X958.1**	1 lid	321,45
MAXI Running module	**X956.1**	1 module	783,70
Fixing plate with seals for MAXI running module	**X959.1**	2 sets	59,65
Seals for MAXI running module	**X960.1**	2 sets	160,20
Spare screws for MAXI running module	**X961.1**	6 screws	21,95
MAXI Gel casting module	**X957.1**	1 module	310,70
Sealing pads for MAXI gel casting module	**X963.1**	1 set	34,20
Platinum spare electrode ∅ 0.2 mm, 650 mm	**T794.1**	650 mm	127,95

MAXI Vertical Glass Plates

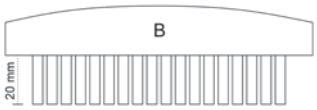
Type	Art. No.	Pack Qty.	€
Plain glass plates (20 x 20.5 cm)	**0649.1**	2 plates	59,05
Notched glass plates (20 x 20.5 cm)	**0650.1**	2 plates	88,70
Dummy plate	**0651.1**	1 plate	62,90

MAXI Vertical Spacers

Thickness (mm)	Width (mm)	Length (mm)	Art. No.	Pack Qty.	€
0,75	20	200	**N632.1**	2 spacers	31,95
1,0	20	200	**N633.1**	2 spacers	31,95
1,5	20	200	**N634.1**	2 spacers	31,95
2,0	20	200	**N635.1**	2 spacers	31,95

MAXI Vertikal Glass Plates with Fixed Spacers

Thickness (mm)	Glass plate (mm)	Art. No.	Pack Qty.	€
0,75	200 x 205	**0658.1**	1 pair	61,30
1,0	200 x 205	**0659.1**	1 pair	61,30
1,5	200 x 205	**0664.1**	1 pair	61,30
2,0	200 x 205	**0665.1**	1 pair	61,30



MAXI Vertical Combs

	No. of teeth	Broadth of teeth (mm)	Height of teeth (mm)
MAXI (B)	18*	6.5	20
	24	5	20
	36*	3	20
	48	2.5	20

*Compatibel with multi-channel pipettors

Wells	18	24	36	48
Thickness	Art. No.	Art. No.	Art. No.	Art. No.
0,75 mm	**N673.1**	**N677.1**	**N679.1**	**N680.1**
1,0 mm	**N683.1**	**N685.1**	**N687.1**	**N688.1**
1,5 mm	**N691.1**	**N693.1**	**N695.1**	**N696.1**
2,0 mm	**N699.1**	**N701.1**	**N703.1**	**N704.1**
Pack Qty.	1	1	1	1
€	45,10	45,10	45,10	45,10

Instructions for use
can be found on the Internet next to the product description.

Capillary Running Modules

For Isoelectric Focussing (IEF) during 2D-gel electrophoresis and for preparative capillary protein gels

Capillary length: max. 8 or 17 cm, resp.
Max. sample capacity per gel: 10

- Versatile - for 1 to 10 capillary gels in parallel
- Applicable for capillaries of 1 mm and 4 mm internal diameter
- Protected and highly resistant platinum electrodes
- Easy handling and reliable, distinct separation

Moduls for Vertical Double Electrophoresis Units of the classical line. Easy-to-use, modular system compatible with the vertical electrophoresis systems MINI (Art. No. Y001-Y004) and MAXI (Art. No. X950-X953).
Delivery incl. capillary running module. Please order glass capillaries, blanking ports, and gel extraction platform separately.

MINI Capillary Running Module, capillary length max. 8 cm

Art. No.	Pack Qty.	€
2811.1	1	600,95

MAXI Capillary Running Module, capillary length max. 17 cm

Art. No.	Pack Qty.	€
2816.1	1	934,20

Blanking Ports

Made of silicone, suitable for MINI and MAXI Capillary Running Modules.

Art. No.	Pack Qty.	€
2815.1	10	37,00

Glass Capillaries for Electrophoresis

Type	Length (cm)	Inner ∅ (mm)	Art. No.	Pack Qty.	€
MINI	8	1	**2812.1**	10	81,70
MAXI	17	1	**2817.1**	10	149,45

Gel Extraction Platforms

Preformed platforms for safe and easy collection, cutting, and transfer of fragile capillary gels. Please order blanking ports separately.

Type	For gels of	Art. No.	Pack Qty.	€
MINI	max. 8 cm	**2814.1**	1	51,20
MAXI	max. 17 cm	**2819.1**	1	81,20

Recommended Combination for 2D-Gel Electrophoresis:

Unit	MINI (Art. No.)	MAXI (Art. No.)
Vertical electrophoresis unit	Y001.1	X950.1
Capillary running module	2811.1	2816.1
Blanking ports	2815.1	2815.1
Glass capillaries	2812.1	2817.1
Gel extraction platform	2814.1	2819.1
Power Supply EV215	A542.1	A542.1
1 pair of spacers, 1.5 mm thick (2. dimension)	3579.1	5921.1
1+1 comb, 1.5 mm thick (2. dimension)	3642.1	5962.1

Sequencing Electrophoresis Unit

Glass plates (w x l): 33 x 45 cm
Max. sample capacity per gel: 96
Buffer volume (upper/lower tank): 500 ml/500 ml
Unit dimensions (w x l x h): 50 x 21,5 x 63 cm

- Robust construction made of acrylic glass
- Safety cover with integral connectors
- User-replaceable electrodes made of pure platinum
- Removable lower buffer tank for easy cleaning
- Optional thermostatic fan kit
- Accessories may be bought separately
- Heavy duty aluminium back plate helps disperse heat evenly
- CE certified
- For SSCP-gels, DDRT-PCR analyses, and extra long protein gels

Delivery incl. chamber with safety lid and integral power leads (2 mm plugs), one set of glass plates (1x plain, 1x notched) one pair of spacers (0,35 mm), one sharktooth comb (0,35 mm, 48 teeth).

Art. No.	Pack Qty.	€
AE28.1	1	1607,15

Accessories:

Cooling and heating kit	**N705.1**	1 electr.	1052,45

Glass Plates for Sequencing Electrophoresis Unit

Type	Art. No.	Pack Qty.	€
Notched glass plate (33 x 45 cm)	**N706.1**	2 plates	140,85
Plain glass plate (33 x 45 cm)	**N707.1**	2 plates	91,30

Spacers for Sequencing Electrophoresis Unit

Thickness (mm)	Width (mm)	Length (mm)	Art. No.	Pack Qty.	€
0,25	20	450	**N708.1**	2 spacers	38,10
0,35	20	450	**N709.1**	2 spacers	38,10
1,0	20	450	**N710.1**	2 spacers	38,10
1,5	20	450	**AE39.1**	2 spacers	34,85

Combs for Sequencing Electrophoresis Unit

Wells	48	80
Thickness	Art. No.	Art. No.
1,0 mm	**AE31.1**	**AE35.1**
1,5 mm	**AE32.1**	**AE36.1**
Pack Qty.	1	1
€	49,15	49,15

Sharktooth Combs

Wells	48	96
Thickness	Art. No.	Art. No.
0,25 mm	**N719.1**	**N721.1**
0,35 mm	**N722.1**	**N724.1**
Pack Qty.	1	1
€	81,70	125,80

▶ Ready-to-use gel solutions for sequencing gels see page 1112

Power Supplies

CONSORT

Power Supply Series EV200

Low cost power supplies for all applications

The upgraded **Consort** series - powerful, easy to operate and low priced. The series comprises Power Supply EV245 (see figure, small unit), a small voltage unit for mini gels and mini blots, in addition to a number of larger units in the medium and high performance range (EV231-EV215, see figure, large unit).

With interface to external control computer or for saving the data from the run.

- Voltage, current and output stable
- 9 programs can be stored
- Automatic control of programs via timer setting
- Program will continue automatically after power cut
- Connection of 3 units (EV245) or 4 units (EV231-EV215) possible
- High safety standard
- 3 year warranty

Technical specifications of series EV200:

Model	EV245	EV231	EV265	EV261	EV202	EV233	EV215
Voltage (V) (±2 % max. V)	0-400	0-300	0-600	0-600	0-300	0-3000	0-1200
Max. intensity of current	500 mA	1000 mA	500 mA	1000 mA	2000 mA	300 mA	500 mA
Max. output	50 W	150 W	150 W	300 W	300 W	300 W	300 W
Timer	0-99.59 h						
Volt-hours	0-99,99 kVh						
Display	LED, 2 x 16 characters						
Resolution	1 V / 1 mA / 1 W						
Programs	9 x 9 parameter settings						
Outlets (parallel socket pairs)	3 (4 mm)	4 (4 mm)	4 (4 mm)	4 (4 mm)	4 (4 mm)	4 (2 mm)	4 (4 mm)
Min. load resistor	30 Ω	10 Ω	10 Ω	15 Ω	5 Ω	300 Ω	70 Ω
Leak recognition	500 µA						
Ambient temp.	4-40 °C						
Dimensions (cm)	24 x 20 x 13	31 x 26 x 15					
Weight	3 kg	6 kg		10 kg			
Current	210-250 V, 50/60 Hz						

Power Supply EV245

Suitable for horizontal and vertical mini gels, MINI-blots and for electro-elution.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
0-400	max. 500	max. 50	**CP56.1**	1	504,20

Power Supply EV231

Suitable for horizontal and vertical gels, for blotting and for mini gel applications.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
0-300	0-1000	0-150	**A545.1**	1	685,85

Power Supply EV265

Suitable for horizontal and vertical gels and for electro-elution. Particularly suited for electrophoresis with multiple units.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
0-600	0-500	0-150	**A544.1**	1	806,25

Power Supply EV261

Versatile Power Supply, suitable for horizontal and vertical gels, for electro-elution, for minigel-blotting and for Comet Assays.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
0-600	0-1000	0-300	**2804.1**	1	913,75

Power Supply EV202

Suitable for tank and semi-dry blotting.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
0-300	0-2000	0-300	**A543.1**	1	942,80

Power Supply EV233

Optimal for DNA-sequencing and IEF using flat bed units. With 2 mm male connectors. Delivery includes 4 adapter pairs with 2 mm male and 4 mm female connectors (Art. No. K294.1).

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
0-3000	0-300	0-300	**A541.1**	1	1149,20

Power Supply EV215

Optimal for isoelectric focussing and DNA-sequencing.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
0-1200	0-500	0-300	**A542.1**	1	1019,10

Recommendation of suitable Power Supplies

Unit	for 1-2 Units	for 3-4 Units
MINIeasy	Roth-MINI, EV245	Roth-MINI, EV245, EV231
PROfessional I		
MINI		
PROfessional II	Roth-STANDARD, EV245, EV231	Roth-STANDARD, EV231, EV265
MIDI 1		
PROfessional III	Roth-STANDARD, EV231, EV265	Roth-BLOT, EV265
MIDI PLUS		
PROfessional IV	EV265, EV261	Roth-BLOT, EV265, EV261
MIDI 2		
PROfessional V		Roth-BLOT, EV261
MAXI		
VARIA 1		Roth-BLOT, EV265, EV261
PROfessional Acetat	Roth-STANDARD, EV231	Roth-STANDARD, EV265
MULTI	EV215	EV233
MINI vertical	Roth-STANDARD, EV245, EV231	Roth-STANDARD, EV231, EV265
MAXI vertical	Roth-BLOT, EV245, EV261	Roth-BLOT, EV265, EV215
Sequencing	EV233	EV233
IEF	EV215	EV215
MINI Blotting	Roth-MINI, EV245, EV231	EV231, EV261
MAXI Blotting	Roth-BLOT, EV231, EV261	Roth-BLOT, EV261, EV202
Electroelution	Roth-MINI, Roth-STANDARD, EV245, EV261	Roth-STANDARD, EV261, EV265

When connecting several units, a higher voltage must be applied in order to attain the same intensity of current and output and, subsequently, the same separating capacity.

Roth Power Supplies

The Roth series - powerful and inexpensive Power Supplies for electrophoresis and blotting

Three units for all applications in electrophoresis. The very inexpensive Power Supply MINI has been developed for horizontal mini gels, rapid bench top-analyses of nucleic acids and for students courses. The STANDARD version is best suited for all horizontal routine gels and for vertical mini gel electrophoresis. The versatile Roth Power Supply BLOT is recommended for maximum application flexibility in the lab, for large-dimension horizontal gels, vertical maxi gels (e. g. 20 x 20 cm), cold room operation and blotting.

- Compact
- Easy to operate
- Constant parameters
- Timer with alarm function
- Connection with 2 or 4 units possible
- Comply to all relevant safety standards
- 2 years warranty

Technical specifications:

Type	① MINI	② STANDARD	③ BLOT
Model	nanoPAC-300	CS-300V	CS-3AP
Voltage (V)	10-300	2-300	5-300
Max. intensity of current	400 mA	700 mA	3000 mA
Max. output	60 W	150 W	300 W
Timer	1-999 mins	1-999 mins	1-999 mins
Volt-hours	49.995 kVh		
Display	LED display	LED display	Matrix display
Resolution	1 V, 1 mA	1 V, 1 mA	1 V, 10 mA, 1 W
Output type	Constant V or mA	Constant V or mA	Constant V, mA or W
Programs	X	X	30 files with 6 parameters each
Outlets (parallel socket pairs)	2 (4 mm)	4 (4 mm)	4 (4 mm)
Min. load resistor	5 Ω	3 Ω	0.1 Ω
Safety	‚No load', overload detection	‚No load', overload detection	‚No load', overload detection
Protection	Over temperature	Leakage and over temperature	Leakage and over temperature
Ambient temp.	15-40 °C	4-40 °C	4-40 °C
Dimensions (cm)	14 x 19 x 8,4	19 x 30,5 x 9,5	19 x 30,5 x 9,5
Weight	1,0 kg	2,5 kg	2,5 kg
Current	220 V		

Roth Power Supply MINI

For horizontal mini gels, rapid analyses of nucleic acids and for students courses.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
max. 300	max. 400	max. 60	**2907.1**	1	514,95

Roth Power Supply STANDARD

For standard applications, all middle sized horizontal gels (routine gels) and for vertical mini gels. Suitable for cold-room operation.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
max. 300	max. 700	max. 150	**2908.1**	1	886,90

Roth Power Supply BLOT

For large dimension horizontal gels, vertical maxi gels and blotting.
For high flexibility in application. Suitable for cold-room operation.

Voltage (V)	Intensity of current (mA)	Output (W)	Art. No.	Pack Qty.	€
max. 300	max. 3000	max. 300	**2909.1**	1	1288,95

Accessories

Electrophoresis Cables

Suitable for up to 1000 volt. Cable length 1 m.

Image	Model	∅ socket (mm)	∅ plug (mm)	Art. No.	Pack Qty. (Pair)	€
①	Classic Line	4	4	**N843.1**	1	85,50
②	Rotiphorese® PROfessional	4	4	**6848.1**	1	83,35

Semi Dry Blotter Cables

Suitable for up to 1000 volt. Cable length 1 m. Narrow socket sheaths.

∅ socket (mm)	∅ plug (mm)	Art. No.	Pack Qty. (Pair)	€
4	4	**6072.1**	1	74,20

Adapters

By using the appropriate pair of adapters, electrophoresis cables may fit to any customary power supply.

∅ socket (mm)	∅ plug (mm)	Art. No.	Pack Qty. (Pair)	€
2	4	**T843.1**	1	16,85
4	2	**K294.1**	1	8,10
4	4	**K295.1**	1	5,95

Silicone Sealing Hose

for horizontal gel casting trays (Art. No. N575.1 and N595.1), ∅ 4 mm, ~1 m.

Art. No.	Pack Qty.	€
T811.1	1 pieces	21,00

Platinum Spare Electrode

for vertical and horizontal electrophoresis units, ∅ 0,2 mm

Art. No.	Pack Qty. (mm)	€
T794.1	650	127,95

Gel Multi Caster

Multiple gel casting systems, tailored for use with Rotiphorese® PROclamp vertical electrophoresis units (10 x 10 cm gel glass plates). The number or the thickness of gels being poured is variabel. After pouring the glass plates can be easily separated by the included separation sheets.
With level bubble for optimal levelling of gels.

Two models of 6 and 12 gel capacities. If required, fewer gels can be poured using the spacer plates supplied with each system in order to adjust the volume.

Delivery incl. gel casting chamber, 1 bottom silicone gasket for top filling, 1 level bubble, 1 clip, 12 separation sheets, 6 or 9 spacer plates with different diameters (dependent on the caster model):
Art. No. 3117.1 (6 gels): 1 x 12 mm, 3 x 5 mm, 2 x 3 mm
Art. No. 3118.1 (12 gels): 1 x 12 mm, 5 x 5 mm, 3 x 3 mm

Type	for max. gels	Art. No.	Pack Qty.	€
Multi Caster 6 x	6	**3117.1**	1	536,45
Multi Caster 12 x	12	**3118.1**	1	643,95

TIP

Roti®-PAGE buffer dam

Special buffer dams made for running of a single Roti®-PAGE gel in **PROTEAN®** units made by BioRad®.
The Roti®-PAGE PROTEAN® buffer dams are somewhat longer than the original buffer dams from BIORAD®, providing the full height needed for building the inner buffer reservoir for runs of single 9x10 cm Roti®-PAGE gels.

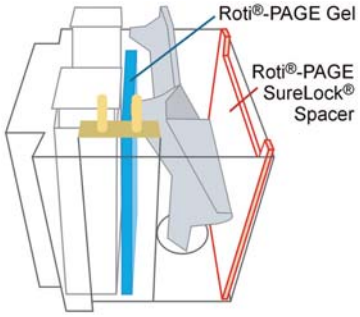
Suitable for BioRad® Mini PROTEAN® I, II, III, Tetra, and Ready Gel® Cell.
Size (w x h x t): 10.1 x 9.3 x 0.4 cm

Art. No.	Material	Pack Qty.	€
4715.1	Acrylic glass	1	22,05

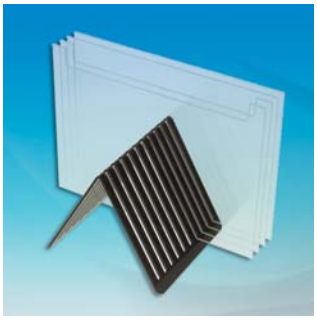
TIP

Roti®-PAGE-Spacer

Spacer for insertion into **Novex® XCell SureLock®** Mini-Cell units made by Invitrogen™.
This spacer compensates the slightly less thick Roti®-PAGE gels, enabling the simultaneous run of two Roti®-PAGE gels in Novex units. When running two Roti®-PAGE gels, the SureLock® Spacer is simply inserted into the tank (see figure).
Size: Width 10 cm, thickness 0,2 cm, height 9 cm (notch) and 10 cm (full heigth.



Art. No.	Material	Pack Qty.	€
4731.1	Acrylic glass	1	18,50



Glass Plate Racks

ROTH MINI and MAXI glass plate racks for safe drying and storage of glass plates for vertical gel electrophoresis. Black acrylic glass.

Type	for max.	Art. No.	Pack Qty.	€
Mini	20 glass plates (up to 2 mm thick)	**N860.1**	1	64,30
Maxi	10 glass plates (up to 5 mm thick)	**N861.1**	1	102,15

MINI and MIDI Gradient Mixer

For preparing polyacrylic amide gel gradients or centrifugation gradients (sucrose or caesium chloride gradients).

The mixers are manufactured from one acrylic block. They consist of two chambers, a storage area and a mixing chamber with a connecting valve. A second valve regulates the discharge from the chamber. A magnetic follower placed into the mixing chamber enables a steady and constant gradient to be produced with the magnetic stirrer. The mixers have a flat bottom and come with a rod on the back which can be attached to a holder. Connection for 4 mm FEP- tubes.

Type	Total filling volume (ml)	Art. No.	Pack Qty.	€
MINI	30	**N857.1**	1	553,65
MIDI	100	**N858.1**	1	643,95

▶ Tube Pump Sci-Q 323 for gradient mixers see page 337

▶ Rotilabo®-FEP-hoses see page 335

Levelling Table

ROTH levelling tables enable casting of horizontal gels of equal thickness, featuring easy-to-turn rotating feet on the corners. Tables also have an air bubble in the centre for precise horizontal alignment.

Table surface: 20 x 30 cm.

Art. No.	Pack Qty.	€
N854.1	1	213,95

Gel Scoops

ROTH gel scoops enable easy transport of gels in staining solutions or to a transilluminator. Even low concentrated agarose gels are protected against breaking.

ROTH gel scoops are UV-transparent.

Type	Overall length (mm)	Scoop width (mm)	Length of scooping surface (mm)	Art. No.	Pack Qty.	€
MINI	235	60	82	**N850.1**	1	53,25
MIDI	282	100	140	**N851.1**	1	55,90
MIDI 2	430	200	250	**N852.1**	1	63,45
MAXI	520	250	330	**N853.1**	1	69,90

Gel Handler®

Flexible UV transparent sheets for supporting, manipulating and photographing gels

Made of polyolefin material. Gel Handler® sheets are slid under gels in solution for easy lifting and moving.

Properties:

- **Cuttable** - may be cut with scissors into convenient pieces
- **Chemically inert** - autoclaving and washing with diluted acids and bases is possible
- **UV-transparent** - higher transparency than UV-transparent acrylic material
- **Very flexible** - slide easily under the gel and eliminate air bubbles when placed on a transilluminator
- **Resistant** - the surface of the transilluminator is protected from scratching when excising segments of a gel with a razor or spatula

Technical specifications:

Optical density 3896.1	
254 nm emission wave length	0.14 OD
300 nm emission wave length	0.04 OD

Dimensions L x W (cm)	Thickness (mm)	Art. No.	Pack Qty.	€
21 x 28	0,13	**3896.1**	10	64,00
21 x 28	0,26	**3897.1**	5	64,00

FlowMesh™

Permeable support mesh for gels and filter membranes. Sturdy, versatile, and convenient. Re-usable and easily cut to size.

FlowMesh™ max be used for the following applications (e.g.):

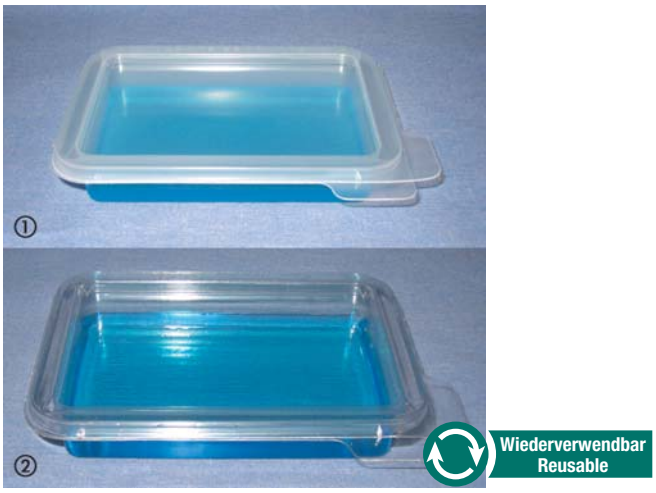
Gel support - Place FlowMesh™ above or below a gel to protect from tearing, bending, or folding. May be used during gel staining, destaining, probing, equilibration etc.

Spacing - Use FlowMesh™ as permeable spacer for separation of gels and membranes during stacking.

Membrane stabilisation - Use on one or both sides of membranes during storage or hybridisation, while keeping the membrane fully accessible for blocking, probing and washing.

FlowMesh™ is made of polypropylene mesh approximately 0,3 mm thick with 1 mm strand spacings and approx. 70 % void volume. Between two flat sheets separated by FlowMesh™ is 2,7 ml/100 cm² void volume.
Size: 27,8 cm x 21,7 cm.

Art. No.	Pack Qty.	€
2796.1	20	61,25



Gel Staining Trays

Compatible with all standard staining methods

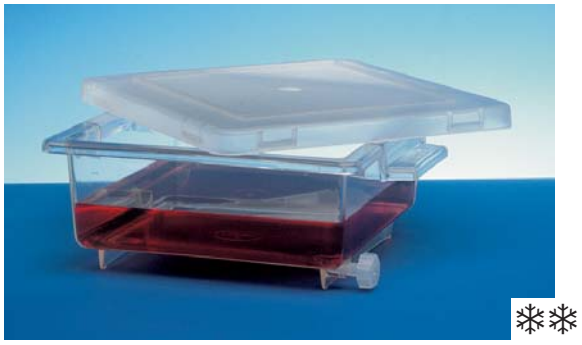
- tightly-sealing, recessed lids
- can be stacked safely and without slipping on the shaker

The staining trays, available in two sizes, are a practical and cheap alternative to plastic household bowls. The asymmetric array of the marking on the edges and drainage outlets on all corners guarantee easy handling and simple orientation of gel.

① The **PP** (polypropylene) trays are heat-resistant, **microwave-proof** and excellent for staining protein/peptide gels.

② The **PETG** (polyethyleneterephtalate) trays have a clear, **UV-permeable bottom** for fluorescence staining of agarose gels (wave length ≥330 nm).

Type	Material	Inner-Dimensions L x W x H (mm)	Art. No.	Pack Qty.	€
MINI	PP	113 x 75 x 25	**CP57.1**	20	85,50
MIDI	PP	143 x 100 x 25	**CP58.1**	20	113,95
MINI	PETG	113 x 75 x 25	**CP59.1**	20	85,50
MIDI	PETG	143 x 100 x 25	**CP60.1**	20	120,40



Staining chamber

By Nalgene®. Made of **PMP** for staining, fixing, and bleaching membranes, electrophoresis gels etc. With lid made of **PP**-copolymer and leakproof drain plug made of **LDPE** for problem-free draining of liquid without gel manipulation. Chamber with handles on both side for easy transport. Capacity with gel under shaking conditions: 500 to 750 ml. Temperature stable from -70 to +70 °C.

Not UV-transparent.

L x W x H (mm)	Art. No.	Pack Qty.	€
125 x 125 x 50	**H591.1**	1	31,75

Blot incubation trays

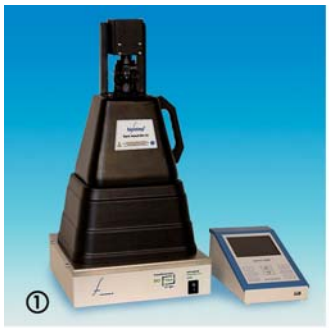
Compatible with Western- and Southern blotting methods

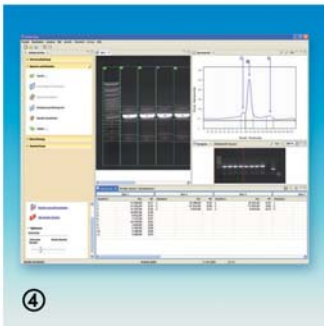
Developed for incubation of filter membranes during signal detection after Western- and Southern blotting. The incubation trays can safely be stacked, and, due to the tightly sealing lids, evaporation of solution is prevented even during long incubation periods. The size, adapted to typical membrane sheets, reduces the amount of buffer needed during incubation. In case of version MINI, the 5 trays may be used separately as well as in uniform. Stabile, autoclavable, and reusable.

Made from polypropylene.

Model	Material	Dimensions W x L (mm)	Art. No.	Pack Qty.	€
MINI	PP	16 x 115	**4810.1**	5	45,70
MIDI	PP	90 x 90	**4811.1**	5	68,30
MAXI	PP	165 x 165	**4812.1**	5	148,35

Gel Documentation





Gel documentation systems

By Biostep. PC-independent imaging systems e.g. for acquisition of DNA/RNA bands in agarose gels or protein bands in polyacrylamide gels. Standard version with ethidium bromide filter.

CCD-Camera model B8-437G
- Resolution 752 x 582 pixel
- Manual zoom objective 8 - 48 mm
- Camera control via external operation terminal 5,6″ LCD display, keypad and USB-connection
- Functions: Live image mode for easy positioning of gels, setting of exposure time (manual or automatic), image inverting, recognition of image manipulation (GLP), staring image settings and storage data onto a USB-stick

① **Typ Gerix 1005**
Attachable dark hood for use in combination with a transilluminator with UV-protection shield.

② **Typ Gerix 1020**
Stationary dark hood with white top light and sliding door. Integrated UV protective shield can be pushed up for gel positioning. Attachable to transilluminator with 4 clamps. Transilluminator will automatically switch off in the case of overheating.

Delivery incl. dark hood, CCD-camera and operation terminal. Please order transilluminator, thermal printer and evaluation software separately.

Type	Dimensions W x D x H (cm)	Art. No.	Pack Qty.	€
① Gerix 1005	30 x 25 x 59	**LL53.1**	1	4025,90
② Gerix 1020	32,5 x 32 x 67	**LL54.1**	1	4708,50

▶ Other Transilluminators see page 736

Accessories for gel documentations systems

By Biostep.

③ **Transilluminators**
- Homogenous illumination
- Temperature-controlled ventilation (except K-model)
- Filter lid made of stainless steel
- Dimensions W 32,5 x D 32,2 x H 10,5 cm
- Filter size 20 x 20 cm

Please order UV-protection and blue light filter shield separately.

Type	Wavelength (nm)	Tubes	Intensity	Art. No.	Pack Qty.	€
UST-20M-8K	312	6 x 8 W	-	**LL55.1**	1	822,40
UST-20M-8E	312	8 x 8 W	50-100 %	**LL56.1**	1	1073,95
UST-20M-8R	312	8 x 8 W	10-100 %	**LL57.1**	1	1177,15
USDT-20SM-8K	254/312	2 x (4 x 8) W	-	**LL58.1**	1	1127,70
USDT-20SM-8R	254/312	2 x (4 x 8) W	10-100 %	**LL59.1**	1	1342,70
USDT-20ML-8K	312/365	2 x (4 x 8) W	-	**LL60.1**	1	1127,70
USDT-20ML-8R	312/365	2 x (4 x 8) W	10-100 %	**LL61.1**	1	1342,70
BST-20G-D2R	470	LED-Matrix 224	10-100 %	**LL62.1**	1	1235,20

UV-tubes
- 8 watt
- Dimensions: L 300 x Ø 12 mm

Wavelength (nm)	Art. No.	Pack Qty.	€
254	**LL70.1**	1	20,55
312	**LL71.1**	1	31,10
365	**LL72.1**	1	21,45

Conversion screen for transilluminators
- For converting UV-radiation into visible light
- Colour value white-yellow
- Light emission: 390 to 650 nm
- Dimensions: W 24 x D 22 cm

Art. No.	Pack Qty.	€
LL63.1	1	170,95

Protection/filter shields for transilluminators
- Dimensions: W 32,5 x D 32,2 x H 2,5 cm
- 4 sides blocking edges

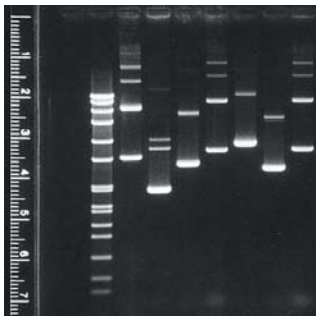
Type	Art. No.	Pack Qty.	€
UV-protection shield	**LY13.1**	1	71,85
Filter shield for blue light	**LL65.1**	1	79,05

④ **Analysis software Gelix One® 210, single license**
- Imports bmp, png, tif, jpg images
- Reduces background noise
- Manual band detection and processing
- Molecular weight determination
- Manual standard allocation
- Exports data table
- Reporting and printing function
- For operating systems: Win XP, Win 7

Art. No.	Pack Qty.	€
LL67.1	1	471,95

Thermal printer Mitsubishi P93E
- Thermosensitive print technology, 256 shades of grey
- Resolution 325 dpi
- Printing speed approx. 3 s/printout
- Standard paper:
  Thermal paper roll K61B, width 110 mm, approx. length 21 m
- High density paper:
  Thermal paper roll K65HM, width 110 mm, approx. length 21 m

Type	Art. No.	Pack Qty.	€
Printer	**LL68.1**	1	966,45
Paper K61B	**LL69.1**	4	38,70
Paper K65HM	**LL66.1**	4	85,50

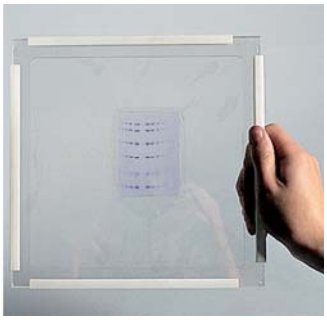


TIP

Fluorescent Rulers

For documentation of DNA fragments in agarose gels. Rulers fluoresce within the same range as EtBr-DNA complexes, are clearly visible on both types of transilluminators (300 nm and 350 nm) and are therefore an excellent aid when photographing agarose gels.
Rulers are only 7 mm wide and therefore fit into one lane of the gel.
The kit contains 4 rulers:
2 x 20 cm for long gels and 2 x 10 cm for mini gels.

Art. No.	Pack Qty. (Kit)	€
K162.1	1	49,40



Gel Drying Frames

For easy drying of gels between 2 cellophane papers. Enables drying of gels without heat or vacuum. The cellophane sheets (spare packs) may also be used for drying of gels on vacuum gel dryers (60 °C). Cellophane sheets (cell glass) are uncoated. Each set contains 2 frames, 2 backs, 8 clamps and 50 cellophane sheets.

MINI gel drying frames, size 14 x 14 cm (overall), 11,7 x 11,7 cm (cutout)

Type	Art. No.	Pack Qty.	€
MINI Set	**K420.1**	1 set	127,95
Spare clamps for frame MINI	**T826.1**	4 clamps	62,90
Spare pack of cellophane MINI	**K422.1**	50 sheets	21,00

MAXI gel drying frames, size 24 x 24 cm (overall), 22,5 x 22,5 cm (cutout)

Type	Art. No.	Pack Qty.	€
MAXI-Set	**K421.1**	1 set	192,45
Spare clamps for frame MAXI	**T827.1**	4 clamps	79,45
Spare pack of cellophane MAXI	**K423.1**	50 sheets	27,75

Vacuum Gel Dryer

- Heatable
- For fast and even gel drying
- For drying protein and sequencing gels
- Particularly even distribution of temperature over entire drying surface
- Precise adjustment of temperature of up to 80 °C
- Digital display of temperature
- Timer for heating element and vacuum pump (1-minute increments)
- Very robust construction
- All accessories are also available individually

Technical Specifications:

Model	MIDI	MAXI
Drying surface	44 x 34 cm	49 x 41 cm
Measurements (H x W x D)	85 x 550 x 435 mm	85 x 680 x 480 mm
Weight	8 kg	13 kg
Heating element	800 W	
Vacuum timer	0-10 h	
Temperature timer	0-10 h	
Digital display	40-80 °C	
Accuracy	±2 %	
Mains connection	220-240 V, 50-60 Hz	

IMPORTANT:
In order to achieve efficient drying, the vacuum pump should achieve a flow rate of 1000-6000 l/h (equals 1-6 m^3/h). We recommend use of the Membrane Vacuum Pump (Art. No. T789.1) and the Rotilabo® vacuum silicone tube (Art. No. 9746.1).

Type	Art. No.	Pack Qty.	€
MIDI vacuum-gel dryer incl. accessories	**T781.1**	1	2471,45
MAXI vacuum-gel dryer incl. accessories	**T782.1**	1	2632,70
Accessories:			
MIDI stainless steel screen	**T818.1**	1	188,15
MIDI Mylar-mat (PET)	**T820.1**	1	53,25
MIDI porous polyethylene mat	**T822.1**	1	145,15
MIDI silicone cover	**T824.1**	1	192,45
MAXI stainless steel screen	**T819.1**	1	256,95
MAXI Mylar-mat (PET)	**T821.1**	1	61,85
MAXI porous polyethylene mat	**T823.1**	1	192,45
MAXI silicone cover	**T825.1**	1	235,45

▶ Membrane Vacuum Pump (Art. No. T789.1) see page 341

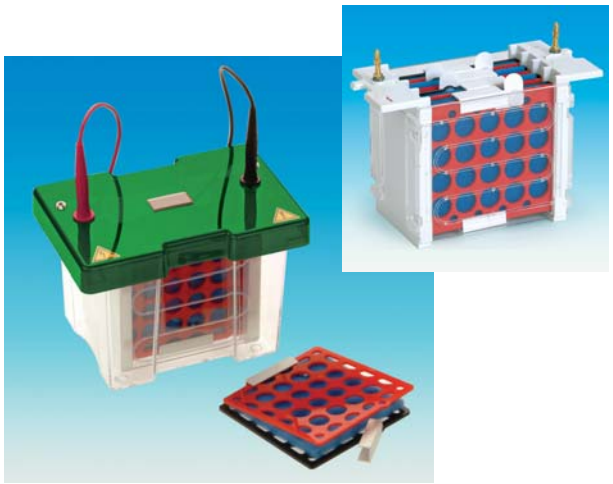
▶ Woulff´s bottle (Art. No. H955.1) and Accessory Kit see page 157

▶ Vacuum silicone tube (Art. No. 9746.1) see page 357

Blotting Units

Tank Blotting

- Electro tank blotting system for blotting of up to 4 gels in parallel
- For transferring proteins and nucleic acids
- Ideal for large and temperature-sensitive proteins
- The short distance between the electrodes guarantees an evenly high current strength across the blotting area and reduces the amount of heat generated
- Hinged cassettes – for most easy handling and rapid blot set up
- Open design, rigid cassettes for maximum current transfer and even blotting contact
- Colour coded cassettes and asymmetrical lid ensure correct blot set up and blotting direction
- **Modules fit the vertical electrophoresis system Rotiphorese® PROclamp**



Rotiphorese® PROclamp MINI Tank Blotting System

Maximum blotting area: 4 gels of up to 10 x 10 cm

- Can be used with all gels of 10 x 10 cm in maximum
- Compatible with the Rotiphorese® PROclamp MINI unit for vertical electrophoresis (Art. Nos. 3501.1-3503.1)

Delivery incl. 1 Rotiphorese® PROclamp MINI buffer tank, safety lid with cables and 1 PROclamp MINI blotting module for max. 4 gels, incl. 4 cassettes and 4 pairs of fibre blotting mats.

Art. No.	Pack Qty.	€
3513.1	1 unit	843,90

Rotiphorese® PROclamp MINI Tank Blotting Module

Blotting insert compatible with the Rotiphorese® PROclamp MINI system for vertical electrophoresis (Art. Nos. 3501.1-3503.1). Blotting module for max. 4 gels, incl. 4 cassettes and 4 pairs of fibre blotting mats.

Art. No.	Pack Qty.	€
3517.1	1 unit	493,45

Accessories:

PROclamp MINI compression cassette (no mats)	**3518.1**	1 unit	47,45
PROclamp MINI blotting mats	**3519.1**	4 pairs	39,80

Rotiphorese® PROclamp MAXI Tank Blotting System

Maximum Blotting area: 4 gels of up to 20 x 20 cm

- Can be used with all gels of 20 x 20 cm in maximum
- Compatible with the Rotiphorese® Unit PROclamp MAXI for vertical electrophoresis (Art. No. 5769.1)

Delivery incl. 1 Rotiphorese® PROclamp MAXI buffer tank, safety lid with cables, removable cooling coil, and 1 PROclamp MAXI blotting module for max. 4 gels, incl. 4 cassettes and 18 fibre blotting mats.

Art. No.	Pack Qty.	€
5814.1	1 unit	1300,75

Rotiphorese® PROclamp MAXI Tank Blotting Module

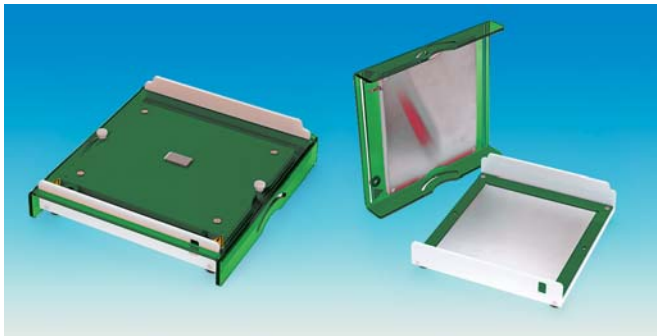
Blotting insert compatible with the Rotiphorese® PROclamp MAXI system for vertical elektrophoresis (Art. No. 5769.1). Blotting module for max. 4 gels, incl. 4 cassettes and 18 fibre blotting mats.

Art. No.	Pack Qty.	€
5816.1	1 unit	686,95

Accessories:

PROclamp MAXI compression cassette (no mats)	**5827.1**	1 unit	80,10
PROclamp MAXI blotting mats	**5829.1**	6 mats	75,20

Semi Dry Blotting



Semi Dry Blotters

For transfer of proteins and nucleic acids.

- Durable, corrosion-free electrodes
- Fast, steady transfer
- Minimum heat development
- Low buffer use

As the electrodes are made of high-grade steel (cathode, lid) and platinised titanium (anode, base), they will last indefinitely if used correctly. There is no build-up of deposits on the transfer surface, the buffers cannot penetrate into the electrodes. The extremely constant electric field over the entire transfer surface guarantees optimal results with all transfer membranes.

MINI Semi-dry-blotter, transfer surface 10 x 10 cm

Art. No.	Pack Qty.	€
T787.1	1	815,95

MAXI Semi-dry-blotter, transfer surface 20 x 20 cm

Art. No.	Pack Qty.	€
T788.1	1	1611,45

Semi Dry Blotters PROfessional

For transfer of proteins and nucleic acids.

- Fast transfer with uniform heat dispersion
- Superior blotting quality due to screw down lid and long life electrodes
- Minimum heat development and buffer use

Semi Dry Blotters PROfessional offer rapid transfer times for blotting of proteins, as well as nucleic acids, being compatible with gel thicknesses from 0,25 up to 10 mm.

Semi Dry Blotters PROfessional utilise a screw down lid, which secures the blot sandwich (optionally) and allows complete control of pressure ensuring even transfer. Uniform heat dispersion across the transfer surface ensures stable blotting parameters and no heat induced sample loss or transfer distortions. The electrodes (platinum coated anode, base, and stainless steel cathode, lid) will exhibit no corrosion when used with accurately prepared transfer buffers, and provide many years of trouble free use.

Unit dimensions (w x h x d): 16,5 x 15 x 5,5 cm (MINI) and 26 x 26 x 7 cm (MAXI)

Semi dry blotter PROfessional MINI, transfer surface 10 x 10 cm

Art. No.	Pack Qty.	€
KK58.1	1	740,70

Semi dry blotter PROfessional MAXI, transfer surface 20 x 20 cm

Art. No.	Pack Qty.	€
KK59.1	1	1746,90

Buffers recommended for Tank blotting

Acc. to **Tobwin** *et al.*, 1997: 25 mM Tris, 192 mM glycin, 20 % methanol. Optional: 0-0,1 % SDS.

Acc. to **Bjerrum und Schaefer-Nielsen**, 1986: 48 mM Tris, 39 mM glycin, 0-20 % methanol. Optional: 0-0.1 % SDS.

Acc. to **Dunn**, 1986: 10 mM $NaHCO_3$, 3 mM $NaCO_3$, 20 % methanol.

Buffers recommended for Semy Dry blotting

Discontinuous buffer system: Roti®-Blot 1 - for standard proteins or Roti®-Blot 2 - for hydrophobic proteins.

Continuous **Tris-glycin buffer** acc. to Bjerrum and Schaefer-Nielsen, 1986: 48 mM Tris, 39 mM glycin, 0-20 % methanol. Optional: 0,01-0,1 % (usually 0,0375 %) SDS.

Continuous **CAPS buffer** for blotting of basic proteins and prior to N-terminal sequencing: 0,22 % CAPS (pH 10,5-11,0), 10 % methanol.

Do not adjust pH of the buffer (exception: CAPS stock solution). Adding acid or base to the buffer will result in higher conductivity, leading to increased formation of heat as well as ions. Subsequently, this results in brown, "burnt" looking blotting paper and damage to the electrode plates.

Methanol prevents the gel from swelling during transfer (mandatory for gradient gels!) and improves the absorption of proteins to NC membranes. For transfer of native or big proteins, reduce or omit methanol.

SDS improves transfer efficiency of large proteins and protein binding to PVDF membranes, however increasing relative current, power and temperature. Don't use SDS for Semi-Dry blotting of small proteins to NC membranes. For tank blotting use 0,02 % SDS in minimum.

For **blotting of native proteins** use buffer acc to Bjerrum and Schaefer-Nielsen with 0,04 % SDS and 0-10 % methanol.

Rotilabo®-sealing roller

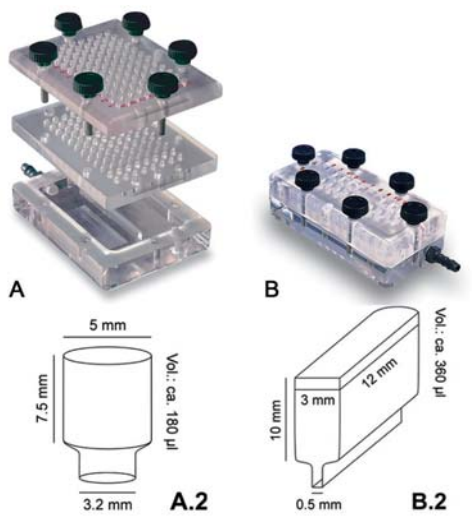
Frame made of **metal**, with **rubber** roller. For more effective sealing of microtest-, PCR- and Deep-Well-plates with sealing foil or sealing mats because the roller presses them on more evenly. Also usable for evenly smoothing out gel, transfer membrane and blotting-paper during blot-assembly. Roll width: 100 mm, ∅ roll: 30 mm.

Art. No.	Pack Qty.	€
HE23.1	1	37,85

Please note our **Technical Information Brochure** on the Internet next to the products:

Transfer Buffers

Tips and protocols



Dot Blotter and Slot Blotter

For rapid transfer of DNA, RNA and immunological antibody screening methods.

- Robust acrylic construction
- Precision lapped mating surfaces prevent sample leakage
- Steady transfer
- Very simple assembly
- Alpha-numeric sample identification

A permanent filter template is provided with each manifold to simplify the cutting of filters to exact size.

A vacuum of approximately 600 mm Hg (0.8 Bar, relative pressure) is required during sample application. We recommend LABOPORT®-Membrane vacuum pump (Art. No. Y371.1) with hose stems for hose inner ∅ 8 mm (Art. No. EL44.1) and the following hoses:
Rotilabo®-Vacuum-Silicone hose, inner ∅ 8 mm (Art. No. 9746.1) or
Rotilabo®-Vacuum-Rubber hose, inner ∅ 8 mm (Art. No. 0680.1).

Dot-blotter (A)

Max. sample capacity: 96 per transfer
Wells per row: 12
Wells per column: 8
Volume per well: approx. 180 µl (for shape of wells, see figure A.2)

Type	Art. No.	Pack Qty.	€
Dot-Blotter	**T790.1**	1	714,90

Slot-blotter (B)

Max. sample capacity: 48 per transfer
Wells per row: 16
Wells per column: 3
Volume per well: approx. 360 µl (for shape of wells, see figure B.2)

Type	Art. No.	Pack Qty.	€
Slot-Blotter	**T791.1**	1	762,20

Instructions for use
can be found on the Internet next to the product description.

Transfer Filter Membranes

Transfer Membranes Made of Nitrocellulose

Pure nitrocellulose membranes for reliable protein standard applications

- Free of cellulose acetate
- High absorption capacity
- Very low background
- 0,2 µm or 0,45 µm pore size
- Easy to block
- For all standard detection systems

Please note: Membranes made of nitrocellulose age and should be replaced anually!

Roti®-NC

Transfer membrane for protein analyses, colony- and plaque-lifts
Binding capacity for proteins: 125-200 µg/cm²
Made of 100 % nitrocellulose

High-quality transfer membrane for all detection systems - extremely suitable for all protein transfer and detection methods. The membrane stands out for its particularly high mechanical stability. The pure 100 % nitrocellulose quality membrane is easy to block and allows for background-free blots with perfect bands. The pore size of 0,2 µm is suitable for proteins and peptides of all sizes. The best retention rate is achieved when blotting proteins of up to 70 kDa. Its excellent protein binding capacity not only efficiently prevents the blot from going through during transfer, but also guarantees highly sensitive detection of even low protein amounts.

Membrane thickness: 0,15 ± 0,05 mm

Pore size: 0,2 µm

Applications: Optimised for proteins of ≤70 kDa. Western- and far-western-blot, colony- and plaque-lifting of nucleic acids and proteins, immunoblots, dot-blots.

Pore size	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,2 µm	30 x 400	**9302.1**	1 Roll	376,25
0,2 µm	30 x 300	**HP40.1**	1 Roll	276,30
0,2 µm	20 x 300	**HP41.1**	1 Roll	248,35
0,2 µm	10,2 x 13,3	**HP42.1**	10 Sheets	103,20
0,2 µm	20 x 20	**HP43.1**	10 Sheets	174,15
0,2 µm	∅ 8,2	**HP44.1**	50 Disks	152,65

Roti®-NC 0.45

Transfer membrane for protein analyses, Southern- und Northern-Blots

Binding capacity for proteins: ≥125 µg/cm²

Made of 100 % nitrocellulose

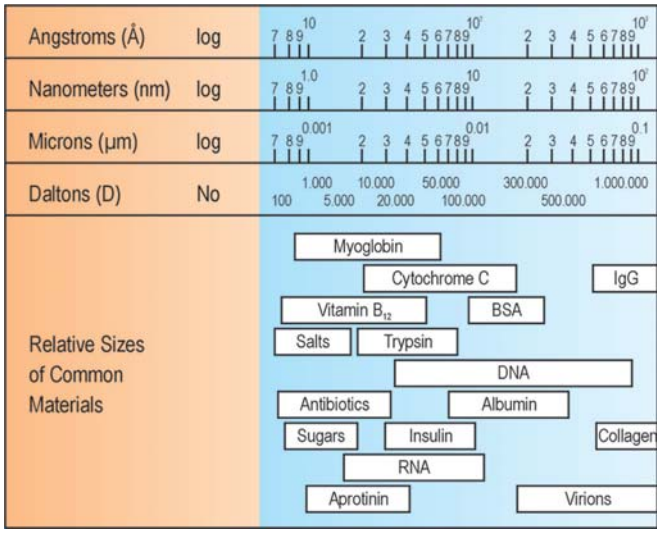
High-quality transfer membrane for all detection systems - extremely suitable for all protein transfer and detection methods. The Roti®-NC 0.45 membrane offers very good mechanical stability, standing out for its particularly smooth structure and even membrane thickness. The pure 100 % nitrocellulose quality membrane is easy to block and allows for background-free blots with perfect bands. The pore size of 0,45 µm is suitable for proteins and peptides of all sizes. The best retention rate is achieved when blotting proteins of ≥20 kDa. Having a high protein binding capacity, the membrane not only efficiently prevents protein loss during transfer, but also guarantees very sensitive detection of even low protein amounts.

Membrane thickness: 0,15 ± 0,01 mm

Pore size: 0,45 µm

Applications: Optimised for proteins ≥20 kDa. Western- and far-Western-blots, Southern- and Northern blots, colony- and plaque-lifting of nucleic acids and proteins, dot- and slot blots.

Pore size	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,45 µm	30 x 400	**9201.1**	1 Roll	376,25
0,45 µm	30 x 300	**9200.1**	1 Roll	279,50



Amersham Protran®

Transfer membrane for most nucleic acid and protein immobilising techniques

Binding capacity: 80-90 µg/cm² (0,2 µm) or 75-85 µg/cm² (0,45 µm)

Made from 100 % nitrocellulose.

Multiple use - ideal for most nucleic acid and protein immobilising techniques. Pure nitro-cellulose, free from cellulose acetate and triton. They have a high binding capacity and low background. The fibre-reinforced version allows extensive handling of membrane, easier cutting, repeated hybridisation and automated immobilising.

Applications: Southern, Northern, Western transfer, colony and plaque hybridisation, immunoblots, nucleic acid and protein dot-blot, slot-blot, electrophoretic transfer of proteins. (Nitrocellulose should only conditionally be used for electrophoretic transfer of nucleic acids, because of the high salt concentrations required for the transfer).

Membranes of 0,45 µm pore size allow for DNA transfer (minimum 300 bp) and protein transfer (minimum 20 kD).

Amersham Protran® 0.2 µm NC

Replaces Protran® BA 83 from Whatman®

Ideal for all protein and nucleic acid transfers.

Pore size 0.2 µm

Pore size	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,2 µm	20 x 20	**4684.1**	25 sheets	456,90
0,2 µm	10,2 x 13,3	**0028.1**	10 sheets	155,90
0,2 µm	30 x 400	**4685.1**	1 roll	410,65
0,2 µm	20 x 400	**0031.1**	1 roll	303,15

Amersham Protran® 0.45 µm NC

Replaces Protran® BA 85 from Whatman®

Ideal for all protein and nucleic acid transfers.

Pore size 0.45 µm

Pore size	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,45 µm	∅ 2,5	**4589.1**	100 disks	109,00
0,45 µm	∅ 8,2	**4592.1**	50 disks	216,00
0,45 µm	20 x 20	**4674.1**	25 sheets	456,90
0,45 µm	10,2 x 13,3	**0030.1**	10 sheets	127,95
0,45 µm	30 x 400	**4675.1**	1 roll	364,45
0,45 µm	20 x 400	**0041.1**	1 roll	277,35

Amersham Protran® supported 0.2 µm NC

Replaces Protran® BA-S 83 from Whatman®

Reinforced with a synthetic, inert material for improved elasticity and reaction to wetness. Suitable for protein and nucleic acid transfers which require a better resistance to wetness, such as repeated screening of the same blot.

Pore size 0.2 µm

Pore size	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,2 µm	20 x 20	**5945.1**	25 sheets	490,20
0,2 µm	30 x 400	**4756.1**	1 roll	450,45

Amersham Protran® supported 0.45 µm NC

Replaces Protran® BA-S 85 from Whatman®

Reinforced with a synthetic, inert material for improved elasticity and reaction to wetness. Suitable for protein and nucleic acid transfers which require a better resistance to wetness, such as repeated screening of the same blot.

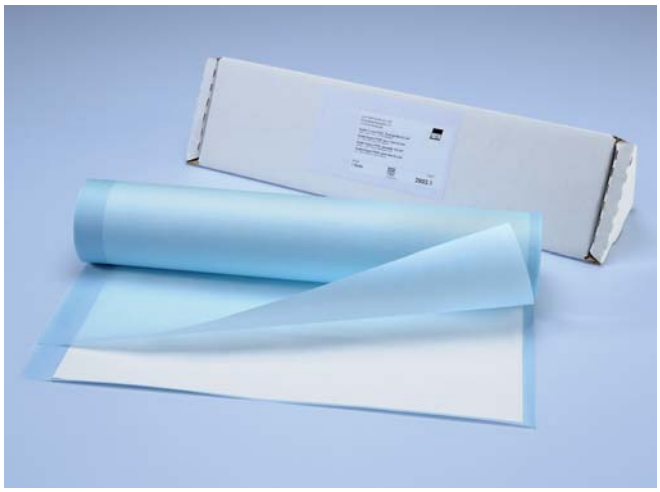
Pore size 0.45 µm

Pore size	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,45 µm	20 x 20	**5930.1**	25 sheets	499,90
0,45 µm	30 x 400	**4705.1**	1 roll	418,20

Transfer Membranes Made of PVDF

For optimal results with all protein transfer techniques

- Well suited for all protein blots
- Best signal-to-noise ratio
- Very robust
- 0,2 µm or 0,45 µm pore size
- Suitable for long-term exposition
- Suitable for all detection systems
- May be used for peptide sequencing



Roti®-Fluoro PVDF

Premium PVDF membrane from ROTH, suitable for direct fluorescence detection

Roti®-Fluoro PVDF is a white, microporous membrane made from naturally hydrophobic polyvinylidene fluoride. The membrane is of superior protein binding capacity, making it perfectly suited for all standard and special applications in the field of protein analysis.

Roti®-Fluoro PVDF is of 0.2 µm pore size and binds proteins tenaciously via hydrophobic interactions. It enables very sensitive protein detection by keeping the background very low, resulting in a good signal-to-noise ratio with all standard detection systems. The mechanically rigid membrane is of high tensile strength and tear-proof, and does not crack or curl during handling. Therefore, signals remain clear and distinct, and are undisturbed by false-positive signals caused by membranes crinkles.

Roti®-Fluoro PVDF has been **specially optimised for direct detection via fluorescence.**

Briefly immerse Roti®-Fluoro PVDF membrane in 100 % methanol prior to transfer until no more white areas are visible. This transfer membrane is then compatible with every aqueous blot system.

Applications: Western- and Far-Western-Blot, analysis of small peptides, Immunoblot, Dot-blot, binding assays, N-terminal sequencing

Detection systems: Fluorescence, radioactivity, colour

Pore size	Binding	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,2 µm	hydrophobic	13 x 20	**2831.1**	2 sheets	33,00
0,2 µm	hydrophobic	26 x 330	**2803.1**	1 roll	320,35

Roti®-PVDF 0.2

PVDF membrane with 0.2 µm pore size

Binding capacity for proteins: ≥125 µg/cm²

Roti®-PVDF 0.2 is a hydrophobic, microporous polyvinylidene membrane, free from adjuvants and detergents. It has been optimised for transfer and highly sensitive detection of proteins of up to 70 kDa, but is also perfectly suited for blotting of bigger proteins. The membrane shows superior protein binding parameters and stands out for its particularly low background. It may also be used very well after repeated stripping and harsh washing processes.

This mechanically rigid transfer membrane can be easily cut to the desired gel size and it remains flexible and tear-proof even when dry.

Briefly immerse Roti®-PVDF 0.2 membrane in 100 % methanol prior to transfer until no more white areas are visible. This transfer membrane is then compatible with every blotting system.

Membrane thickness: 140 ± 20 µm

Pore size: 0,2 µm

Due to production processes, the membrane shows two different sides - one smooth and one raw. For optimally distinct bands, please use the smooth side for protein binding.

Applications: Optimised for proteins of ≤70 kDa. Western-blot, Dot-blot, lipopolysaccharide- and amino acid analysis, bindings assays, N-terminal peptide sequencing.

Detection systems: Chemoluminescence, radioactivity, colour

Pore size	Binding	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,2 µm	hydrophobic	30 x 300	**8989.1**	1 Roll	338,65

Roti®-PVDF

PVDF membrane from ROTH.

Roti®-PVDF is a hydrophobic, microporous polyvinylidene membrane. It is free from adjuvants and detergents. This membrane enables efficient transfer of proteins over a wide molecular weight range.

This mechanically rigid transfer membrane can be easily cut to the desired gel size and it remains flexible and tear-proof even when dry.

Briefly immerse Roti®-PVDF membrane in 100 % methanol prior to transfer until no more white areas are visible. This transfer membrane is then compatible with every aqueous blot system.

Membrane thickness: 125 ± 25 µm

Pore size: 0.45 µm.

Applications: Optised for proteins ≥20 kDa. Western-blot, Dot-blot, lipopolysaccharide- and amino acid analysis, bindings assays, N-terminal peptide sequencing.

Detection systems: Chemoluminescence, radioactivity, colour

Not suitable for use with infrared densitometers (700 nm/800 nm).

Pore size	Binding	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,45 µm	hydrophobic	26,5 x 375	**T830.1**	1 roll	342,95

Immobilon-P

Original PVDF membrane from Millipore, for outstanding Western Blots.

The Immobilon-P membrane consists of microporous polyvinylidene fluoride (PVDF) with a high binding capacity for all biomolecules, particularly for proteins, independently of the transfer method or gel used. The efficient signal-to-noise ratio allows long exposure times and provides a high sensitivity during detection even when working with low protein amounts.

Membrane thickness 100-145 µm.

Pore size 0.45 µm.

Instructions for use:
Compared to nitrocellulose the Immobilon-P membrane is much easier to handle and much better to stain, and shows superior resistance to organic solvents. Furthermore, the open pore structure provides easy access of antibodies or other peptides used for detection to bound protein, and enables efficient removal of unbound molecules, efficiently reducing the background.

Immobilon-PVDF membrane is ideal when performing immunodetection. The rapid immunodetection method additionally provides a tool to reduce the time span needed for the process by several hours. During Western Blot, the superior qualities of the PVDF membrane not only supersede a blocking step, but also reduce number and time span of washing steps considerably without compromising on specificity or sensitivity.

Applications: Western-blot, Dot- and Slot-blot, amino acid analysis, binding assays, detection of glycoproteins, N-terminal peptide sequencing.

Detection systems: Radioactivity, chemoluminescence, colour

Pore size	Binding	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,45 µm	hydrophobic	26,5 x 375	**T831.1**	1 roll	428,95

Technical Parameters of ROTH-Transfer Membranes

Membrane	Material	Characteristics	Thickness (µm)	Binding capacity (µg/cm²)	Pore size (µm)	Immobilisation
Roti®-Fluoro PVDF	Polyvinyliden fluoride	hydrophobic	125±25	300	0,2	not necessary
Roti®-PVDF 0.2	Polyvinyliden fluoride	hydrophobic	140±20	≥125	0,2	not necessary
Roti®-PVDF	Polyvinyliden fluoride	hydrophobic	125±25	ca. 200	0,45	not necessary
Immobilon P	Polyvinyliden fluoride	hydrophobic	120±25	150-300	0,45	not necessary
Roti®-Nylon 0.2	Nylon 6,6	neutral/amphoteric	150±20	500	0,2/0,45	UV, baking
Roti®-Nylon plus	Nylon 6,6	hydrophilic, positively charged	160±20	500	0,45	not necessary, UV and baking possible
Roti®-NC	Nitrocellulose	electrostatic, hydrophobic	150±50	125-200	0,2	UV, baking (max. 80 °C)
Roti®-NC 0.45	Nitrocellulose	electrostatic, hydrophobic	150±10	≥125	0,45	UV, baking (max. 80 °C)
Amersham Protran®	Nitrocellulose	electrostatic, hydrophobic	Unknown	11-72	0,2/0,45	UV, baking (max. 80 °C)
Amersham Protran® supported	Nitrocellulose	electrostatic, hydrophobic	Unknown	86-110	0,2/0,45	UV, baking (max. 80 °C)

Transfer Membranes Made of Nylon

For perfect Southern- and Northern-Blots

- Very low background
- Suitable for all staining techniques
- Superior performance in nucleic acid absorption
- Available as roll, easy-to-use pre-cut membranes and disks – the perfect size for each application

Roti®-Nylon plus

Ideal for DNA/RNA-transfers.

Roti®-Nylon plus is a cationic, einforced nylon 6.6-membrane with 0.45 µm pore size and extremely high tensile strength. The positively charged membrane surface guarantees rapid and efficient binding of DNA and RNA. May be steam sterilised.

Also available in convenient pre-cut sheets of standard gel size.

Membrane thickness: 150 ± 20 µm

Instructions for use: Nucleic acids can be cross-linked to the membrane by baking (80 °C, 15 min) or through UV exposure. No cross-linking is required for alkaline transfer as the negatively charged DNA forms a very stable complex with the positively charged Roti®-Nylon membrane.

Applications: Southern- and Northern-blot, Dot-blot, DNA fingerprinting, macro- and microarrays

Detection systems: Radioactivity, chemoluminescence, fluorescence

Pore size	Load	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,45 µm	positive	30 x 300	**K058.1**	1 roll	295,65
0,45 µm	positive	10 x 10	**HP34.1**	10 sheets	134,40
0,45 µm	positive	10 x 15	**HP35.1**	10 sheets	160,20
0,45 µm	positive	20 x 20	**HP36.1**	10 sheets	241,90
0,45 µm	positive	22,2 x 22,2	**HP37.1**	10 sheets	274,15

Roti®-Nylon 0.2

Ideal for DNA/RNA transfer, particularly for colony- and plaque-lifting, as well as for all multiple rehybridisations.

Especially recommended for Northern-blots.

Roti®-Nylon 0.2 is a neutral, enhanced Nylon membrane. Based on the material it provides a superior tensile strength and is extremely resistant against alcohol, acetone, and many other organic solvents. In a buffer pH of 6,5 Roti®-Nylon 0.2 is uncharged and by means of the surface-standing amino- and carboxy-groups has superior hydrophilic qualities. The charge of the membrane (ζ-potential) may be altered through the pH of the buffer - the membrane is positively charged at pH <6,5 and negatively charged at pH >6,5.

Membrane of particulary high DNA-binding capacity. Available as roll (pore size 0,2 µm) for high-flexible usage, and as disks (pore size 0,45 µm) for colony- and plaque-lifting. May be steam sterilised.

Membrane thickness: 150 ± 20 µm

Instructions for use: Covalent bondage of transferred nucleic acids is achieved by cross linking (baking for 15 min at 80 °C or UV-cross linking for 20 sec at 260 nm). Due to the excellent signal-to-noise ratio of the membrane, very sensitive detection (single copy-gene detection) and multiple rehybridisation is possible without loosing sensitivity.

Applications: Southern- and Northern blot, Dot blot, DNA fingerprinting, ELISA, colony- and plaque lifting, macro- and microarrays

Detection systems: Radioactivity, chemoluminescence, fluorescence

Pore size	Load	Dimensions W x L (cm)	Art. No.	Pack Qty.	€
0,2 µm	neutral	30 x 300	**AE50.1**	1 roll	304,25
0,45 µm	neutral	∅ 8,2	**HP38.1**	50 disks	217,15
0,45 µm	neutral	∅ 13,2	**HP39.1**	50 disks	342,95

Size Comparison of Membrane Pores and Biomolecules

Biomolecules / Membrane Pores	Size (kD)
genomic DNA (human)	>11000000
E. coli	approx. 1500000
0.45 µm	approx. 5000
0.2 µm	approx. 2000
DNA 3 kb	approx. 1000
RNA 1 kb	approx. 300
Antibodies (IgG)	approx. 150
Proteins in the lab	approx. 10 - 300
BSA (Albumin)	69

Application of ROTH-Transfer Membranes

Biomolecules	Nylon plus	Nylon 0.2	PVDF 0.2	PVDF	Fluoro PVDF	NC	NC 0.45
DNA	+++	+	-	-	-	+	+
RNA	+	+++	-	-	-	+	+
Proteins	-	+	+++	+++	+++	+	+
Detection System							
Colour	+++	+++	+++	+++	+++	+++	+++
Radioactivity	+++	+++	+++	+++	+++	+++	+++
Chemoluminescence	+++	+++	+++	+++	-	+	+
Fluorescence	+++	+++	-	-	+++	-	-

+++: recommended +: suitable -: not

Blotting Papers

Rotilabo®-Blotting Papers

High quality paper for blotting, chromatography and filtration.
With good absorption qualities and smooth surface - for distinct bands and sample spots.

Thickness	Weight	Capillary rise (acc. to Klemm)
0,17 mm	81 g/m²	70-90 mm / 10 min
0,35 mm	192 g/m²	55-65 mm / 10 min
0,75 mm	320 g/m²	150-160 mm / 10 min
1,0 mm	400 g/m²	130-145 mm / 10 min
1,5 mm	570 g/m²	250-300 mm / 10 min

Thickness 0,17 mm

Dimensions	Art. No.	Pack Qty.	€
100 x 130 mm	**CL68.1**	100	42,50
200 x 200 mm	**CL69.1**	100	46,90
460 x 570 mm	**CL70.1**	100	188,15
580 x 600 mm	**CL71.1**	100	213,95

Thickness 0,35 mm

Dimensions	Art. No.	Pack Qty.	€
100 x 130 mm	**CL64.1**	100	28,50
200 x 200 mm	**CL65.1**	100	53,25
460 x 570 mm	**CL66.1**	100	207,50
580 x 600 mm	**CL67.1**	100	238,65

Thickness 0,75 mm NEW

Dimensions	Art. No.	Pack Qty.	€
100 x 130 mm	**0942.1**	100	43,90
200 x 200 mm	**0943.1**	100	93,35
460 x 570 mm	**0944.1**	100	408,50
580 x 600 mm	**0945.1**	100	424,65

Thickness 1,0 mm

Dimensions	Art. No.	Pack Qty.	€
150 x 150 mm	**CL72.1**	25	20,90
200 x 200 mm	**CL73.1**	25	33,50
580 x 600 mm	**CL74.1**	25	135,00

Thickness 1,5 mm

Dimensions	Art. No.	Pack Qty.	€
580 x 600 mm	**CL75.1**	25	182,50

Gel Blotting Papers

Original Whatman®-blotting paper for wicking, blots and drying. Made from specially selected cellulose. Superior for applications in electrophoresis and chromatography.

Thickness 0,34 mm (Whatman® 3MM), flow rate 130 mm/30 min.
Also available in convenient rolls!

Dimensions	Art. No.	Pack Qty.	€
102 x 133 mm	**0043.1**	100	18,95
200 x 200 mm	**0048.1**	100	69,00
460 x 570 mm	**4926.1**	100	254,00
580 x 680 mm	**4928.1**	100	385,00
10 cm x 100 m (roll)	**CL87.1**	1	140,00
15 cm x 100 m (roll)	**CL88.1**	1	193,00
19 cm x 100 m (roll)	**CL89.1**	1	240,00

Thickness 1,5 mm (extra thick, mass per unit area: 550 g/m²).
Particularly recommended for Semi-Dry-Blotting.

Dimensions	Art. No.	Pack Qty.	€
150 x 150 mm	**A125.1**	25	71,30
200 x 200 mm	**AE19.1**	25	89,50
580 x 580 mm	**A126.1**	25	363,00

Whatman® Chromatography Papers

Whatman® chromatography papers for blotting, chromatography and filtration. Made from specially selected cellulose.

Thickness 0,18 mm (Whatman® 2CHR), flow rate 115 mm/30 min.

Dimensions	Art. No.	Pack Qty.	€
460 x 570 mm	**CL36.1**	100	228,00

Thickness 0,18 mm (Whatman® 1CHR), flow rate 130 mm/30 min.
Also available in convenient rolls!

Dimensions	Art. No.	Pack Qty.	€
100 x 300 mm	**CL37.1**	100	42,80
200 x 200 mm	**CL38.1**	100	48,90
250 x 250 mm	**CL39.1**	100	76,40
460 x 570 mm	**CL40.1**	100	166,00
580 x 680 mm	**CL41.1**	100	259,00
20 mm x 100 m (roll)	**7606.1**	1	26,50
30 mm x 100 m (roll)	**CL42.1**	1	36,50
40 mm x 100 m (roll)	**CL43.1**	1	41,20
50 mm x 100 m (roll)	**7607.1**	1	49,50
100 mm x 100 m (roll)	**CL44.1**	1	93,40
150 mm x 100 m (roll)	**7608.1**	1	119,00

Thickness 0,34 mm (Whatman® 3CHR), flow rate 130 mm/30 min.
For general applications with medium/heavy solute loadings.

Dimensions	Art. No.	Pack Qty.	€
460 x 570 mm	**7604.1**	100	330,00

Thickness 0,92 mm (Whatman® 17CHR), flow rate 190 mm/30 min.
For the heaviest solute loadings.

Dimensions	Art. No.	Pack Qty.	€
70 x 90 mm	**7600.1**	100	64,00
25 x 220 mm	**7601.1**	100	65,40
460 x 570 mm	**7602.1**	25	247,00
460 x 570 mm	**7603.1**	100	919,00

Blotting Reagents

TRIS

≥99,9 %, Blotting-Grade

For Western blotting and immunodetection

Warning H315-H319-H335

Tris of very high purity, tested for absence of heavy metals and protease. Particularly suitable for Western blotting and protein immunodetection.

0188.1	250 g	plastic	33,25 €
0188.2	500 g	plastic	56,45 €
Original pack 6 x 500 g			53,63/500 g
0188.3	1 kg	plastic	91,95 €
Original pack 6 x 1 kg			87,35/1 kg
0188.4	2,5 kg	plastic	176,85 €

Glycine

≥99 %, Blotting-Grade

For Western blotting

Glycin of very high purity, tested for absence of heavy metals, ammonia, and hydrolysable substances. Well soluble and particularly suitable for Western blotting.

0079.1	250 g	plastic	23,15 €
0079.2	500 g	plastic	43,75 €
Original pack 6 x 500 g			41,56/500 g
0079.3	1 kg	plastic	69,35 €
Original pack 6 x 1 kg			65,88/1 kg
0079.4	2,5 kg	plastic	138,70 €

SDS

≥99,5 %, Blotting-Grade

For Western- and Southern blotting

Danger H228-H302+H332-H315-H318-H335-H412

SDS of particularly high purity, tested for absence of heavy metals and for UV-absorption qualities. Particularly suitable for Western- and Southern blotting, as well as for immunodetection and assays in molecular biology.

0183.1	100 g	plastic	44,00 €
0183.2	250 g	plastic	93,45 €
0183.3	500 g	plastic	152,15 €
Original pack 6 x 500 g			144,54/500 g

Methanol

≥99,9 %, Blotting-Grade

For Western blotting

Danger H225-H301+H311+H331-H370

Methanol of very high purity, tested for absence of heavy metals, sulphates, and organic impurities. Particularly suitable for Western blotting.

0082.1	500 ml	glass	21,00 €
0082.2	1 l	glass	27,65 €
Original pack 6 x 1 l			26,27/1 l
0082.3	2,5 l	glass	56,90 €
Original pack 4 x 2,5 l			54,06/2,5 l

Roti®-Stock 20x SSC

BioScience-Grade, ready-to-use, steam sterilised

For molecular biology.

SSC 20x ready-to-use solution

20fold stock solution sodium/sodiumcitrate. Undiluted or after dilution with sterile water to 10x, 6x, 1x or 0.1x SSC one receives a versatile buffer for blotting, hybridising or washing of Southern- or Dot/Slot-Blots of DNA as well as for *in situ* hybridisation. Undiluted buffer is also suitable for neutral transfer of RNA onto unloaded membranes (e.g. Roti®-Nylon 0.2, Art. No. AE50.1).
With original seal.

Composition:

3 M NaCl, 300 mM sodium citrate in deionised water, pH-value 7.0, steam sterilised

1054.1	1 l	glass	61,20 €
Original pack 6 x 1 l			58,14/1 l

Roti®-Stock 20 % SDS

BioScience-Grade, ready-to-use, 0,2 µm filtered

For molecular biology and electrophoresis.

SDS 20 % ready-to-use solution

Danger H318-H315-H335

20 % stock solution sodium dodecyl sulphate. Store the solution away from light in a dry place. SDS-stock solution and other solutions containing SDS should not be cooled below 24 °C otherwise the SDS may precipitate. The crystals can be easily resolubilised by heating them between 30 to 50 °C.
With original seal.

Composition:

20 % SDS in deionised water, 0,2 µm filtered

1057.1	1 l	glass	127,95 €
Original pack 6 x 1 l			121,55/1 l

Ponceau S (C.I. 27195)

for histology and electrophoresis

For reversible protein staining on membranes and for microscopy.

Scarlet red

Warning H315-H319-H335

Compatible with PVDF and NC membranes.
Staining of NC membranes: 0.2-2 % Ponceau S in 3 % trichloroacetic acid (Art. No. 8789.1) + 3 % sulphosalicylic acid (Art. No. 4119.1), incubate for 1-5 mins. at room temperature. Enhance contrast by incubation in water acidified by a few drops acetic acid.
Staining of PVDF membranes: 0.1-1 % Ponceau S in 10 % acetic acid (Art. No. 6755.1), incubate 1-5 mins. at room temperature. Ponceau S stained bands on PVDF only appear bright and distinct after drying (not recommended if Western blotting shall be performed).
Prior to Western blot analysis decolourise in PBS (Art. No. 1058.1) or TBS (Art. No. 1060) for 10-20 mins. at room temperature.

5938.2	10 g	glass	23,55 €
5938.1	25 g	glass	47,85 €

Amido black 10 B (C.I. 20470)

p.a.

For irreversible staining of proteins on membranes and for quantification of proteins in detergent containing solutions.

Naphthol blue black

Compatible with PVDF and NC membranes.
Staining solution: 0.5 % amido black in 50 % methanol (Art. No. 4627.1) / 10 % acetic acid (Art. No. 3738.1). Stain for 1-5 min at room temperature. Reduce background in 50 % methanol at room temperature.

9590.1	25 g	glass	34,95 €

Roti®-Blot 1

Discontinuous transfer buffer for semi dry blotting.

ready-to-use

Storage temp.: +20 °C

Warning H315-H319

- Optimised for semi dry blotting
- Superior blotting results for peptides and proteins of every size
- Special formulation with reduced acid formation - for optimal electrode protection

Roti®-Blot has a much better transfer efficiency than a tris-glycine buffer. Roti®-Blot also enables proteins >100 kD to be transferred completely by simply extending the transfer time.
A kit consists of:
Anode buffer Roti®-Blot A, 1 l (10 x concentration) (Art. No. L510)
Cathode buffer Roti®-Blot K, 1 l (10 x concentration) (Art. No. L511)

L509.1	1 Set	glass	94,50 €

Roti®-Blot A

anode buffer to Roti®-Blot 1, 10x conc.

ready-to-use

Storage temp.: +20 °C

Warning H315-H319

L510.1	1 l	glass	56,90 €
Original pack 6 x 1 l			54,06/1 l

Roti®-Blot K

cathode buffer to Roti®-Blot 1, 10x conc.

ready-to-use

Storage temp.: +20 °C

L511.1	1 l	glass	59,05 €
Original pack 6 x 1 l			56,10/1 l

In order to compare Roti®-Blot with conventional transfer buffers the following experiment was carried out

A) Protein markers, size 20-100 kD (①-⑤) were separated in polyacrylic amide gel (Rotiphorese®-Gel 30) and stained with a colloidal coomassie dye (Roti®-Blue).

B) Proteins of gels run in parallel were transferred onto a PVDF membrane (Roti®-PVDF). Once with a tris-glycine buffer and once with Roti®-Blot. The transfer was carried out with 1 mA/cm² for 60 min, the proteins on the membrane were subsequently coomassie stained. On the tris-glycine transfer the protein with the greatest molecular weight can hardly be detected on the membrane. The **Roti®-Blot** transfer, however, shows noticeable staining.

C) The gels were re-stained with colloidal coomassie dye (Roti®-Blue) after the transfer. In the tris-glycine transfer, the proteins ①-④ can be clearly seen in the gel. Only the smallest protein ⑤ was completely transferred onto Roti®-PVDF.
In the Roti®-Blot transfer, proteins ②-⑤ can no longer be detected in the gel and protein ① only partially.

Roti®-Blot 2

discontinuous transfer buffer for semi dry blotting of hydrophobic proteins

ready-to-use

Special formulation for hydrophobic proteins.

Warning H315-H319

- Optimised for semi dry blotting of hydrophobic proteins
- Superior blotting results for hydrophobic peptides and proteins of every size
- Special formulation with reduced acid formation - for optimal electrode protection

For hydrophobic proteins, Roti®-Blot 2 enhances the transfer efficiency by far, compared with a standard Tris/Glycine Blot. Particularly if **hydrophobic proteins or proteins with strongly hydrophobic domains, like membrane-associated proteins** (e.g. channel proteins, trans-membrane receptors), are to be blotted, Roti®-Blot 2 is highly recommended.
Also proteins >100 kDa can be transferred very efficiently using by extending the transfer time.
A kit consists of:
Anode buffer Roti®-Blot 2A, 1 l (10 x concentration) (Art. No. P037)
Cathode buffer Roti®-Blot 2K, 1 l (10 x concentration) (Art. No. P038)

P039.1	1 Set	glass	72,60 €

Roti®-Blot 2A

anode buffer to Roti®-Blot 2, 10x conc.

ready-to-use

Storage temp.: +20 °C

Warning H315-H319

P037.1	1 l	glass	47,00 €
Original pack 6 x 1 l			44,65/1 l

Roti®-Blot 2K

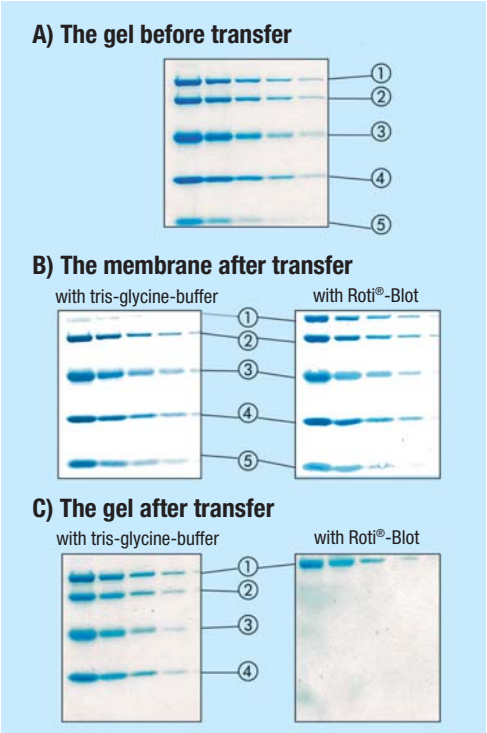
cathode buffer to Roti®-Blot 2, 10x conc.

ready-to-use

Storage temp.: +20 °C

Warning H319

P038.1	1 l	glass	47,00 €
Original pack 6 x 1 l			44,65/1 l



Molecular Biology

DNA-/RNA Isolation

Roti®-Phenols	1179
Extraction Systems	1180
FTA® Technology	1188
Density Gradient Centrifugation	1191
Ribonucleases	1192
Precipitation & Concentration	1192

DNA-/RNA Analysis

Quantitation of Nucleic Acids	1194
Plasmid DNA	1194
Blue-/White Selection	1195
Hybridisation	1196
General Reagents	1198
Decontamination & Purification	1202

Transfection & Cell Culture
see the new chapter <Cell Biology> NEW

PCR

Thermal Cyclers	1203
Nucleotides	1205
Reagents	1211
Ready-Made Primers	1211

DNA Synthesis
see chapter <Organic- & Bioorganic Chemicals>

DNA-/RNA Isolation

Roti®-Phenol

Roti®-Phenol solutions for DNA- and RNA extraction

- Reduce exposure to toxic chemicals
- Prepared from phenol of highest purity
- Packed under argon for maximum stability
- Successfully tried and tested in many research laboratories

ready-to-use

Mechanism

Phenol and chloroform lead to denaturation of proteins which accumulate in the interphase. Isoamyl alcohol prevents foaming and very efficiently inhibits RNAses.

For distinct phase separation, Roti®-Aqua-Phenol needs a pH of ≤4.0 in the aqueous upper phase. If needed, the upper phase may be acidified by adding 1-2 drops of 1 N HCl. Draw solution from lower phase. Do not shake before use!

Roti®-Phenol

for extraction of nucleic acids

Redistilled, in TE buffer equilibrated phenol, pH 7,5-8,0.

Storage temp.: +4 °C

Danger H314-H341-H373-H301+H311+H331

Phenol solutions for nucleic acid isolation must be buffered and adjusted to the correct pH-value prior to use. Roti®-Phenol is a redistilled, in TE-buffer equilibrated ready-to-use phenol. Roti®-Phenol has been successfully tried and tested for isolating nucleic acids in many research laboratories.
This quality product for molecular biology replaces the time consuming preparation of phenol and subsequently any exposure to toxic vapours.
Covered with buffer and packed under argon. Store in the dark!
Draw solution from lower phase. Do not shake before use!

0038.1	100 ml	glass	24,20 €
0038.2	250 ml	glass	48,30 €
0038.3	500 ml	glass	73,00 €

Roti®-Phenol/Chloroform/Isoamyl alcohol

for extraction of nucleic acids

Redistilled, in TE-buffer equilibrated phenol, chloroform and isoamyl alcohol at a ratio of 25:24:1, pH 7,5-8,0.

Storage temp.: +4 °C

Danger H301+H311-H330-H314-H341-H351-H361d-H372

Ready-to-use solution for extraction of nucleic acids.
Covered with buffer and packed under argon. Store in the dark!
Draw solution from lower phase. Do not shake before use!

A156.3	100 ml	glass	34,30 €
A156.1	250 ml	glass	69,35 €
A156.2	500 ml	glass	115,60 €

Roti®-C/I

for extraction of nucleic acids

Chloroform/Isoamyl alcohol at a ratio of 24:1.

Storage temp.: +20 °C

Danger H331-H372-H351-H361d-H302-H315-H319

Mixture of chloroform and isoamyl alcohol of highest purity.
Ideal for extraction of DNA/RNA in combination with Roti®-Phenol.

X984.3	100 ml	glass	10,65 €
X984.1	250 ml	glass	15,60 €
X984.2	500 ml	glass	24,20 €

Roti®-Aqua-Phenol

for RNA extraction

Redistilled, in water saturated phenol, pH 4,5-5.

Storage temp.: +4 °C

Danger H314-H341-H373-H301+H311+H331

Optimal for RNA-isolation and other procedures, requiring a low phenol pH-value. The low pH results in interphase-enrichment of the DNA, reducing DNA-contamination in the RNA-eluate.
Also ideal for self-adjustment of pH-value. If required, buffer solution (e.g. TE buffer) may be added directly into the bottle, as Roti®-Aqua-Phenol comes in the following bottle sizes:
A980.2 - 100 ml in a 250 ml bottle
A980.1 - 250 ml in a 500 ml bottle
A980.3 - 500 ml in a 1 l bottle

Packed under argon for protection. Store in the dark!
Draw solution from lower phase. Do not shake before use!

A980.2	100 ml	glass	20,35 €
A980.1	250 ml	glass	40,35 €
A980.3	500 ml	glass	60,10 €

Roti®-Aqua-P/C/I

for RNA extraction

Redistilled, in water saturated phenol, chloroform and isoamyl alcohol at a ratio of 25:24:1, pH 4,5-5.

Storage temp.: +4 °C

Danger H301+H311-H330-H314-H341-H351-H361d-H372

Optimal for RNA-isolation and other procedures where a low phenol pH-value is desired. The low pH results in interphase-enrichment of the DNA, reducing DNA-contamination in the RNA-eluate.
Packed under argon for protection. Store in the dark!
Draw solution from lower phase. Do not shake before use!

X985.3	100 ml	glass	26,35 €
X985.1	250 ml	glass	45,70 €
X985.2	500 ml	glass	69,80 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Phenolic DNA Isolation

Background and protocol

Safety data sheets

can be found on the Internet next to the product description.

Extraction Systems

DNAse-free
RNAse-free

DNA-free

ready-to-use

Roti®-MagBeads DNA

20 mg/ml, ready-to-use, DNAse- and DNA-free, for molecular biology

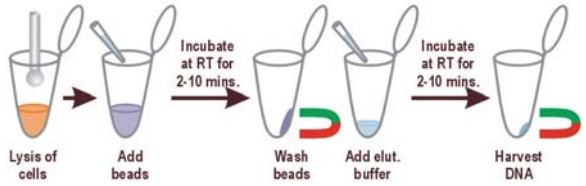
Magnetic silica gel beads for isolation of genomic DNA.
Storage temp.: +4 °C

- For isolation of highly pure genomic DNA from blood, cell and tissue extracts and bacteria suspensions
- High DNA binding capacity for exceptional recovery rates
- High magnetic strength guarantees very efficient collection of the beads
- Suitable for manual and automated preparations

Roti®-MagBeads DNA is a matrix for simple and efficient isolation of DNA from solutions like blood, cell and tissue extracts and bacteria suspensions. Due to the high binding capacity, a very high magnetic strength, and fast bead collection, Roti®-MagBead DNA is particularly suited for manual and automated preparations.

The magnetic properties enable easy and quick washing steps, allowing one preparation to take place in approx. 20 mins. The small bead size of 1.2 µm in average provides a large surface with excellent coupling capacities. Handling is easy and identical to standardized protocols for beads of other suppliers, providing easy establishment of the assays. The high DNA binding capacity guarantees high recovery rates from a variety of buffer systems as well as directly from cell lysates. Isolated DNA can be easily eluted in small volumes.

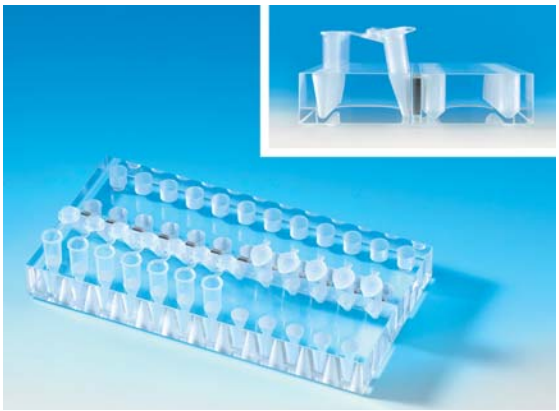
The Matrix of Roti®-MagBeads DNA consists of uniform, superparamagnetic silica beads with a deliberately designed uneven surface optimised for DNA binding. In those beads, nanometer-sized particles of magnetic iron(II/III)oxide are embedded in silicium oxide, resulting in high magnetic mobility with low aggregation potential. The surface is made from pure silicium oxide and allows application in pH values between 3 and 13, as well as at 95 °C in maximum.
Well suited for automated applications.



Type analysis:

Concentration. ..... 20 ±1 mg/ml
Size distribution. ..... 0,7-2,5 µm
Mean particle sizing. ..... 1,2 ±0,1µm
Bead number. ..... 0,6-2 x 10^{10} Beads/ml
Magnetic iron content. ..... ≥50 %
DNA binding capacity (whole blood). ..... ~2 µg/100 µg Beads
Suspension in ultrapure water (*aqua ad injectabila*) with 0,05 % sodium azide.

2787.2	50 µl	plastic	13,15 €
2787.1	2 ml	plastic	120,95 €



Roti®-Mag Tube-Separator

For collection of magnetic beads in reaction tubes.

The Roti®-Mag Tube Separator has been designed for fast and efficient collection of Roti®-Mag Beads magnetic particles during elution of biological molecules in reaction tubes. The separator has been equipped with 12 particularly strong permanent magnets, providing magnetic force for separation in 1 to 24 tubes in parallel. It, therefore, enables for single tube preparation as well as high-throughput applications.

Short separation times (under 2 mins.) are allowed by the close proximity of magnets and tubes. The use of transparent acrylic glass ensures permanent visual control of the separation process without the need to remove the tubes from the block. 24 non-magnetic sockets for reaction tubes have been included to provide a whole working station for both, magnetic separation and resuspension.
Usable with 2 x 12 tubes of 1.5 and 2.0 ml volumes.

Usable for	Art. No.	Pack Qty.	€
2 x 12 tubes á 1.5 and 2 ml	**2807.1**	1	392,40

Roti®-Mag 96well-Separator

For collection of magnetic beads in 96well plates.

The Roti®-Mag Tube Separator has been designed for fast and efficient high-throughput collection of Roti®-Mag Beads magnetic particles during elution of biological molecules in 96well plates. Each separator is made from acrylic glass and is equipped with 24 particularly strong permanent magnets of 7.5 mm diameter.

The close proximity of the magnets strongly pulls the beads of four adjacent wells, collecting the beads very efficiently and in short time (under 2 mins.) and, hence, enabling high speed and quantitative buffer exchange. For resuspension of the beads, plates are removed from the magnet stand.
Usable with 96well plates of 300 µl up to 2 ml well volume.

Usable for	Art. No.	Pack Qty.	€
96well plates (300 µl - 2 ml)	**2808.1**	1	392,40

Roti®-Prep Plasmid MINI

for molecular biology

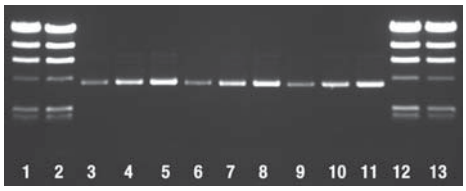
For fast and easy isolation of plasmid and cosmid DNA from recombinant bacteria.

Storage temp.: +20 °C

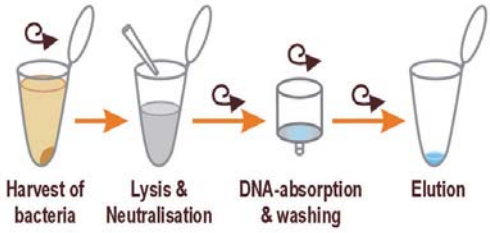
Danger H290-H302+H312+H332-H314-H334-H412-EUH032

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- For all plasmids and cosmids of up to 10 kb length
- Up to 20 µg highly pure DNA, directly applicable to restriction digest, sequencing etc.
- 12 preparations in approx. 30 minutes

Designed for the isolation of high-purity plasmid or cosmid DNA from bacteria, Roti®-Prep Plasmid MINI Kit is based on the well-known "mini-prep" method, an alkaline lysis of bacteria followed by purification of the DNA from the cell debris, RNA and genomic DNA. The kit uses the easy-to-handle spin column technique, eliminating the need for time-consuming techniques like phenol-chloroform extraction and alcohol precipitation. The highly efficient and DNA-specific silica-gel membrane DNA absorption provides reliably high amounts of DNA, independently from vectors or bacterial strains used. Up to 20 µg DNA can be isolated from up to 10 ml bacterial culture (5 preparations per column). DNA is free of RNA or protein contamination and can be directly applied to all standard down-stream applications like restriction digest, sequencing, *in vitro* transcription, transfection etc.



The **figure** depicts DNA of a 4 kb plasmid isolated by three equivalent kits (Competitor "I", Roti®-Prep Plasmid MINI and competitor "II")
Lane 1, 2, 12, 13: Lambda *Hind* III Marker 500 and 750 ng, respectively
Lane 3, 4, 5: Kit competitor "I", 3 / 6 / 9 µl (1:10 dilution)
Lane 6, 7, 8: Roti®-Prep Plasmid MINI, 3 / 6 / 9 µl (1:10 dilution)
Lane 9, 10, 11: Kit competitor "II", 3 / 6 / 9 µl (1:10 dilution)



The kit contains:
RNAse A (Art. No. 3953), Resuspension buffer (Art. No. 3968), Lysis buffer (Art. No. 3970), Neutralisation buffer (Art. No. 3971), Washing buffer (Art. No. 3975), Elution buffer (Art. No. 3978), Column activation buffer (Art. No. 3980), Mini spin columns (5/50/250), 2 ml Collection tubes (5/50/250), detailed instructions-for-use. Excluding the columns, contents of this Kit may not be bought separately.

HP29.3	5 prep.	16,70 €
HP29.1	50 prep.	64,40 €
HP29.2	250 prep.	249,95 €

Roti®-Prep Plasmid MINI-XL

for molecular biology

For easy isolation of plasmids from up to 15 ml bacterial culture.

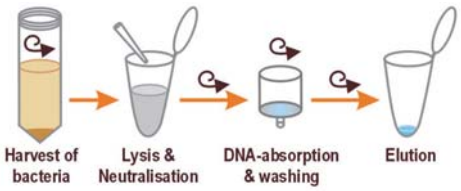
Storage temp.: +20 °C

Danger H225-H290-H302-H315-H318-H336

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- Preparation from 5-15 ml bacteria culture
- Preparation within approx. 20 minutes
- Yield 60-70 µg (on average)

MIDI preps in MINI size-fomat

Roti®-Prep Plasmid MINI-XL is a further development of the classical Plasmid Mini extraction kit, which is based on an alkaline lysis and binding of the plasmid to the spin filter.
The binding capacity of the spin filter has been, compared to usual plasmid mini kits, considerably increased (approx. 80 µg plasmid DNA) and allows now a plasmid extraction from 5-15 ml bacteria culture. Since filter dimensions correspond to the usual miniprep spin filters, its application differs only slightly from other plasmid mini kits. Most significant difference is the afore done convenient lysis in a 15 ml tube.
The elution resulting in highly concentrated pure DNA in 100 µl, takes then place in a 1.5 ml tube, like in standard mini kits. Isolated DNA is free of RNA or protein contamination and can be directly applied to all standard down-stream applications like restriction digest, sequencing, *in vitro* transcription, transfection etc.



The kit contains:
Resuspension Buffer RB, Lysis Buffer LS, Neutralisation Buffer NB, Washing Buffer PA, Washing Solution PB, Elution Buffer XEB, spin columns, collection tubes, elution tubes, detailed instructions-for-use. Contents of this Kit may not be bought separately.
Please order ethanol 96-99.8 % (p.a., Art. No. 9065) separately.

8546.1	10 prep.	23,55 €
8546.2	50 prep.	83,75 €
8546.3	250 prep.	321,45 €

Roti®-Prep Plasmid MINI Columns

DNA-extraction columns for the Roti®-Prep Plasmid Kit

Replacement columns and 2 ml tubes for additional DNA-extractions using the buffers of the Roti®-Prep Plasmid MINI Kit (Art. Nr. HP29).

Not suited for Roti®-Prep Plasmid MINI-XL (Art. Nr. 8546).

Art. No.	Pack Qty.	€
2929.2	50	40,35

Roti®-Prep Genomic DNA MINI

for molecular biology

For isolation of genomic DNA from tissues, rodent tails, FFPE tissues, buccal swabs, cell cultures.

Storage temp.: +20 °C

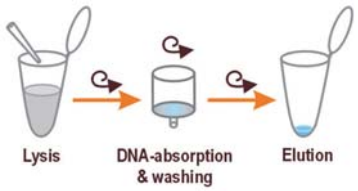
Danger H225-H315-H317-H318-H334-H335-H336-H411

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- Preparation in approx. 15 minutes (excluding lysis)
- Yield up to 65 µg gDNA, depending on source material

Roti®-Prep Genomic DNA MINI has been developed for the isolation of genomic DNA from various sources.
The isolation is carried out through the proven and reliable spin column technique, which is very easy to handle and needs only few steps.

In addition to the especially on proteinase K adapted lysis buffer, the filtration spin column has been optimised, permitting particularly high extraction rates. Extraction from up to 40 mg tissue, therefore, allows a yield of up to 65 µg DNA. The thereby extracted DNA is free of RNA and proteins, and can directly be stored or used for downstream applications.

Suitable source material:
- Tissue (up to 40 mg)
- Rodent tails (0,5-1 cm)
- FFPE tissue (formalin-fixed, paraffin-embedded)
- Buccal swabs
- Cell culture (up to $5x10^6$ cells)



The kit contains:
Lysis Buffer LSA, Binding Buffer BSN, Proteinase K, Washing Buffer WST, Elution Buffer EB, spin columns, collection tubes, elution tubes, detailed instructions-for-use. Contents of this Kit may not be bought separately.
Please order ethanol 99,8 % (p.a., Art. No. 9065), RNase A (Art. No. 7156, not for FFPE tissue), and for FFPE tissue xylole (Art. No. 4436) or octane separately.

8472.1	10 prep.	35,40 €
8472.2	50 prep.	134,30 €
8472.3	250 prep.	525,70 €

Roti®-Prep Blood Genomic DNA MINI

for molecular biology

For isolation of DNA from whole blood

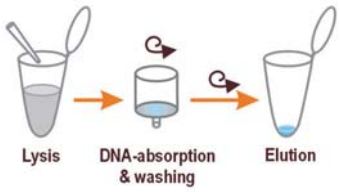
Storage temp.: +20 °C

Danger H225-H317-H319-H315-H334-H335-H336-H400

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- Preparation in approx. 25 minutes
- Yield up to 30 µg gDNA

Roti®-Prep Blood Genomic DNA MINI has been specially designed for the isolation of high purity genomic DNA from blood samples.
The isolation is carried out through the proven and reliable spin column technique, which is very easy to handle and needs only few steps.

The Roti®-Prep Blood Genomic DNA MINI kit has been adapted to gain high purity DNA from fresh or frozen blood (EDTA or citrate stabilised) or whole blood, respectively. In order to get optimal results, two protocols, depending on sample amount, are provided. Furthermore, the properties of the binding buffer have been optimised to reach highest binding capacity with blood samples, permitting a yield of up to 30 µg gDNA out of 400 µl blood. Utilisation is uncomplicated and fast to achieve (approx. 25 minutes, lysis included), and offers best conditions for following downstream applications. Isolated gDNA is free of EDTA, RNA, or proteins, and may directly be applied to all standard downstream applications like, for instance, restriction digest, PCR etc.



The kit contains:
Lysis Buffer LSN, Binding Buffer BR, Proteinase K, Washing Solution WSO, Washing Buffer WSH, Elution Buffer EB, spin columns, collection tubes, elution tubes, detailed instructions-for-use. Contents of this Kit may not be bought separately.
Please order ethanol 99.8 % (p.a., Art. No. 9065) and RNase A (optional, Art. No. 7156) separately.

8620.1	10 prep.	32,15 €
8620.2	50 prep.	120,95 €
8620.3	250 prep.	478,40 €

Instructions for use
can be found on the Internet next to the product description.

Roti®-Prep RNA MINI

for molecular biology

For RNA isolation from eukaryotic cells, tissues, bacteria, biopsies.
Storage temp.: +20 °C

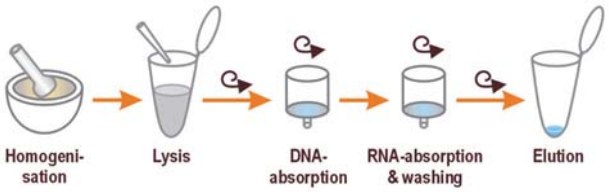
Warning H302-H312-H412-EUH032

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- Use of DNase not necessary
- Preparation in approx. 15 to 40 minutes
- Yields up to 100 µg RNA, depending on source material
- Elution in 30-80 µl

Roti®-Prep RNA MINI has been developed for the isolation of total RNA from various sources.
The isolation is carried out through the proven and reliable spin column technique, which is very easy to handle and needs only few steps.

One of the critical points in RNA extraction is the presence of endogenous RNases, which can lead to high losses very early in extraction of the (in comparison to DNA) very sensitive RNA. Therefores the lysis buffer has been specially optimised to inactivate RNases, with highest efficiency, already at the early stage of the extraction.
Furthermore, in order to get a high-pure total RNA, one particularly for this purpose developed prefilter is used. This filter exclusively serves for binding and targeted removal of DNA impurities, and is discarded after use with the bound DNA. Thus, it is possible to omit application of DNase I.
Total RNA is then obtained from the DNA-free eluate through a simple "Binding-Washing-Elution" process.
In each preparation, up to 100 µg highly pure total RNA may be isolated.
One preparation takes (excluding lysis) approx. 10 mins.
Isolated RNA is free of DNA and enzyme inhibitors, and may directly be applied to RT-PCR or other downstream applications.

Suitable source material:
- Tissues (up to 20 mg)
- Eukaryotic cells (up to $5x10^6$)
- Bacteria Gram + and Gram - (up to $1x10^9$)
- Biopsies



The kit contains:
Lysis Buffer LSR, Washing Buffer WSA, Washing Solution WSL, RNase-free Water, spin filters (blue), spin columns (violet), collection tubes, elution tubes, detailed instructions-for-use. Contents of this Kit may not be bought separately.
Please order ethanol 99.8 % (p.a., Art. No. 9065) and 70 % (p.a., Art. No. T868) separately.

8485.1	10 prep.	52,15 €
8485.2	50 prep.	198,90 €
8485.3	250 prep.	783,70 €

ready-to-use

Roti®-Quick kit

for molecular biology

For RNA-isolation from cells and tissues.
Storage temp.: +4 °C

Danger
H225-H314-H301+H311-H330-H341-H351-H373-H336-H412-EUH032

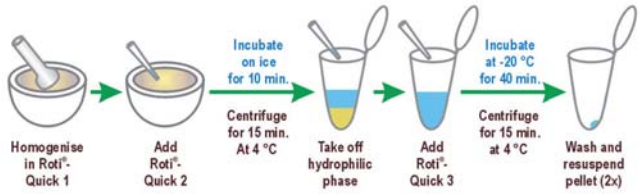
- Easy, most versatile application
- High recovery rate of intact, very pure total RNA
- Column-free two-step isolation
- Applicable on nearly any tissue type

Column-free, ultra-flexible isolation system designed for reliable isolation of total RNA from almost any tissue. The Roti®-Quick Kit is suitable for use with cell culture material, biopsies, high-fat or high-protein tissue, blood (Üçeyler *et al. Neurology* (2007) 69:42-9), solid plant material, mitochondria (Backert *et al. Plant Molecular Biology* (1997) 33:1037-50), mycoplasms (Weiner *et al. Nucleic Acids Res.* (2000) 28:4488-96) and many more. The kit can be used for both fresh tissue and frozen material.

The Roti®-Quick Kit is based on the GITC isolation method by Chomczynski and Sacchi (Chomczynski and Sacchi. (1987) *Anal. Biochem.* 162:156) and includes three optimised ready-to-use solutions that were developed by molecular biologists and have proven effective for many years.

After the tissue has been homogenised, the RNA is purified in a single step and isolated by precipitation. Each isolation takes approximately 2.5 hours, and multiple isolations can easily be performed simultaneously. The incubation and centrifuging steps take about 2 hours. Preparation as given in the instruction-for-use is optimised for RNA isolation from approx. 0.2 g of tissue or cell material. The amount of material isolated per batch may easily be up- or downscaled to larger or smaller amounts of tissue.

The isolated total RNA is highly pure and may be used directly for all common down-stream applications, such as RT-PCR, Northern blotting and reverse transcription. Detailed instructions-for-use are enclosed with each kit.



This Kit contains:
Roti®-Quick Kit 1 (Art. No. A976), Roti®-Quick Kit 2 (Art. No. A977), and Roti®-Quick Kit 3 (Art. No. A978). Contents of this Kit may not be bought separately.

The Roti®-Quick Kit is sufficient for 20 isolations from 0,2 g of tissue.

A979.1	1 kit	cardboard	83,35 €

Roti®-Prep Viral RNA/DNA MINI

for molecular biology

For isolation of viral DNA and RNA

Storage temp.: +20 °C

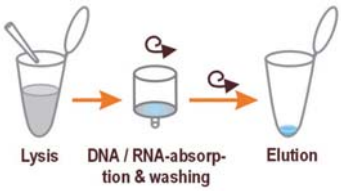
Danger H225-H315-H317-H319-H334-H335-H336-H411-EUH032

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- Preparation within approx. 25 minutes
- Elution in 60 µl

Roti®-Prep Viral RNA/DNA MINI has been developed for the isolation of viral DNA and RNA from various kinds of source material.
The isolation is carried out via the proven and reliable spin column technique, which is very easy to handle and needs only few steps.

The kit enables the simultaneous extraction of viral ssDNA, dsDNA and ssRNA. The purification happens by using a carrier RNA, which engenders a higher binding of the nucleic acid (resp. its complex with the carrier RNA) on the spin filter and thus a higher recovery rate.
Furthermore, in order to achieve a maximum of nucleic acid purity for each source material, 5 specifically optimised protocols are provided.
Thus, within approx. 25 mins high-pure viral nucleic acid is eluted, free from inhibitors. This nucleic acid may directly be applied to further downstream applications, like RT-PCR, PCR, *packaging* etc.

Suitable source material:
- Tissues and biopsies (up to 20 mg)
- Cell culture supernatants, serum, plasma, cell-free body fluids (up to 400 µl)
- Swabs



The kit contains:
Lysis Buffer LSV, Binding Buffer BSN, Carrier CS, RNase-free Water, Proteinase K, Washing Buffer WSA, Washing Solution WSL, spin columns, collection tubes, elution tubes, detailed instructions-for-use.
Contents of this Kit may not be bought separately.
Please order ethanol 99.8 % (p.a., Art.-No. 9065) separately.

8547.1	50 prep.	198,90 €

Roti®-Prep PCR Purification

for molecular biology

For concentration and purification of PCR products.

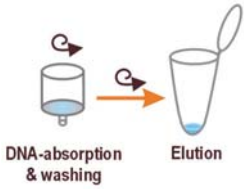
Storage temp.: +20 °C

Danger H225-H319-H336

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- Purification in approx. 3 minutes
- For fragment length of 60 bp-30 kb
- Recovery rate up to 95 %
- Elution in 10 µl

Very fast purification and/or concentration of PCR products, between 60 bp and 30 kb length, through simple but effective spin column technique.

The high performance membrane used for the Roti®-Prep PCR Purification columns, allows purification or concentration of PCR products within approx. 3 minutes. The PCR product to be extracted (50 µl in maximum) is first mixed with binding buffer, which can be done separately or directly in the spin filter column. The nucleic acid is then eluted by centrifugation, without any additional washing step, in a minimum of 10 µl of water or buffer. Isolated DNA is free of residual nucleotides or PCR additives, and may directly be applied to all standard downstream applications like cloning or sequencing.



The kit contains:
Binding Buffer, Elution Buffer EB, spin columns, collection tubes, elution tubes, detailed instructions-for-use. Contents of this Kit may not be bought separately.

8503.1	10 prep.	18,85 €
8503.2	50 prep.	70,45 €
8503.3	250 prep.	273,60 €

Roti®-Prep Gel Extraction

for molecular biology

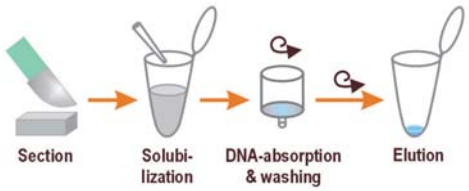
For DNA extraction from agarose gels.
Storage temp.: +20 °C

Warning H290-H302+H312+H332-H315-H319-H412-EUH032

- Preparation by well-known mini spin-column system
- Fast, easy and efficient
- Extraction within approx. 20 minutes
- For fragment length of 100 bp-30 kb
- Recovery rate up to 90 %

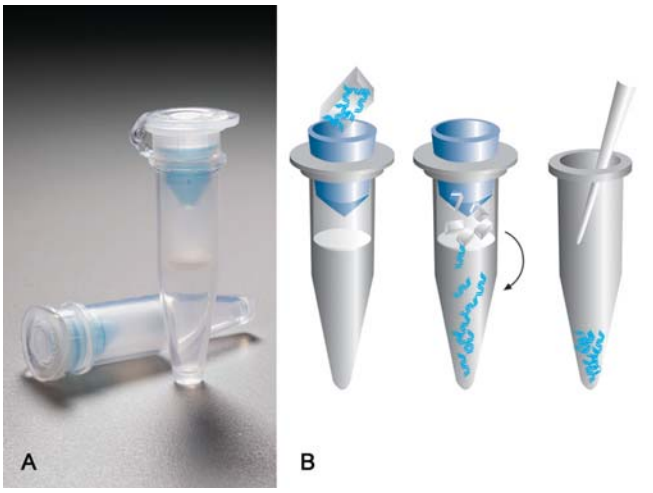
DNA extraction from agarose gels through incubation and subsequent spin column process.The gel slice to be extracted (up to 300 mg) is first solubilised in a lysis buffer through a simple 10 minute incubation.
After that, DNA is elutied via convenient spin filter centrifugation in approx. 10 mins. A specially developed Binding Enhancer is admixed in order to enhance binding efficiency of the DNA to the filter, and thus yield and purity of the isolated DNA.
Furthermore, the Roti®-Prep Gel Extraction kit allows, if needed, to reduce elution volume down to 10 µl in order to obtain particularly highly concentrated DNA.

For gel runs both, TAE and TBE may be used. The kit is compatible with all standard gel loading buffers and gel staining reagents, even non-toxic ethidium bromide replacements like, for instance, Roti®-GelStain.
Isolated DNA is free of residual agarose, PCR- and ligase inhibitors, and cytotoxic reagents, and can directly be applied to all standard downstream applications like cloning, PCR, transformation and transfection.



The kit contains:
Binding Enhancer, Gel Solubizer, Washing Solution WSL, Elution Buffer EB, spin columns, collection tubes, elution tubes, detailed instructions-for-use. Contents of this Kit may not be bought separately.
Please order ethanol 96-99.8 % (p.a., Art. No. 9065) separately.

8510.1	10 prep.	18,85 €
8510.2	50 prep.	70,45 €
8510.3	250 prep.	273,60 €



Ultrafree®-DA gel extraction kit

for molecular biology

For easy and speedy extraction of DNA fragments from agarose or polyacryl amide gels. Made by MILLIPORE - the expert in filtration.

- Extraction in 10 minutes
- High recovery of fully intact DNA
- Highly efficient with all gel running buffers
- Easy application - even during student courses
- Convenient handling even of large sample numbers

Recovery of functionally intact DNA in one spin-step. The agarose slice is placed directly into the pre-assembled device and centrifuged for 10 minutes (fig. B). Melting or enzymatic digestion is not required. The agarose slice is nebulised and the DNA is filtered and purified during centrifugation. The eluate may simply be stored away in the extraction tube or collected from the tube in order to apply the DNA to subsequent analyses.

Application:
Compatible with all agaroses with standard gelling temperature (not compatible with Low-Melting agarose). Suitable for fragments of 100 bp up to 10,000 bp. Ideal also for labelled DNA, e.g. after fluorescence- or radioactive labelling. Reliable recovery rates for fragments of 100 bp up to 2,000 bp. The gel extraction units may be used with all standard gel running buffers. Following elution from gels run with Rotiphorese® 10 x TAE buffer *light* (Art. No. 0122.1), the DNA may be applied **directly** to cloning or sequencing.

One extraction unit consists of a 1,5 ml standard reaction tube and a removable nebuliser/filter unit.
Compatible with all standard Mini-centrifuges.

Art. No.	Pack Qty.	€
AE86.1	1 kit (50 extraction units)	134,40

Instructions for use
can be found on the Internet next to the product description.

Roti®-Elution Tubes

RNase-free, DNase-free and proteinase-free, free of PCR products. For gel elution and purification of DNA/RNA and proteins.

- Ultrapure
- Easy-to-handle
- Very gentle process
- Typical recovery rate of >95 %
- Suitable for elution from agarose and PAGE
- Suitable for dialysis of biomolecules
- Suitable for oligoncleotides, dsDNA, ssDNA, RNA, proteins and protein/nucleic acid complexes
- Compatibel with all popular electrophoresis units

Easy-to-handle system for gel elution and purification of DNA/RNA and proteins in solution.

This very gentle method guarantees the non-disruptive purification of high-molecular or genomic DNA as well as of native protein complexes and long peptides. Using membranes of low MWCO, elution of very small DNA fragments is possible, making the tubes a very useful tool for the efficient desalting of primers within 60-100 min as well as for purification of siRNA (ss or duplexes).

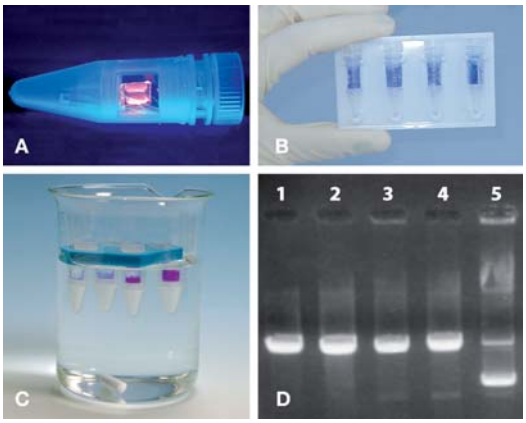
Roti® elution tubes are suitable for elution of ssDNA (≥20 nt), dsDNA (15 bp-100 kb), RNA of each size, proteins of each size, and of protein/nucleic acid complexes. The tubes may be applied to elution procedures from agarose- and polyacrylamide gels, as well as to all popular electrophoresis units. Used in floating racks, they are ideal for the purification of DNA, RNA or proteins by means of dialysis.

All Roti® Elutions Tubes are free of DNase, RNase, Proteinase and PCR products. All membranes are made from regenerated cellulose and can thus be exposed to a pH range of 2-12, to a temperature of +60 °C, and also to a variety of organic solvents. Additionally, the membranes are free of sulphate and heavy metals and were treated with EDTA. Hence, macromolecules (like proteins or nucleic acids) or other biological particles may be eluted and dialysed in native conformation, and are very well suited for subsequent activity tests.

Application: Roti® elution tubes are very easy to handle, and therefore can be used in both individual tests and high-throughput applications. Thanks to the screw cap, the vials are easy to open, can easily be filled with gel slices and buffer and can be securely sealed.

The practical elution vial holder has sufficient stability for safe use in electrophoresis cell. Under current flow, the DNA/RNA/protein molecules initially migrate from the gel slice until they are halted by the dialysis membrane. By briefly reversing the polarity of the electrical field, the molecules can be separated from the membrane and pipetted out of the tube together with the buffer. By carefully selecting the tube and the amount of buffer, it is in many cases possible to achieve a high concentration directly within the elution buffer. The buffer can then easily be concentrated by using the usual methods (e.g. precipitation).

Roti® elution tubes with MWCO 1, 25 and 50 kDa are wet packed in stabilising solution (25 % ethanol, 2 mM EDTA) and should stored under refrigeration. All other elution vials are dry packed and can be stored at room temperature.



Figures:

A: Roti®-Elution Tube under UV-light with a DNA containing agarose slice stained by ethidium bromide

B: Roti®-Elution Tubes MIDI positioned in Roti® Elution Tube Tray

C: Dialysis of the restriction enzyme *Pst*I in enzyme buffer/8 M urea against pure enzyme buffer

D: Detection of enzymatic activity after dialysis by digestion on plasmid DNA (1-4). Untreated control (5).

Typical applications: Purification of DNA and proteins from gels, elution of genomic DNA or total RNA, preparation of DNA fragments prior to cloning, purification of siRNA for RNAi assays, purification/desalting of oligonucleotides/primers, purification of RNA or DNA for transfection or transformation, desalting or buffer change of protein solutions.

Recommended choice of MWCO:

MWCO (kDa)	RNA/ssDNA	dsDNA	Proteins
1	20-50 nt	15-25 bp	3-15 kDa
3,5	50-250 nt	25-100 bp	10-30 kDa
8	250-1000 nt	100-500 bp	25-50 kDa
14	1-5 knt	0,5-2 kb	45-100 kDa
25	5-30 knt	2-10 kb	80-200 kDa
50	>30 knt	10-100 kb	>150 kDa

Technical specifications:

Typ	MWCO	Gel slice up to approx. (cm)	Packed	Storage temp.
MINI 8	8	0,4 x 1,0	dry	+15-25 °C
MINI 14	14	0,4 x 1,0	dry	+15-25 °C
MINI 25	25	0,4 x 1,0	wet	+4 °C
MIDI 1	1	0,5 x 1,2	wet	+4 °C
MIDI 3.5	3,5	0,5 x 1,2	dry	+15-25 °C
MIDI 8	8	0,5 x 1,2	dry	+15-25 °C
MAXI 3.5	3,5	1,0 x 2,0	dry	+15-25 °C
MAXI 8	8	1,0 x 2,0	dry	+15-25 °C
MAXI 14	14	1,0 x 2,0	dry	+15-25 °C
MAXI 25	25	1,0 x 2,0	wet	+4 °C
MAXI 50	50	1,0 x 2,0	wet	+4 °C
MEGA 3.5/10	3,5	preparative	dry	+15-25 °C
MEGA 3.5/15	3,5	preparative	dry	+15-25 °C
MEGA 3.5/20	3,5	preparative	dry	+15-25 °C
MEGA 8/10	8	preparative	dry	+15-25 °C
MEGA 8/15	8	preparative	dry	+15-25 °C
MEGA 8/20	8	preparative	dry	+15-25 °C
MEGA 14/10	14	preparative	dry	+15-25 °C
MEGA 14/15	14	preparative	dry	+15-25 °C
MEGA 14/20	14	preparative	dry	+15-25 °C

Please order the respective Roti®-Elution Tube Tray separately.The classification below refers only to Art. Nos. marked *

Warning H226-H319

Roti®-Elution Tubes MINI

Type	Volume	Art. No.	Pack Qty.	€
MINI 8	10-250 µl	**9281.1**	2 pieces	10,65
MINI 8	10-250 µl	**9281.2**	30 pieces	106,45
MINI 8	10-250 µl	**9281.3**	100 pieces	277,15
MINI 14	10-250 µl	**9283.1**	2 pieces	10,65
MINI 14	10-250 µl	**9283.2**	30 pieces	106,45
MINI 14	10-250 µl	**9283.3**	100 pieces	277,15
MINI 25*	10-250 µl	**9284.1**	1 pieces	9,15
MINI 25*	10-250 µl	**9284.2**	5 pieces	40,35

Roti®-Elution Tubes MIDI

Type	Volume	Art. No.	Pack Qty.	€
MIDI 1*	50-800 µl	**9263.1**	1 piece	10,75
MIDI 1*	50-800 µl	**9263.2**	5 pieces	48,40
MIDI 3.5	50-800 µl	**9266.1**	2 pieces	12,90
MIDI 3.5	50-800 µl	**9266.2**	30 pieces	134,40
MIDI 3.5	50-800 µl	**9266.3**	100 pieces	390,70
MIDI 8	50-800 µl	**9294.1**	2 pieces	12,90
MIDI 8	50-800 µl	**9294.2**	30 pieces	134,40
MIDI 8	50-800 µl	**9294.3**	100 pieces	390,70

Roti®-Elution Tubes MAXI

Type	Volume	Art. No.	Pack Qty.	€
MAXI 3.5	0,1-3 ml	**9421.1**	2 pieces	17,20
MAXI 3.5	0,1-3 ml	**9421.2**	30 pieces	225,75
MAXI 3.5	0,1-3 ml	**9421.3**	100 pieces	602,00
MAXI 8	0,1-3 ml	**9425.1**	2 pieces	17,20
MAXI 8	0,1-3 ml	**9425.2**	30 pieces	225,75
MAXI 8	0,1-3 ml	**9425.3**	100 pieces	602,00
MAXI 14	0,1-3 ml	**9427.1**	2 pieces	17,20
MAXI 14	0,1-3 ml	**9427.2**	30 pieces	225,75
MAXI 14	0,1-3 ml	**9427.3**	100 pieces	602,00
MAXI 25*	0,1-3 ml	**9428.1**	1 piece	16,15
MAXI 25*	0,1-3 ml	**9428.2**	5 pieces	74,20
MAXI 50*	0,1-3 ml	**9489.1**	1 piece	16,15
MAXI 50*	0,1-3 ml	**9489.2**	5 pieces	74,20
MAXI 50*	0,1-3 ml	**9489.3**	30 pieces	311,75

Roti®-Elution Tubes MEGA

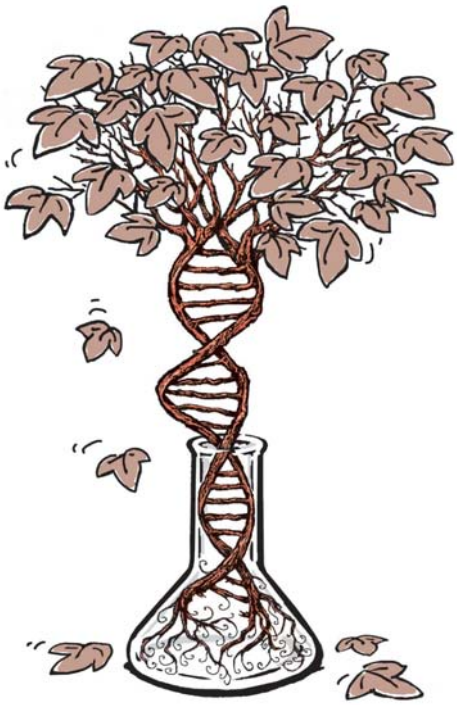
Type	Volume	Art. No.	Pack Qty.	€
MEGA 3.5/10	max. 10 ml	**9371.1**	1 piece	16,15
MEGA 3.5/10	max. 10 ml	**9371.2**	10 pieces	104,30
MEGA 3.5/15	max. 15 ml	**9380.1**	1 piece	16,15
MEGA 3.5/15	max. 15 ml	**9380.2**	10 pieces	104,30
MEGA 3.5/20	max. 20 ml	**9381.1**	1 piece	16,15
MEGA 3.5/20	max. 20 ml	**9381.2**	10 pieces	104,30
MEGA 8/10	max. 10 ml	**9390.1**	1 piece	16,15
MEGA 8/10	max. 10 ml	**9390.2**	10 pieces	104,30
MEGA 8/15	max. 15 ml	**9393.1**	1 piece	16,15
MEGA 8/15	max. 15 ml	**9393.2**	10 pieces	104,30
MEGA 8/20	max. 20 ml	**9394.1**	1 piece	16,15
MEGA 8/20	max. 20 ml	**9394.2**	10 pieces	104,30
MEGA 14/10	max. 10 ml	**9396.1**	1 piece	16,15
MEGA 14/10	max. 10 ml	**9396.2**	10 pieces	104,30
MEGA 14/15	max. 15 ml	**9397.1**	1 piece	16,15
MEGA 14/15	max. 15 ml	**9397.2**	10 pieces	104,30
MEGA 14/20	max. 20 ml	**9398.1**	1 piece	16,15
MEGA 14/20	max. 20 ml	**9398.2**	10 pieces	104,30

Accessories:

Roti® Elution Tube Tray MIDI for 4 Elution Tubes MINI	**9626.1**	1 pieces	11,85
Roti® Elution Tube Tray MIDI for 4 Elution Tubes MIDI	**9627.1**	1 pieces	14,00
Roti® Elution Tube Tray MAXI for 3 Elution Tubes MAXI	**9628.1**	1 pieces	17,20

Colour code of the Roti®-Elution Tubes MEGA

Colour	MWCO	Application
Blue	3,5 kDa	Nucleic acids from 50 nt or 25 bp, proteines from 10 kDa
Red	8 kDa	Nucleic acids from 250 nt or 100 bp, proteines from 25 kDa
Green	14 kDa	Nucleic acids from 1000 nt or 500 bp, proteines from 45 kDa



FTA®-Technology

Collect, transport, archive and isolate nucleic acids - all at room temperature.

FTA® Cards utilize patented Whatman FTA® Technology that simplifies the handling and processing of nucleic acids. The cards contain chemicals that lyse cells, denature proteins and protect nucleic acids from nucleases, oxidative and UV damage.

FTA® Cards rapidly inactivate organisms, including blood-borne pathogens, and prevent the growth of bacteria and other microorganisms. Capture of nucleic acid is a most simple and highly rapid process which can be performed quite easily also by untrained personal. The captured DNA is stable for years at room temperature.

Indicating FTA® Cards change colour upon sample application to facilitate handling of colourless samples. Since FTA® Cards are suitable for virtually any cell type, this is a very versatile, ready-to-use and easy-to-handle tool for storage and isolation of genomic DNA.

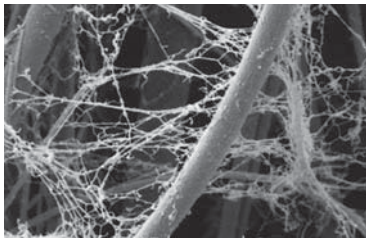


Figure:
Electron micrograph showing DNA entrapped within the FTA Matrix (magnification x 10,000).

Instructions for use
can be found on the Internet next to the product description.

FTA® Cards

Made by GE Healthcare.
Speciality cards for space- and time-saving collection, archival storage, and isolation of genomic DNA from a variety of sample material. Originally Whatman.

- Capture nucleic acid in one easy step - simply apply blood or tissue material to the card
- Captured nucleic acid is ready for downstream applications in less than 30 mins.
- Genomic DNA collected on FTA® Cards is stable for years at room temperature
- Suitable for virtually any cell type
- Indicating FTA® Cards change colour upon sample application in order to facilitate handling of colourless samples

Simply apply your sample to the FTA® Card. Liquids are pipetted or trickled, tissue samples are pressed onto the surface. Cell membranes and organelles are automatically lysed and the released nucleic acids are entrapped in the fibres of the matrix (see figure). The nucleic acids remain immobilized and are stabilized for transport, immediate processing or long-term storage. Libraries and species DNA collections can be stored simply in a folder; single DNA samples can be filed in your lab manual. FTA® Cards facilitate sample collection in remote locations and simplify sample transport, thus, you can collect samples in the field without worrying about refrigeration.
Captured nucleic acids are used for downstream experiments by simply taking a small punch from the FTA® Card, wash with FTA® Purification Reagent and rinse with TE buffer (Roti®-Stock 100 x TE Buffer, Art. No. 1052.1). DNA on the washed punch is ready for use in a variety of applications given below. Genomic DNA stored on FTA® Cards at room temperature for over 14 years (and counting) has been successfully amplified by PCR. For RNA, being more sensitive than DNA, we recommend rapid analysis after only few weeks' storage at room temperature.

FTA® Cards contain chemicals that lyse cells, denature proteins and protect nucleic acids from nucleases, oxidative and UV damage. FTA® Cards rapidly inactivate organisms, including blood borne pathogens, and prevent the growth of bacteria and other microorganisms. Each card can be used for archival storage or multiple downstream applications of 1-2 (MINI) and 1-4 (CLASSIC) independent samples.

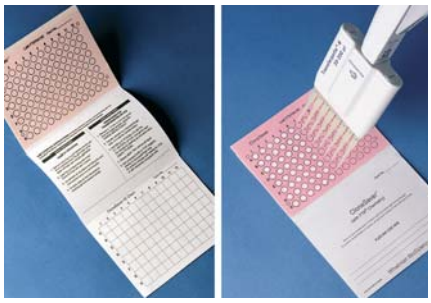
Suitable for blood, cultivated cells, buccal cells, plant material, bacteria, microorganisms, tissue and tissue homogenisations, virions, M13 plaques and more.

Applications: Storage of genomic DNA samples and libraries, collection of nucleic acid from animal tissue or cell cultures, or from plants or microorganisms during in-field-experiments.

Downstream-Experiments: E. g. PCR, real-time PCR, SNP and STR analysis, transgenetic identification, whole genome amplification, HLA typing, and genotyping **in** forensics, molecular biology, food and agriculture testing, drug discovery, genomics, species identification, and more.

WGK 2

Type	Areas	Art. No.	Pack Qty.	€
MINI	2	**CL90.1**	25	110,00
MINI with colour indicator	2	**CL91.1**	25	137,00
CLASSIC	4	**CL93.1**	25	124,00
CLASSIC with colour indicator	4	**CL94.1**	25	156,00



FTA® CloneSaver Cards

Made by GE Healthcare.
Speciality cards for space- and time-saving archival storage and isolation of Plasmid and BAC DNA. Originally Whatman.

- Capture DNA in one easy step by simply applying the samples (recombinant bacteria, glycerol stocks etc.) to the card
- Captured nucleic acid is easily accessible for downstream applications
- DNA collected on FTA® CloneSaver Cards is stable for years at room temperature
- Store up to 96 clones on each card
- Standard 96well plate format and compatible with multi-channel pipettors

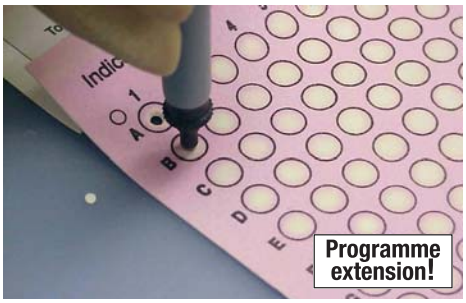
Apply few µl bacterial culture, resuspended colony or glycerol stock. Cells are lysed and plasmid or BAC DNA is stabilized for long-term storage or immediate processing. Captured nucleic acids are used for downstream experiments without the need for culture regrowth and plasmid purification. Simply take a small punch from the FTA® Card and wash with TE buffer (Roti®-Stock 100x TE Buffer, Art. No. 1052.1). DNA on the washed punch is ready for elution or for direct use in PCR, transformation, amplification by rolling circle followed by sequencing, and so on.
WGK 2

Type	Art. No.	Pack Qty.	€
CloneSaver	**HP11.1**	5	156,00

FTA® Kit

Made by GE Healthcare.
FTA® Cards MICRO for space- and time-saving collection, archival storage, and isolation of genomic DNA. Originally Whatman.
Suitable for blood, cultivated cells, buccal cells, plant material, bacteria, microorganisms, tissue and tissue homogenisations, virions, M13 plaques and more.
Content: 25 FTA® Cards with one area each (MICRO Cards), 2 x 25 ml FTA® Purification Reagent, 2 FTA® Harris Uni-Core Punches (1,2 and 2,0 mm), Cutting Mat, instructions for use.
FTA® Cards: WGK 2

Art. No.	Pack Qty.	€
CL98.1	1 Kit	162,00



FTA® CloneSaver Starter Pack

Made by GE Healthcare.
Assortment for space- and time-saving archival storage and isolation of plasmid and BAC DNA. Originally Whatman.
For isolation and storage of plasmid and BAC DNA by simply applying the clones to the card at room temperature. Cells are automatically lysed by application to the card material. Captured nucleic acid may be eluted or directly applied to downstream experiments by punching small pieces from the card after short washing.
Whatman CloneSaver is an excellent DNA storage and preparation medium for plasmids to be amplified by rolling circle amplification. Plasmid or glycerol stocks are simply spotted onto the CloneSaver Card, activating chemicals in the card that lyse cells, and immobilize nucleic acids. After drying, the nucleic acids can be stored for years at room temperature.
Content: 2 FTA® CloneSaver Cards, 2 FTA® Harris Uni-Core Punches (2 mm), Cutting Mat, instructions for use.
CloneSaver Cards: WGK 2

Art. No.	Pack Qty.	€
HP13.1	1 Kit	102,00

ready-to-use

FTA® Purification Reagent

ready-to-use, for molecular biology
Made by GE Healthcare. For purification of nucleic acids stored on FTA® Cards. Originally Whatman.
Simple and rapid purification of nucleic acids stored on FTA® Cards.
Ensures superior quality DNA for PCR or SNP analysis.
Removes heme, PCR inhibitors and other potential contaminants.
WGK 2

CL99.1	500 ml	plastic	329,00 €

FTA® Foam Tip Applicator

Made by GE Healthcare.
For application of saliva and buccal cells to FTA® Cards. Originally Whatman.

Sterile. Non-abrasive foam head is same size as sample area on FTA® Cards and is, therefore, best suited for application of buccal samples. The oral mucosa is grazed with the foam head, which is then pressed onto the card field. We recommend the use of FTA® Cards with colour indicator (CLASSIC Art. No. CL 91.1 and MINI Art. No. CL94.1) for buccal and saliva samples.

Art. No.	Pack Qty.	€
HP14.1	100	88,50

FTA® Pouches

Made by GE Healthcare.
For transporting or storing FTA® Cards. Originally Whatman.

Seven laminated layers protect the card from exposure to gas or liquid contamination. Tamper-evident seal maintains sample security.
Outer paper surface for labelling or writing.
CloneSaver pouches only: with additional resealable zip-lock closure.

Type	for FTA® Cards of Type	Art. No.	Pack Qty.	€
MINI	MINI, MICRO	**CL92.1**	100	56,50
MAXI	CLASSIC	**CL95.1**	100	102,00
CloneSaver	CloneSaver	**HP12.1**	50	139,00

Harris Uni-Core Punches

Made by GE Healthcare.
GE Healthcare's disposable Uni-Core Punch addresses your laboratory's manual punching requirements. Designed for use with Whatman FTA® Cards, FTA® Elute Cards, and EasiCollect device.

Uni-Core Punch is a disposable punch which has a polished steel tip that is case-hardened and can be sterilized. Each tip provides up to 500 punches before disposal. Uni-Core Punch is available in diameters from 1.0 to 6.0 mm for a variety of sampling needs. It is housed in a plastic handle and disposable for contamination control. Stainless steel cutting edges enable manual coring, retrieval, and controlled ejection of the FTA punch. Manual punching is preferred for laboratories with low sample volumes punching 1 to 50 samples per day.

Very easy application: By pressing the Micro tip down a tiny slice is punched from the FTA® card. This DNA containing sample is then washed and directly applied to downstream experiments.

Two cutting mats are included in the small packages (4 punches).
Colour of the punches supplied may differ to that shown in the picture.

Type	Art. No.	Pack Qty.	€
1,0 mm	**6729.1**	25 pieces	116,00
1,2 mm	**HP15.1**	4 pieces	52,20
1,2 mm	**HP15.2**	25 pieces	116,00
2,0 mm	**HP16.1**	4 pieces	52,20
2,0 mm	**HP16.2**	25 pieces	116,00
3,0 mm	**6798.1**	4 pieces	51,00
3,0 mm	**6798.2**	25 pieces	116,00
6,0 mm	**6799.1**	4 pieces	26,10
6,0 mm	**6799.2**	25 pieces	116,00

Density Gradient Centrifugation

Caesium chloride

≥99,999 %, p.a., ultra quality

Reagent for density gradient centrifugation.
Cesium chloride
CsCl • M 168,36 g/mol

Warning H361

For isolation and purification of nucleic acids in ultra-centrifugation. This extremely pure reagent is especially ideal for isolation of DNA, which is subsequently used in hybridisation and enzyme reactions.

8627.3	50 g	plastic	44,00 €
8627.1	100 g	plastic	74,20 €
8627.2	1 kg	plastic	489,15 €
Original pack 6 x 1 kg			464,69/1 kg

Caesium chloride

≥99,9 %, extra pure, for biochemistry

Reagent for density gradient centrifugation.
Cesium chloride
CsCl • M 168,36 g/mol

Warning H361

Can be used for isolation and purification of nucleic acids in ultracentrifugation. Is a low cost alternative to CsCl ultra-quality, ideal for applications where extreme purity is not essential.
Highly concentrated solutions can show traces of cloudiness or opalescence as a result of 25 ppm water-insoluble ingredients.

7878.1	100 g	plastic	42,90 €
7878.3	250 g	plastic	94,50 €
7878.2	1 kg	plastic	332,20 €
Original pack 6 x 1 kg			315,59/1 kg

Caesium sulphate

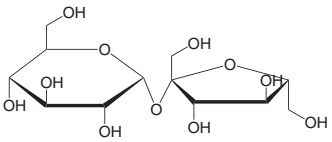
≥99,99 %, p.a.

Reagent for density gradient centrifugation.
Cesium sulphate
Cs_2SO_4 • M 361,89 g/mol

Warning H302-H361

Cesium sulphate produces a gradient which is almost twice as steep compared with cesium chloride in similar centrifugal fields.
Floating densities in cesium sulphate gradients are approx. 1,4 g/cm³ for DNA and approx. 1.6 g/cm³ for RNA.

9355.3	25 g	plastic	37,55 €
9355.1	100 g	plastic	119,90 €
9355.2	1 kg	plastic	811,65 €
Original pack 6 x 1 kg			771,07/1 kg



DNAse-free RNAse-free

D(+)-Saccharose

≥99,5 %, RNase/DNase free

Reagent for density gradient centrifugation.
D-Sucrose
$C_{12}H_{22}O_{11}$ • M 342,30 g/mol
Sucrose gradient centrifugation has proven very effective in structural and functional analysis of macromolecular complexes. The distribution of macromolecules in gradients can be measured by UV absorption (A_{254}).

9097.1	1 kg	plastic	33,90 €
Original pack 6 x 1 kg			32,21/1 kg
9097.2	5 kg BIG PACK	plastic	144,05 €

Cell Isolation by Density Gradient Centrifugation

Ficoll® 400

for molecular biology and biochemistry

For density gradient centrifugation; ingredient of gel loading buffers.
Non-ionic polymer of saccharose.
M ~400 000 g/mol

CN90.1	10 g	plastic	36,55 €
CN90.2	25 g	plastic	76,95 €
CN90.3	100 g	plastic	246,05 €

Polysucrose 400

BioScience-Grade, for molecular biology and biochemistry

For density gradient centrifugation during cell separation and isolation of cell organelles.
Sucrose polymer, Sucrose-epichlorhydrin copolymer
$(C_{12}H_{22}O_{11})_n$ x $(C_3H_5ClO)_n$
M 450000 ±100000 g/mol

4668.1	10 g	plastic	26,35 €
4668.2	25 g	plastic	59,05 €
4668.3	100 g	plastic	198,90 €

Roti®-Sep 1077

CELLPURE® for density gradient centrifugation

ready-to-use S

Polysucrose based medium for separation of lymphocytes from whole blood.
Polysucrose solution, lymphocyte separation medium
M ~400000 g/mol
Storage temp.: +4 °C

Danger H317-H334

0642.1	100 ml	plastic	39,25 €
0642.2	500 ml	plastic	106,45 €

▶ Further information on reagents for cell isolation see chapter Cell Biology!

Ribonucleases

Ribonuclease A

90 U/mg (Kunitz), BioScience-Grade, free from salt

Acc. to Hirs, extracted from bovine pancreas.

RNase A

M ~13 700 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334

Extracted from bovine pancreas for RNA separation, especially when isolating RNAfree DNA. The enzyme cleaves RNA and produces 3' terminal nucleoside phosphates. This quality product for molecular biology is free from salt, without proteases and is chromatographically homogeneous. Unit definition acc. to Kunitz.

Application:
Stock solution: 10 mg/ml in water (pH ≤6.0) or 0.01 M sodium acetate (pH 5.2)
Working solution: 2-10 µg/ml in 10 mM Tris (pH 7.5), 15 mM NaCl.
DNAse free RNAse ist prepared by cooking the solubilised ribonuclease aliquots for 15 min.
Note: RNAse precipitates when concentrated solutions are heated/cooked at pH ≥7.0.
Let cool to room temperature on bench top and store in aliquots at -20 °C.

7156.1	100 mg	glass	67,20 €
7156.2	500 mg	glass	299,95 €
7156.3	1 g	glass	493,45 €

Ribonuclease

>70 U/mg (Kunitz), free from salt and protease

Purified by chromatography, for biochemistry.

RNase

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334

Extracted from bovine pancreas; free from salt, without proteases and chromatographically cleaned with specific activity of 70 U/mg (Kunitz). RNAse mixture containing approx. 70-80 % RNAse A.

Application:
Stock solution: 10 mg/ml in water
Working solution: 5-20 µg/ml in 10 mM Tris (pH 7.5), 15 mM NaCl.
DNAse free RNAse ist prepared by cooking the solubilised ribonuclease aliquots for 15 min. Let cool to room temperature on bench top and store in aliquots at -20 °C.

7164.1	100 mg	glass	27,85 €
7164.2	1 g	glass	181,70 €

Precipitation & Concentration

Glycogen

lyophilised, from oysters

DNA-free

For molecular biology and biochemistry.

Long-chain polysaccharide made of glucose. Most frequently used in biochemistry and as 'carrier' during precipitation of nucleic acids.
Recovery of precipitated DNA is significantly enhanced by addition of 50 µg/ml glycogen; even starting from solutions with very low DNA concentrations, efficient precipitation can be performed.
Contains no nucleic acid and doesn't hinder enzymatic *down-stream* applications.
Glycogen contains a central protein and should not be applied if DNA is to be used in protein binding-assays following precipitation. In these cases we recommend to use our glycogen-free coprecipitants.
Stock solution: 5 mg/ml in distilled, sterile water
Working concentration: 50 µg/ml

Type analysis:

Appearance. ..... bright powder
Origin. ..... oysters
Solubility (1 M NaCl). ..... 0,25 %
Loss on drying. ..... ≤15 %
Specific rotation $[\alpha]_D^{20}$. ..... +170° to +200°

HP51.1	1 g	glass	22,50 €
HP51.2	5 g	plastic	88,70 €
HP51.3	10 g	plastic	153,65 €
HP51.4	25 g	plastic	332,20 €

Further Reagents for Nucleic Acid Precipitation

Product	Purity	Art. No.	Pack Qty.	€
Ammonium acetate	≥97 %, p.a., ACS	**7869.2**	500 g	25,70
		7869.1	1 kg	36,45
		7869.3	2,5 kg	62,25
Ethanol	≥99,8 %, p.a.	**9065.1**	1 l	76,25
		9065.3	1 l	75,15
		9065.2	2,5 l	153,65
		9065.4	2,5 l	151,50
		9065.5	5 l	274,15
		9065.6	25 l	956,75
Lithium chloride	≥99 %, p.a., ultra quality	**3739.1**	250 g	45,70
		3739.2	1 kg	131,70
Polyethylene glycol 6000	Ph.Eur.	**0158.4**	500 g	20,65
		0158.1	1 kg	29,60
		0158.2	5 kg	107,40
		0158.3	50 kg	805,20
Polyethylene glycol 8000	Ph.Eur.	**0263.1**	500 g	19,60
		0263.2	1 kg	28,50
		0263.3	5 kg	98,40
2-Propanol	≥99,8 %, p.a., ACS, ISO	**6752.1**	1 l	22,80
		6752.3	1 l	21,75
		6752.2	2,5 l	51,10
		6752.4	2,5 l	49,35
		6752.5	5 l	76,90
		6752.6	25 l	220,40
Sodium acetate trihydrate	≥99,5 %, p.a., ACS, ISO	**6779.2**	500 g	17,10
		6779.1	1 kg	31,10
		6779.3	5 kg	94,50
		6779.5	25 kg	353,70
Sodium chloride	≥99,5 %, p.a., ACS, ISO	**3957.3**	500 g	15,30
		3957.1	1 kg	16,70
		3957.2	5 kg	60,75
		3957.5	25 kg	181,70

For additional product data and safety information, see chapter Chemicals A-Z.

Roti®-Spin Centrifugal Devices

For purification and concentration of biomolecules and for purification of solutions.

- Applicable for nucleic acids, proteins/peptides, other biomolecules >6 kD and very small bioparticles
- Can be used to replace standard techniques like precipitation, dialysis, gel filtration, gel purification, column chromatography, gradient centrifugation etc.
- Gentle: No shearing of DNA of up to 100 kb, proteins remain native and enzymatically active
- Applicable for purification of all labelled probes (isotope-, fluorescent-, chromogenic labelling)
- Very high recovery rates of >90 % (when using devices of appropriate MWCO)

Centrifugal devices for ultrafiltration of biomolecules. The membranes made of highly chemical-resistant polyethersulfone have been tightly sealed to prevent leakage and loss of samples. Furthermore, the membranes underwent special treatment minimising the binding of biomolecules, in order to optimise sample recovery-rates.

Roti®-Spin Centrifugal Devices can be applied to a variety of applications and can be used to replace tedious and labour-intensive methods like gel filtration, gel purification or precipitation. Application is time-saving and very simple - only few centrifugal steps are necessary to concentrate and recover your sample. During this, the sample remains untouched in the upper reservoir, and cross-contamination is efficiently prevented even when large numbers of samples are handled. Centrifugation can easily be performed in the cold room or at specially designated benches like isotope laboratories or in laminar flow hoods.

MWCO:
For convenient and successful application, centrifugal devices with membranes in 4 colour-coded molecular weight cut-offs (MWCO) are available. In order to choose the appropriate MWCO please use the following thumb-rule:
Centrifugation of proteins/peptides: MWCO ≤1/3 of sample molecule size.
Centrifugation of nucleic acids: MWCO ≤ ½ sample molecule size.

Overview for selection the right pore size

MWCO	Molec. size	DNA size
3 kD	10 - 20 kD	<50 bp
10 kD	30 - 90 kD	50 - 200 bp
30 kD	90 - 180 kD	200 bp - 1 kb
100 kD	>300 kD	>1 kb

Sample volumes:
Maximum sample volume: Roti®-Spin MINI 50-500 µl
Final concentrate volume: Roti®-Spin MINI 15-20 µl

Applications (examples):
Desalting or buffer exchange following restriction digest, PCR or such; separation of free nucleotides and polymerised DNA; removal of contaminating compounds (like DNA) from stock solutions (e.g. PCR-buffers); concentration of DNA or proteins; separation of proteins of different size; sample preparation prior to HPLC.

Roti®-Spin MINI

Type	MWCO (kD)	Colour	Art. No.	Pack Qty.	€
Roti®-Spin MINI-3	3	grey	**CL12.1**	25	106,45
Roti®-Spin MINI-10	10	blue	**CL13.1**	25	106,45
Roti®-Spin MINI-30	30	red	**CL14.1**	25	106,45
Roti®-Spin MINI-100	100	clear	**CL15.1**	25	106,45

ready-to-use

Roti®-PinkDNA

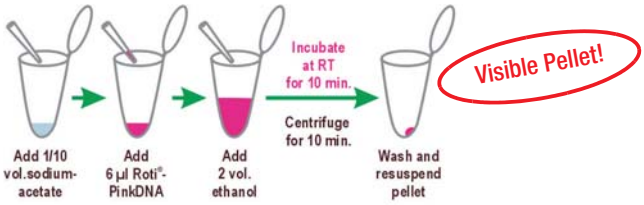
for molecular biology

Synthetic co-precipitant with dye for efficient precipitation of nucleic acids.
Storage temp.: +4 °C

- **Visible pellet due to included pink dye**
- **Recovery rates of up to 99 %**
- Simply add to ethanolic nucleic acid precipitation
- Recovered DNA is immediately applicable to all standard applications
- Ready-to-use

Stained precipitation additive for recovery of DNA from all solutions by ethanolic precipitation. Recovery rates of up to 99 % can be attained even from solutions with very weak nucleic acid concentration. The incorporated dye stains the DNA (reversibly) pink and facilitates location and lossless washing of pellets. Roti®-PinkDNA is produced synthetically and is free from nucleic acids. DNA or dsRNA precipitated with Roti®-PinkDNA is highly pure and can be used directly in all standard applications such as transformation, restriction digestion, cloning, sequencing, *in vitro* transcription etc.

Suitable for all nucleic acid fragments, cyclic, and genomic DNA. Not compatible with photometric concentration measurement at 260-280 nm.

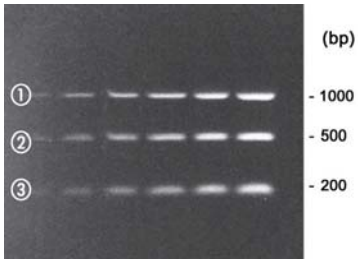


HP54.1	0,5 ml	plastic	38,20 €
HP54.2	1,5 ml	plastic	107,40 €
HP54.3	3 ml	plastic	192,45 €

Tips for Application of Precipitation Salts

Precipitation Salts	Stock solution	Amount applied	Recommended for	Not recommended for
Ammonium acetate	7.5 M	1/2 volume	Removal of nucleotides or other contaminants	Kinase downstream experiments (phosphorylation)
Lithium chloride	8.0 M	1/10 volume	RNA precipitation	Very small RNA
Sodium acetate	3.0 M (pH 5.2)	1/10 volume	Routine DNA precipitation	Removal of nucleotides or other contaminants
Sodium chloride	5.0 M	1/20 volume	SDS containing solutions	Routine precipitations

DNA Quantitation



ready-to-use

DNA-quantifying marker

for DNA-quantitation

Storage temp.: -20 °C • Transport temp.: room temp.

DNA-fragments of precisely defined concentration for easy quantifying of linear DNA of medium fragment length in agarose gels.
Also suitable for quantifying standard DNA via photometric measurement to establish light-cycler-controls.

DNA-quantifying marker QSK 1000

Fragment length: 1000 bp (see figure ①)
Concentration: 100 µg/ml in TE-buffer

L506.1	40 µg	plastic	184,90 €

DNA-quantifying marker QSK 500

Fragment length: 500 bp (see figure ②)
Concentration: 100 µg/ml in TE-buffer

L507.1	40 µg	plastic	184,90 €

DNA-quantifying marker QSK 200

Fragment length: 200 bp (see figure ③)
Concentration: 100 µg/ml in TE-buffer

L508.1	40 µg	plastic	184,90 €

DAPI

≥98 %, p.a.

For DNA-staining.

4',6-Diamidino-2-phenylindole dihydrochloride

$C_{16}H_{17}Cl_2N_5$ • M 350,3 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

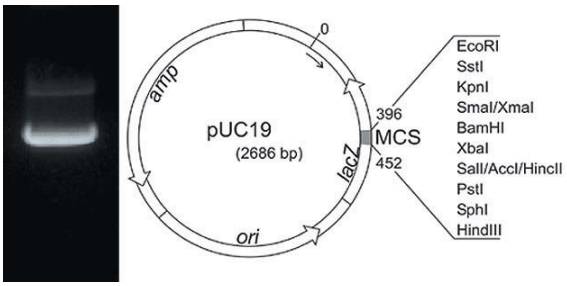
Fluorescent dye with specific DNA-binding capacity. For detection of mycoplasms in cell culture, for quantitative DNA measurement, and for chromosome counter staining. Store in the dark! Stabile for one year when solubilised, stored at -20 °C, and protected from light
Stock solution: 1 to 10 mg/ml in sterile water
Excitation maximum: 359 nm
Emission maximum: 461 nm

6335.1	25 mg	glass	83,35 €
6335.2	100 mg	glass	231,15 €

Plasmid DNA

The following plasmid DNA was prepared in low nuclease host bacteria and isolated through ion exchange chromatography. It is available in supercoiled form (ccc-form >95%) and, as a high-purity DNA ($OD_{260/280}$ > 1,70), it is ideal for different applications:

- Controlling transformation efficiency
- Comparison with plasmid ccc-forms of unknown size
- Cloning DNA-fragments
- Restriction (Preparing DNA-length markers)
- Calibrating DNA-separating or DNA-preparing processes or equipment
- Blocking DNA-chips with plasmid DNA of a defined sequence



Plasmid DNA pUC19

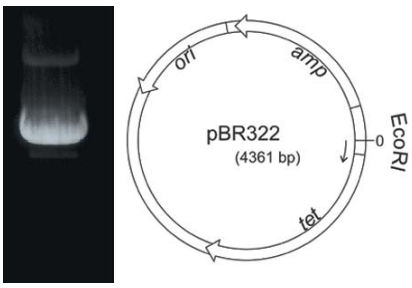
High-purity plasmid-DNA of pUC19 (pUC19c, Acc. No. L09137) with a overall length of 2686 base pairs. Lyophilised.

Storage temp.: -20 °C • Transport temp.: room temp.

$OD_{260/280}$: >1.70
genomic DNA: <2 %
oc-form: <3 %
ccc-form: >95 %
baise pairs: 2686

pUC19 is a standard high-copy cloning vector for *E. coli* recombinants. The position of the Multi Cloning Site (MCS), which is inserted in frame into the LacZ-gene, enables a blue-white selection of insert containing plasmid DNA by α-complementation. The copy number of plasmids per cell depends on the temperature and is approx. 70-80 at 37 °C and over 200 at 42 °C.

X911.1	50 µg	plastic	42,50 €



Plasmid DNA pBR322

High-purity plasmid-DNA of pBR322 (Acc. No. V01119) with a overall lenght of 4361 base pairs. Lyophilised.

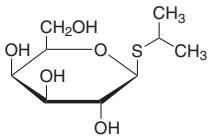
Storage temp.: -20 °C • Transport temp.: room temp.

$OD_{260/280}$: >1.70
genomic DNA: <2 %
oc-form: <3 %
ccc-form: >95 %
base pairs: 4361

The circular sequence was numbered in such a way that 0 lies in the middle of the singular *EcoR* I restriction site. The copy number of pBR322 is limited by the gene product of *rop* to 20 copies per cell. However, by adding chloroamphenicol (final concentration 170 µg/ml) to log-phase cultures and then incubating for 8 hours, the copy number can be increased considerably.

X912.1	50 µg	plastic	52,60 €

Blue-/White Selection



IPTG

≥99 %, BioScience-Grade, dioxane free, animal free

For molecular biology.

Isopropyl-β-D-thiogalactopyranoside

M 238,30 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Lactose analogon. Glucose-galactose-disaccharide. *lac*-promotor is induced by IPTG via inhibition of *lac*-repressor. Recommended for induction of *lac*-regulated vectors in expression assays, for instance blue-/white selection of recombinant *E. coli*, in bench-top as well as in production scale.

Application:
Stock solution: 0.5 M (1 g / 8.4 ml) in water (sterilise through 0.2 µm filter).
Final concentration in agar plates:
0.2 mM (add after autoclaving and cooling medium).
Final concentration in induction medium: 2 mM.

2316.1	250 mg	glass	18,85 €
2316.2	1 g	glass	40,35 €
2316.3	5 g	glass	113,45 €
2316.4	25 g	plastic	392,40 €
2316.5	100 g	plastic	901,95 €

IPTG

≥99 %, for biochemistry

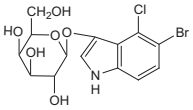
Isopropyl-β-D-thiogalactopyranoside

M 238,30 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Standard reagent for biochemical assays. Main application as inducer of protein *in vitro* expression.

CN08.1	1 g	glass	24,40 €
CN08.2	5 g	glass	65,50 €
CN08.3	50 g	glass	467,65 €
CN08.4	100 g	glass	811,65 €



DNAse-free
Protease-free
RNAse-free

X-β-Gal

≥99 %, BioScience-Grade

Colorimetric substrate of β-galactosidase.
For biochemistry and molecular biology.

5-Bromo-4-chloro-3-indoxyl-β-D-galactoside

M 408,6 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Ideal for colorimetric detection of β-galactosidase activity, for instance during blue-/white selection.

Application:
Stock solution: 100 mg/ml (240 mM) in DMF, store at -20 °C in the dark.
Working solution: For blue/white selection of recombinant clones on agar plates use 0.3 µl stock solution per ml broth/agar.

2315.1	100 mg	glass	19,25 €
2315.2	500 mg	glass	53,65 €
2315.3	1 g	glass	101,60 €
2315.4	5 g	glass	349,40 €

▶ LB Media and other nutrient media for molecular biology see page 1350

α-Complementation (blue-white selection)

Being a galacto pyranoside, IPTG inhibits the *lac* repressor, therefore leading to the induction the *lac* promotor. Subsequently, using the plasmid as matrix the C-terminal 146 amino acid fragment of the bacterial β-galactosidase is expressed, which functions as so called α-donor and complements the C-terminally deleted bacterial β-galactosidase. The then functional β-galactosidase restricts the galactoside X-Gal, resulting in a blue-coloured dye - therefore, these *lac*$^+$ clones are coloured dark blue. Since the C-terminal part of the α-donor is located **upstream** and the N-terminal part is located **downstream** of the multi cloning site of the plasmid, inserted DNA normally leads to frame shift or at least to major chain elongation, resulting in an unfunctional α-donor and no functional galactosidase - recombinant clones are white. The appearance of light blue clones either results form very short insertions or from the fact that in some plasmids the C-terminal fragment cloned upstream of the MCS is sufficient for α-complementation and restriction of a small amount of X-Gal.

α-Complementation - protocol

Stock solution

IPTG: 0.5 M (1 g /8.4 ml) in water, freeze sterile filtered and aliquoted

X-β-Gal: 100 mg/ml (240 mM) in DMF, store aliquoted and in the dark at -20 °C

Approach

Add 10 µl IPTG solution + 10 µl X-β-Gal solution per 25 ml autoclaved, cooled Agar and pour plates.

Alternatively, mix 10 µl IPTG and X-β-Gal solution with approx.100 µl sterile water and plate onto a hardened 9 cm agar petri dish.

Hybridisation

DNA Labelling

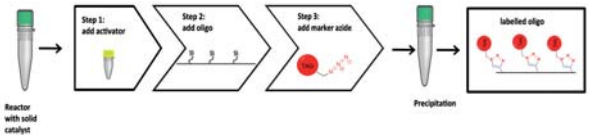
ROTI®kits for DNA labelling

For DNA labeling assays.
Transport temp.: cooled

Warning H226-H319-H335

- Highly reliable
- Easy to perform
- Fast detection procedure (only 30 min)
- Mild conditions (no DNA denaturation required)
- Modular system due to click chemistry
- Compatible with various dyes and readouts

The ROTI®kits for DNA labelling provide an easy-to-use tool for quick labelling of oligonucleotides. For this purpose, fluorescent dyes are coupled via click reaction with uracil derivatives (mostly ethynyldeoxyuridine, EdU) which are present in the DNA. This fast and elegant approach allows for direct labelling of DNA fragments with the desired fluorescent dye. Thus, the assay is perfectly adaptable to the present facilities and to the assay situation (e.g. for double or triple detection). The protocol includes only three steps and is quick and easy to perform:



Oligonucleotides not included.

The end of the product name specifies the included fluorescent marker.

Components:

Azide. ..... 1 mg
Activator. ..... 20 µl
Reactor M. ..... 7 x 5 mg
Solvent..... 1 ml
Store at -20 °C (Azide, Activator); room temp. (Reactor M, Solvent)

Product	Art. No.	Pack Qty.	€
Oligo Click S-488	**7766.1**	1 Kit	122,55
Oligo Click M-488	**7767.1**	1 Kit	127,40
Oligo Click S-555	**7769.1**	1 Kit	138,70
Oligo Click M-555	**7770.1**	1 Kit	144,60
Oligo Click S Biotin	**7771.1**	1 Kit	101,60
Oligo Click M Biotin	**7772.1**	1 Kit	105,90
Oligo Click S Reload	**7764.1**	1 Kit	56,45
Oligo Click M Reload	**7765.1**	1 Kit	70,45

Tip:
The ending of the product name specifies the included marker:

- -488: 6-FAM-Azide
- -555: 5-TAMRA-Azide
- -Biotin: Biotin Azide
- Reload: no marker included

Ready-Made Buffers & Supplements

Roti®-Hybri-Quick

BioScience-Grade, ready-to-use, for molecular biology
Solution for DNA- and RNA hybridisation.

Danger H318

- Suitable for prehybridisation, hybridisation and washing
- For Southern- and Northern-hybridisations
- Suitable for all membrane types

Roti®-Hybri-Quick ready-to-use solution is an all-purpose solution for DNA-hybridisation experiments.
Optimised sodiumphosphate buffer with superior signal-to-noise ratio. Compatible with all Southern- and Northern-hybridisations, all labelling and detection methods, and all types of membranes. Improved buffer formulation based on the hybridisation solution published by Church & Gilbert (*PNAS USA*, 81:1991-95).

A981.1	1 l	glass	47,20 €
Original pack 6 x 1 l			44,84/1 l
A981.2	2,5 l	glass	85,90 €
Original pack 4 x 2,5 l			81,61/2,5 l

Roti®-Stock 20x SSC

BioScience-Grade, ready-to-use, steam sterilised
For molecular biology.
SSC 20x ready-to-use solution
20fold stock solution sodium/sodiumcitrate. Undiluted or after dilution with sterile water to 10x, 6x, 1x or 0.1x SSC one receives a versatile buffer for blotting, hybridising or washing of Southern- or Dot/Slot-Blots of DNA as well as for *in situ* hybridisation. Undiluted buffer is also suitable for neutral transfer of RNA onto unloaded membranes (e.g. Roti®-Nylon 0.2, Art. No. AE50.1).
With original seal.

Composition:
3 M NaCl, 300 mM sodium citrate in deionised water, pH-value 7.0, steam sterilised

1054.1	1 l	glass	61,20 €
Original pack 6 x 1 l			58,14/1 l

Dextran sulphate 500 sodium salt

for biochemistry and molecular biology

Dextranhydrogensulphate 500 sodium salt

M ~500 000 g/mol

Dextran sulphate is a polyanion produced by esterification of dextran with chlorosulphonic acid. The standard product is based on dextran with a mean molecular weight of approx. 500.000 Dalton. Anionic dextrans such as dextran sulphate (10 % in hybridisation buffer) accelerate the hybridisation of nucleic acids by approx. 10fold.

5956.5	10 g	plastic	27,85 €
5956.3	25 g	plastic	53,65 €
5956.4	50 g	plastic	91,30 €
5956.1	100 g	plastic	174,05 €
5956.2	500 g	plastic	768,65 €
Original pack 6 x 500 g			730,22/500 g

Salmon Sperm DNA sodium salt

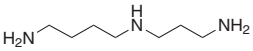
ex salmon testes

Deoxyribonucleic acid sodium salt, DNA from salmon sperm

Storage temp.: +4 °C

Sonified DNA from salmon sperm is used in Southern- and Northern hybridisation, in order to block unspecific probe binding prior to and during hybridisation (Sambrook, J. *et al.* (1989) *Molecular Cloning:* A Laboratory Manual, 2nd Edition).
This salmon sperm DNA has been mechanically shredded using a rotary crusher. We recommend further ultrasonic sound fragmentation up to 500-1000 bp (controlled via electrophoresis) with subsequent Phenole/Chloroform extraction.
Stock solution: 10 mg/ml in H_2O
Storage of stock solution: -20°C in aliquots
Working concentration: 100 µg/ml

5434.1	5 g	plastic	25,30 €
5434.2	10 g	plastic	39,70 €



Spermidine

≥98 %, for biochemistry

N-(3-Aminopropyl)-1,4-butanediamine

$C_7H_{19}N_3$

M 145,25 g/mol

Storage temp.: +4 °C

Danger H314

Ingredient vital for $CaCl_2$-transfektion (70 µM), tissue homogenisation (500 µM), *in vitro* transcription (20 mM), and in hybridisation buffers (1-20 mM).

7161.2	1 g	glass	38,60 €
7161.1	2,5 g	glass	73,00 €
7161.3	5 g	glass	126,85 €

Blocking Reagents

Denhardt's solution, lyophilised powder (50x)

BioScience-Grade, for molecular biology

Blocking reagent for hybridisation and stripping.

Storage temp.: +4 °C

Denhardt's lyophilised powder contains a mixture of different blocking agents that is used for nuclear acid hybridisation (Northern and Southern Blot) as well as for stripping of hybridised membranes. By prehybridisation the filter membranes with Denhardt's solution unspecific binding of DNA to the membrane is avoided.

Application: The bottle contains powder mix for 50 ml 50x stock solution. Add 48.8 ml water to gain exactly 50 ml stock solution. Sterilise stock solution by filtration (0.2 µm) and store in aliquots of 10 ml at -20 °C .
For hybridisation use 10x Denhardt's solution with 6x SSC (Roti®-Stock 20x SSC, 1054.1) supplemented with 100 µg/ml denatured salmon sperm DNA and 1 % SDS (Roti®-Stock 20 % SDS, 1057.1).

HP33.1	Powder mix for 50 ml	plastic	91,95 €

Albumin Fraction V

≥98 %, powdered, for molecular biology

Wide range of applications, e.g. as protein standard or blocking reagent.

BSA

M ~66 000 g/mol

Storage temp.: +4 °C

BSA made of fresh bovine plasma by fractionation (Cohn method) and subsequent crystallisation from alcohol solution at a low temperature.
Molar extinction coefficient: 44.020 · M^{-1} · cm^{-1}
(acc. to 0.667 x cm^{-1} for a 0.1 % solution).

8076.1	10 g	plastic	24,55 €
8076.2	50 g	plastic	77,95 €
8076.4	200 g	plastic	268,25 €
8076.3	500 g	plastic	600,95 €
Original pack 6 x 500 g			570,90/500 g
8076.5	1 kg	plastic	1037,40 €
Original pack 6 x 1 kg			985,53/1 kg

Albumin Fraction V, biotin-free

≥98 %, biotin-free, for molecular biology

Excellent as blocking and stabilising reagent in all biotin/streptavidin-mediated detection systems.
BSA
M ~66 000 g/mol
Storage temp.: +4 °C
Tried and tested albumin preparation, suitable for all immunoassays, for stabilising proteins, enzymes and antibodies and as a blocking-reagent in hybridisation. Tested for its absence of biotin. Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcohol solution.

0163.1	10 g	plastic	31,10 €
0163.2	50 g	plastic	96,25 €
0163.4	200 g	plastic	332,20 €
0163.3	500 g	plastic	751,45 €
Original pack 6 x 500 g			713,88/500 g

Powdered milk

blotting grade, powdered, low fat

Lowfat powdered milk, especially suited for use as blocking reagent in immunological assays like Western-Blot analyses or ELISA.
Fine powdered for easy application.
Not suitable for biotin/streptavidine mediated detection systems.
Milk contains biotin.

T145.1	250 g	plastic	13,15 €
T145.2	500 g	plastic	20,35 €
Original pack 6 x 500 g			19,33/500 g
T145.3	1 kg	plastic	33,25 €
Original pack 6 x 1 kg			31,59/1 kg
T145.5	2,5 kg new size	plastic	69,80 €
T145.4	5 kg	plastic	130,65 €

▶ Further accessoiries for hybridisation see chapter Biochemistry/Western-Blotting and chapters labware!

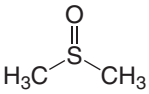
Blot incubation trays

Compatible with Western- and Southern blotting methods

Developed for incubation of filter membranes during signal detection after Western- and Southern blotting. The incubation trays can safely be stacked, and, due to the tightly sealing lids, evaporation of solution is prevented even during long incubation periods. The size, adapted to typical membrane sheets, reduces the amount of buffer needed during incubation. In case of version MINI, the 5 trays may be used separately as well as in uniform. Stabile, autoclavable, and reusable.
Made from polypropylene.

Model	Material	Dimensions W x L (mm)	Art. No.	Pack Qty.	€
MINI	PP	16 x 115	**4810.1**	5	45,70
MIDI	PP	90 x 90	**4811.1**	5	68,30
MAXI	PP	165 x 165	**4812.1**	5	148,35

General Reagents for Molecular Biology



Dimethyl sulphoxide

≥99,5 %, BioScience-Grade, for molecular biology

Recommended for PCR, sequencing, hybridisation and cell culture.
DMSO
C_2H_6OS
M 78,13 g/mol

A994.1	100 ml	glass	21,00 €
A994.2	250 ml	glass	32,15 €

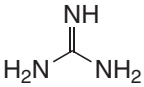
Formamide, deionized

≥99,5 %, BioScience-Grade, RNAse / DNAse-free

DNAse-free RNAse-free

Formic acid amide
CH_3NO
M 45,04 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
Danger H360FD-H351-H373

P040.1	250 ml	plastic	42,90 €



· HSCN

Guanidine thiocyanate

≥99 %, for biochemistry

Reagent for denaturation of proteins and for isolation of DNA and RNA.
GTC, Guanidinium isothiocyanate
$C_2H_6N_4S$
M 118,16 g/mol
Warning H302+H312+H332-H412-EUH032
Highly chaotropic agent that potently destroys the three-dimensional structure of proteins, leading to denaturation. Guanidinium (iso)thiocyanate contains potent anionic as well as cationic groups, that form strong hydrogen bonds. It, therefore, can be used to break protein disulfide bonds as well as to disrupt hydrophobic interactions, and is added during RNA extraction in order to inhibit RNAse activity.

Stock solution: 4 M or 8 M in water
Storage of stock solution: +4 °C
Working concentration: 4 M in hydrous buffer system
(e.g. 25 mM sodium citrate, 0.5 % SDS)
For a 4 M solution, solubilise 472,64 g in distilled water and fill to 1 l.

0017.1	100 g	plastic	26,55 €
0017.3	500 g	plastic	97,75 €
Original pack 6 x 500 g			92,86/500 g
0017.2	1 kg	plastic	157,50 €
Original pack 6 x 1 kg			149,63/1 kg

Good's Buffers for Applications in Molecular Biology

In order to compensate for the low Tris buffering capacity at pH levels below 7.5, Good and colleagues 1966 developed a new reagent group as a buffer for this range: N-substituted amino sulphonic acids[1]. Amino sulphonic acids behave like strong hybrid ions at physiological pH levels (approx. 7.0) and facilitate a large spectrum of molecular biological processes by virtue of their high buffering capacity.
The group of 'Good's buffers' also includes sulphonic acids and reagents such as bicine, tricine and AMP with higher pKa values, thus providing buffer substances for the entire pH range between 5.5 and 11.

[1]Good *et al.* (1966) *Biochemistry* 5:467-477.

Product	Buffer Reagent	pK_a (at 25 °C)	pH Range	Purity	Art. No.	Pack Qty.	€
ACES	N-(2-Acetamido)-2-aminoethanesulphonic acid	6,78	6,1-7,5	≥99 %	**9138.1**	10 g	19,25
					9138.2	100 g	141,40
AMP	2-Amino-2-methyl-1-propanol	6,69	8,7-10,4	≥90 %	**3121.1**	250 ml	33,90
AMPSO	3-N-(α,α-Dimethyl-hydroxyethyl)-amino-2-hydroxypropane sulphonic acid	9,00	8,3-9,7	≥98 %	**7159.1**	25 g	31,75
					7159.2	100 g	104,20
BES	N,N-Bis-(2-hydroxyethyl)-2-aminoethane sulphonic acid	7,09	6,4-7,8	≥99 %	**9134.1**	25 g	21,40
					9134.2	100 g	58,60
					9134.3	250 g	127,95
					9134.4	500 g	203,20
BICINE	N,N-Bis-(2-hydroxyethyl)-glycine	8,26	7,6-9,0	≥99 %	**9162.1**	50 g	36,05
					9162.2	250 g	117,20
					9162.3	500 g	166,65
CAPS	Cyclohexylamino propanesulphonic acid	10,40	9,7-11,1	≥99 %	**9168.1**	25 g	17,45
					9168.3	100 g	44,65
					9168.2	250 g	106,45
CAPSO	3-N-Cyclohexylamino-2-hydroxypropane sulphonic acid	9,60	8,9-10,3	≥98 %	**5584.3**	25 g	26,70
					5584.1	100 g	81,20
					5584.2	500 g	299,95
CHES	2-(Cyclohexylamino)-ethanesulphonic acid	9,50	8,6-10,0	≥99 %	**9166.1**	10 g	13,15
					9166.3	25 g	21,00
					9166.2	100 g	56,90
DIPSO	3-N-Bis(hydroxyethyl)-amino-2-hydroxypropane sulphonic acid	7,52	7,0-8,2	≥98 %	**7151.1**	25 g	65,50
HEPES	N-2-Hydroxyethyl piperazine-N'-2-ethane sulphonic acid	7,48	6,8-8,2	≥99,5 %, BioScience-Grade	**6763.1**	100 g	33,25
					6763.2	500 g	128,50
					6763.3	1 kg	213,95
MES	2-(N-Morpholino)-ethane sulphonic acid	6,10	5,5-6,7	≥99 %	**4256.2**	100 g	59,05
					4256.5	250 g	127,95
					4256.3	500 g	242,45
					4256.4	1 kg	428,95
MOPS	3-(N-Morpholino) propane sulphonic acid	7,14	6,5-7,9	≥99,5 %	**6979.2**	250 g	69,80
					6979.4	500 g	118,80
					6979.3	1 kg	228,45
					6979.5	2,5 kg	482,70
MOPSO	3-(N-Morpholino)-2-hydroxypropane sulphonic acid	6,87	6,2-7,6	≥98 %	**7117.1**	25 g	28,95
					7117.2	100 g	89,15
					7117.3	1 kg	665,45
PIPES	Piperazine-N,N'-bis-(2-ethanesulphonic acid)	6,76	6,1-7,5	≥99 %	**9156.1**	25 g	18,10
					9156.2	100 g	51,50
					9156.3	250 g	113,45
					9156.4	500 g	193,50
POPSO	Piperazine-N,N'-bis(2-hydroxypropane sulphonic acid)	7,78	7,2-8,5	≥99 %	**6632.1**	25 g	37,10
					6632.2	100 g	117,20
TAPS	N-Tris(hydroxymethyl)-methyl-3-amino-propane sulphonic acid	8,40	7,7-9,1	≥99 %	**6982.1**	10 g	12,80
					6982.2	100 g	39,70
					6982.3	250 g	79,45
					6982.4	500 g	141,80
TAPSO	3-N-Tris(hydroxymethyl)-methylamino-2-hydroxypropanesulphonic acid	7,61	7,0-8,2	≥99 %	**6628.1**	25 g	27,85
					6628.2	100 g	80,10
TES	N-[Tris-(hydroxymethyl)-methyl]-2-aminoethane sulphonic acid	7,40	6,8-8,2	≥99 %	**9137.1**	10 g	24,20
					9137.2	100 g	127,95
					9137.3	500 g	256,95
TRICINE	N-Tris-(hydroxymethyl)-methyl-glycine	8,05	7,4-8,8	≥99 %	**6977.1**	50 g	24,65
					6977.4	250 g	97,75
					6977.2	500 g	203,20
					6977.3	1 kg	284,90
					6977.5	2,5 kg	568,70

For additional product data and safety information, see chapter Chemicals A-Z.

Tris Buffers

Tris (hydroxymethyl) aminomethane (or 'Tris' for short) was first described[1] in 1897 and then proposed as a pH-stabilising reagent for biological systems[2] in 1946. On account of its high water solubility, its very large buffering capacity and the fact that it behaves inertly in a large number of enzymatic reactions, it has been used for many years as a base reagent for standard buffers in all fields of molecular biology.

[1]Piloty *et* Ruff (1897) *Proc. Soc. Exp. Biol. Med.* 6:233-234.

[2]Gomori (1946) *Ber. Dtsch. Chem. Ges.* 30:1656-1665.

In addition to the original, alkaline Tris, the pre-buffered Tris hydrochloride (Tris-HCl) is also available today. 1 M Tris buffer can be manufactured directly with a defined pH buffering range through skilful mixing of Tris (alkaline) and Tris-HCl. The table below specifies the mixing ratio for each Tris.

Please note: the pH buffered by the Tris mixture depends heavily on the temperature. The values found is the literature always refer to a temperature of 25 °C (unless specified otherwise).

Product	Buffer Reagent	pK_a (at 25 °C)	pH Range	Purity	Art. No.	Pack Qty.	€
BIS-TRIS	Bis-(2-hydroxyethyl)imino-tris-(hydroxymethyl)-methane	6,46	5,8-7,2	≥99 %	**9140.1**	50 g	48,95
					9140.2	250 g	196,20
					9140.3	500 g	332,20
BIS-TRIS-Propane	1,3-Bis[tris(hydroxymethyl)-methylamino]-propane	6,80	6,3-9,5	≥98 %	**6999.1**	25 g	54,75
					6999.2	100 g	198,35
TRIS	Tris(hydroxymethyl)-aminomethane	8,06	7,5-9,0	≥99,9 %, p.a.	**4855.1**	500 g	48,05
					4855.2	1 kg	83,75
					4855.5	2,5 kg	174,70
					4855.3	5 kg	348,85
					4855.4	10 kg	661,15
TRIS hydrochloride	Tris(hydroxymethyl)aminomethane hydrochloride, Tris-HCl	8,06	7,5-9,0	≥99 %, p.a.	**9090.1**	50 g	13,15
					9090.2	500 g	81,60
					9090.3	1 kg	120,95
					9090.5	2,5 kg	258,00
					9090.4	5 kg	493,45

For additional product data and safety information, see chapter Chemicals A-Z.

ready-to-use

S

Roti®-Stock 100x TE

BioScience-Grade, ready-to-use, steam sterilised

For molecular biology.

TE 100x ready-to-use solution

Warning H315-H319

100fold stock solution Tris/EDTA. The most popular solution and storage buffer for DNA can be obtained by diluting 1:100 with sterile water. The accompanying EDTA inhibits traces of DNAses and therefore protects your valuable nucleic acids from degradation. However, many other enyzmes such as ligases will also be inhibited through the complexation of bivalent cations, therefore TE-buffer should not be used as a solution buffer for cloning.
With original seal.

Composition:

1 M Tris (pH 8,0), 100 mM EDTA (pH 8,0) in deionised water, steam sterilised

1052.1	1 l	glass	75,15 €
Original pack 6 x 1 l			71,39/1 l

Table for the production of 1 molar Tris-buffer pH 7.2-9.0

pH at:			for 1 litre 1 M-solution	
5 °C	25 °C	37 °C	Tris (g)	Tris-HCl (g)
7.76	7.20	6.91	13.4	140.4
7.89	7.30	7.02	16.0	137.0
7.97	7.40	7.12	19.4	132.2
8.07	7.50	7.22	23.6	127.0
8.18	7.60	7.30	27.8	121.2
8.26	7.70	7.40	33.2	114.4
8.37	7.80	7.52	39.4	106.4
8.48	7.90	7.62	46.0	97.6
8.58	8.00	7.71	53.0	88.8
8.68	8.10	7.80	59.4	80.4
8.78	8.20	7.91	66.8	70.8
8.88	8.30	8.01	74.0	61.4
8.98	8.40	8.10	80.6	52.8
9.09	8.50	8.22	87.2	44.2
9.18	8.60	8.31	93.0	36.6
9.28	8.70	8.42	98.0	30.0
9.36	8.80	8.51	102.6	24.6
9.47	8.90	8.62	106.4	19.2
9.56	9.00	8.70	109.4	15.2

Instructions:
Dissolve the stated amounts Tris plus Tris HCl in 1 l water end volume. You will receive a 1 molar Tris-solution with the stated pH-value. The pH-value of the solution should be rechecked. As Tris and Tris HCl are hygroscopic, they should be dried before weighing. This will increase accuracy.

ready-to-use

S

Roti®-Stock 20 % SDS

BioScience-Grade, ready-to-use, 0,2 µm filtered

For molecular biology and electrophoresis.

SDS 20 % ready-to-use solution

Danger H318-H315-H335

20 % stock solution sodium dodecyl sulphate. Store the solution away from light in a dry place. SDS-stock solution and other solutions containing SDS should not be cooled below 24 °C otherwise the SDS may precipitate. The crystals can be easily resolubilised by heating them between 30 to 50 °C.
With original seal.

Composition:

20 % SDS in deionised water, 0,2 µm filtered

1057.1	1 l	glass	127,95 €
Original pack 6 x 1 l			121,55/1 l

DNAse-free RNAse-free

ready-to-use

S

Water

BioScience Grade, nuclease-free, steam sterilised, DEPC treated water

For molecular biology.

H_2O

M 18,02 g/mol

Distilled water mixed with DEPC and steam sterilised. By DEPC Histidin residues in proteins are modified to N-carbethoxy histidin, resulting in inhibition of RNases and DNases. DEPC decomposes to CO_2 and ethanol during sterilisation.
Also available as 50 reaction tubes with 1 ml each nuclease free water in a tube rack.
After autoclaving, each lot is photometrically tested for optimal purity in the wave length range relevant for nucleic acid research.

T143.1	250 ml	glass	24,20 €
T143.2	500 ml	glass	27,45 €
T143.3	1 l	glass	32,15 €
Original pack 6 x 1 l			30,54/1 l
T143.4	50 x 1 ml	plastic	81,20 €
T143.5	5 x 20 ml	glass	18,50 €

TIP

Further Reagents for DNA/RNA Analysis

Product	Purity	Art. No.	Pack Qty.	€
DAPI	≥98 %, p.a.	**6335.1**	25 mg	83,35
		6335.2	100 mg	231,15
DEPC	≥97 %, for biochemistry and molecular biology	**K028.3**	5 ml	23,55
		K028.1	25 ml	73,00
		K028.2	100 ml	126,75
1,4-Dithioerythritol	≥99 %, p.a.	**8814.1**	5 g	57,95
		8814.3	10 g	97,75
		8814.2	25 g	230,60
1,4-Dithiothreitol	≥99 %, p.a.	**6908.1**	5 g	53,65
		6908.3	10 g	80,55
		6908.2	25 g	190,85
		6908.4	100 g	567,10
Ethidium bromide	≥98 %	**7870.1**	1 g	21,40
		7870.2	5 g	83,75
Ethidium bromide solution 1 %	1 % solution in water (10 mg/ml)	**2218.1**	10 ml	9,90
		2218.4	15 ml	27,85
		2218.2	30 ml	21,00
		2218.3	100 ml	51,10
Ethidium bromide solution 0,025 %	aqueous solution (250 µg/ml)	**HP47.1**	15 ml	27,85
		HP47.2	5x15 ml	99,45
Ethidium bromide solution 0,5 %	aqueous solution (5 mg/ml)	**HP46.1**	15 ml	27,85
		HP46.2	5x15 ml	99,45
Ethylenediamine tetraacetic acid disodium salt dihydrate	≥99 %, p.a., ACS	**8043.3**	100 g	19,90
		8043.1	250 g	31,75
		8043.2	1 kg	93,00
		8043.4	5 kg	342,95
		8043.5	25 kg	762,20
Glycerol (anhydrous)	≥99,5 %, p.a., anhydrous	**3783.1**	1 l	48,95
		3783.3	1 l	52,90
		3783.2	2,5 l	87,65
		3783.4	2,5 l	95,60
β-Mercaptoethanol	≥99 %, p.a.	**4227.3**	100 ml	13,45
		4227.1	250 ml	18,85
		4227.2	1 l	42,90
Propidiumiodide	≥95 %, p.a.	**CN74.1**	25 mg	61,85
		CN74.2	50 mg	107,40
		CN74.3	100 mg	192,45
SDS, ultra pure	≥99,5 %, for electrophoresis	**2326.1**	100 g	36,05
		2326.4	250 g	76,25
		2326.2	500 g	138,70
		2326.3	500 g *	145,15
		2326.5	1 kg	235,45
Tris-(2-carboxy-ethyl)phosphine hydrochloride	≥98 %, for biochemistry	**HN95.1**	1 g	44,00
		HN95.2	5 g	142,90
Tween® 20	Ph.Eur.	**9127.1**	250 g	19,25
		9127.2	1 kg	47,85
		9127.3	2,5 kg	82,70

For additional product data and safety information, see chapter Chemicals A-Z.

* (in 2,5 l glass bottle for preparation of a 20 % solution)

Decontamination & Purification

Roti® Nucleic Acid-free

ready-to-use

ready-to-use

Ready-to-use solution for removal of nucleic acid contaminations from surfaces.

Warning H315-H319

Roti®-Nucleic Acid-free was specifically designed for extensive removal of nucleic acid contaminations. Being a mild reagent, Roti®-Nucleic Acid-free may be used on tables, laboratory devices, as well as on glass and plastic wares. By incubation or by wiping, laboratory benches, heating blocks, thermocyclers, pipettor shafts, reaction tubes a.s.o. can easily be cleaned. Contamination with foreign DNA or RNA, which may heavily interfere with sensitive assays like PCR, reverse transcription or sequencing, is hence efficiently eliminated.

HP69.1	500 ml	spray bottle	63,35 €
HP69.2	1 l	plastic	84,40 €
Original pack 6 x 1 l			80,18/1 l
HP69.3	2,5 l	plastic	188,15 €
Original pack 4 x 2,5 l			178,74/2,5 l

DNA AWAY®

ready-to-use solution for removal of DNA-contaminations

ready-to-use

Warning H315-H319

Suitable for PCR-applications. DNA AWAY® enables speedy and safe removal of DNA-contaminations, e.g. to prevent false-negative PCR results. For decontamination of surfaces as well as of lab ware like pipettors, thermocyclers, and reaction tubes.

Figure A: Full removal of DNA surface contaminations after 5 minutes (1 µg dried DNA each, a-d).

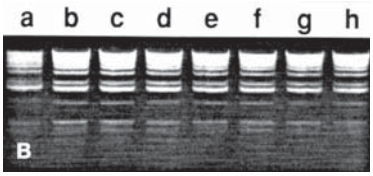


Figure B: No removal of solubilised DNA - for protection of your sample-DNA (1 µg DNA each, 5 minutes incubation).

X996.1	250 ml	plastic	38,30 €
X996.2	4 l	plastic	204,25 €

Instructions for use

can be found on the Internet next to the product description.

ready-to-use

RNase AWAY®

ready-to-use solution for removal of RNAse-contaminations

Warning H315-H319

Quick and safe removal of RNases from labware made of plastic or glass, e.g. pipettes, gel chambers, glass discs, etc.
A safe alternative to DEPC. Reduces the use of carcinogenic DEPC in the laboratory considerably. RNase AWAY® does not corrode the surface and is not carcinogenic. Creates and preserves RNase-free surfaces. No mixing, baking or time-consuming waiting. RNase AWAY® is chemically stable and requires no special storing.

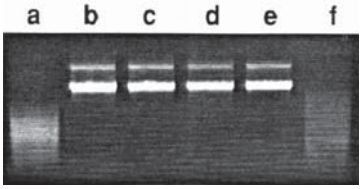


Figure: RNase-digestion of RNA (a, f), and removal of RNase by RNase AWAY® (d-e: undamaged RNA, 1µg poly(A)-RNA each).

Apply RNase AWAY® directly to surface, allow to work in, then rinse with water or dry with an RNase-free tissue cloth. For effective removing of RNases without influencing your DNA samples.

A998.1	250 ml	plastic	46,55 €
A998.4	475 ml	spray bottle	71,65 €
A998.2	1 l	plastic	96,65 €
Original pack 6 x 1 l			91,82/1 l
A998.3	4 l	plastic	181,70 €

DEPC

≥97 %, for biochemistry and molecular biology

Diethyl pyrocarbonate, Pyrocarbonic acid diethyl ester,
Dicarbonic acid diethyl ester.
$C_6H_{10}O_5$ • M 162,14 g/mol
Storage temp.: +4 °C

Warning H302+H332-H315-H319-H335

Histidin residues in proteins are modified to N-carbethoxy histidin, resulting in inhibition of RNases and DNases. DEPC decomposes to CO_2 and ethanol during steam sterilisation.
Application: 0.1 % DEPC over night under agitation. Autoclave.

K028.3	5 ml	glass	23,55 €
K028.1	25 ml	glass	73,00 €
K028.2	100 ml	plastic	126,75 €

S

DynaGard® Filter Tips

For sterilisation, clarification and filtration of solutions and fluids.

Easy aspiration and injection of fluids into and out of vials, ampoules, test tubes and other vessels with small openings.

- Easy to handle
- Time-saving
- High flow-rate
- Maximum sample recovery
- No needle needed

Suitable for all standard luer lock syringes.
Maximum operating pressure at room temperature: 5 bar (75 psi).

DynaGard® Cellulose mixed ester Filter Tips for aqueous solutions (CL56.1 - CL59.1) use an anisotropic hollow fiber membrane with micropores and high flow rate for filtration, thus combining the advantages of an enlarged filtration surface with a very low residual volume. Cellulose mixed ester tips are especially suitable for sterilizing and purifying small amounts of solution for molecular biology or microbiology.

Filtration surface (cm²)	Filtration volume	Max. hold-up volume
2.5	<5 ml	18 µl
5.5	>5 ml	35 µl

Filtration surface (cm²)	Pore size (µm)	Type	Art. No.	Pack Qty.	€
2.5	0.2	non sterile	**CL56.1**	200	402,05
5.5	0.2	non sterile	**CL57.1**	100	293,50
2.5	0.2	**sterile**	**CL58.1**	50	145,15
5.5	0.2	**sterile**	**CL59.1**	50	169,85

DynaGard® Polypropylene Filter Tips for HPLC (CL60.1 - CL63.1) are made from hollow polypropylene fibre membranes and are compatible with all of the common chemicals used as organic and aqueous HPLC solvents. Particularly suited for sample preparation prior to HPLC. Fluids can be clarified simply by aspiration into the syringe and loaded directly onto the column. **Autoclavable.**

Filtration surface (cm²)	Filtration volume	Max. hold-up volume
0.8	<5 ml	8 µl
3.9	>5 ml	30 µl

Filtration surface (cm²)	Pore size (µm)	Type	Art. No.	Pack Qty.	€
0.8	0.2	non sterile	**CL60.1**	200	507,40
3.9	0.2	non sterile	**CL61.1**	100	377,35

▶ Syringe filters see chapter Labware/Filtration!

Thermal Cyclers

licenced

Thermal Cycler ³PRIME

Compact, easy-to-handle thermal cyclers for each work bench. Made by TECHNE.

- Licensed for PCR
- New, upgraded generation
- Fast heating and cooling rates
- High temperature homogeneity
- Simple, intuitive programming
- 3,5´´ colour touch screen
- USB port
- Cost-efficient
- 4 years warranty on cyclers and blocks

New generation of reliable, inexpensive thermal cyclers specially developed for use on the individual bench, for student's courses and schools.

In order to enable very rapid heating and cooling rates at extremely low temperature variations in the block, an advanced block algorithm has been implemented, regulating the modern Peltier technology. The mono-tube blocks were specially designed to provide optimal contact between the PCR-vials and the block bore hole and are cut, with the most modern of technologies, out of high-grade material. In most ³PRIME instruments, the heated lid can be adjusted to the height of the PCR-vials, thus optimising the temperature and volume constancy in the sample. Intuitive programming and the newly designed colour touch screen with very easy handling, enable both simple as well as complex cycle protocols to be entered very easily and quickly. All thermal cycler models have 1000 program slots available. With Gradient Thermal Cycler a temperature gradient may be added freely to every temperature step of the program. Further data may be found online in our detailed product instruction manual or by calling one of our staff on the service hotline.

Purchase of this instrument conveys a limited non-transferable immunity from suit for the purchaser's own internal research and development and applied fields other than human *in vitro* diagnostics under non-real-time thermal cycler patents of Applied Biosystems LLC.

Technical Data:

Type	Personal Cycler ³PRIME	Standard Cycler ³PRIMEX	Gradient Cycler ³PRIMEG
Sample capacity	24 x 0,2 ml or 18 x 0,5 ml	48 x 0,2 ml or 30 x 0,5 ml	48 x 0,2 ml or 30 x 0,5 ml
Block temperature	4 - 100 °C		
Block uniformity at 55 °C	below ±0,3 °C		
Temperature accuracy at 55 °C	below ±0,2 °C		
Max. heating rate	3,0 °C/sec		
Max. cooling rate	2,1 °C/sec		
Peltier elements per block	2	4	4
Selectable lid temperature	35 °C - 115 °C (disengageable)		
Heated lid pressure	no	yes	4
Lid adjustable to tubes with	flat lid	flat and domed lids	flat and domed lids
Tubes	single tubes and strips		
PCR plates	no	48well plates*	48well plates*
Max. number of programs	1000		
Max. number of steps per program	10 stages with 10 steps each		
Max. repetition of cycles	99		
"Hold" time	1 sec - 4 h/59 min/59 sec		
Increment/Decrement function	yes (temperature and time)		
Ramp resolution	0,1 °C/sec		
Gradient temperature range	-	-	30 - 80 °C
Max. gradient range	-	-	14 °C
Min. gradient range	-	-	1 °C
Gradient calculator	-	-	yes
Oligonucleotide T_m calculator	yes (Nearest Neighbour method)		
Display	3,5´´ colour touch screen		
Auto-restart function	yes (disengageable)		
Data transfer	USB port		
Password protection	yes		
Warranty	4 years or 80,000 cycles		
Dimensions in cm (L x W X H)	35 x 21 x 18		
Weight (kg)	6		
Voltage	100-230 V, 50-60 Hz		
Power (W)	155		

* Heating block for 48 x 0,2 ml tubes only

Thermal Cycler ³PRIME (Personal)

With heating block	Art. No.	Pack Qty.	€
For 24 x 0.2 ml tubes	**4834.1**	1	2687,50
For 18 x 0.5 ml tubes	**4835.1**	1	2687,50

Thermal Cycler ³PRIMEX (Standard)

With heating block	Art. No.	Pack Qty.	€
For 48 x 0.2 ml tubes	**4837.1**	1	3493,75
For 30 x 0.5 ml tubes	**4838.1**	1	3493,75

Thermal Cycler ³PRIMEG (Gradient)

With heating block	Art. No.	Pack Qty.	€
For 48 x 0.2 ml tubes	**4847.1**	1	3923,75
For 30 x 0.5 ml tubes	**4848.1**	1	3923,75

licenced

Thermal Cycler PRIME

Versatile, easy-to-handle thermal cyclers for each laboratory. Made by TECHNE.

- Licensed for PCR
- New, upgraded generation
- Fast heating and cooling rates
- High temperature homogeneity
- Simple, intuitive programming
- 5,7´´ colour touch screen
- 8 Peltier elements per block
- USB port
- Cost-efficient
- 4 years warranty on cyclers and blocks

New generation of versatile, inexpensive thermal cyclers for use in the laboratory.

In order to enable very rapid heating and cooling rates at extremely low temperature variations in the block, an advanced block algorithm has been implemented, regulating the modern Peltier technology. The mono-tube blocks were specially designed to provide optimal contact between the PCR-vials and can be exchanged in a matter of seconds without the need of tools. The heated lid can be adjusted to the height of the PCR-vials, thus optimising the temperature and volume constancy in the sample. The modern, intuitive programming, and the newly designed colour touch screen with very easy handling, enable both simple as well as complex cycle protocols to be entered very easily and quickly. All thermal cycler models have 1000 program slots available. With Thermal Cycler Gradient a temperature gradient may be added freely to every temperature step of the program. Further data may be found online in our detailed product instruction manual or by calling one of our staff on the service hotline.

Purchase of this instrument conveys a limited non-transferable immunity from suit for the purchaser's own internal research and development and applied fields other than human *in vitro* diagnostics under non-real-time thermal cycler patents of Applied Biosystems LLC.

Technical Data:

Type	Standard Cycler PRIME	Gradient Cycler PRIMEG
Sample capacity	96 x 0,2 ml or 60 x 0,5 ml or 33 x 0,2 ml plus 33 x 0,5 ml	
Block temperature	4 - 100 °C	
Block uniformity at 55 °C	below ±0,3 °C	
Temperature accuracy at 55 °C	below ±0,25 °C	
Max. heating rate	3,4 °C/sec	
Max. cooling rate	1,0 °C/sec	
Peltier elements per block	8	
Selectable lid temperature	35 °C - 115 °C (disengeable)	
Heated lid pressure	yes	
Lid adjustable to tubes with	flat and domed lids	
Tubes	single tubes and strips	
PCR plates	96well and 384well plates	
Max. number of programs	1000	
Max. number of steps per program	10 stages with 10 steps each	
Max. repetition of cycles	99	
"Hold" time	1 sec - 4 h/59 min/59 sec	
Increment/Decrement function	yes (temperature and time)	
Ramp resolution	0,1 °C/sec	
Gradient temperature range	-	30 - 80 °C
Max. gradient range	-	29 °C (19 °C with 384wells)
Min. gradient range	-	1 °C
Gradient calculator	-	yes
Oligonucleotide T_m calculator	yes (Nearest Neighbour method)	
Display	5,7´´ color touch screen	
Auto-restart function	yes (disengeable)	
Data transfer	USB port	
Password protection	yes	
Warranty	4 years or 80 000 cycles	
Dimensions in cm (L x W X H)	42 x 24 x 24	
Weight (kg)	9,4	
Voltage	100-230 V, 50-60 Hz	
Power (W)	425	

Thermal Cycler PRIME (Standard)

With heating block	Art. No.	Pack Qty.	€
For 96 x 0.2 ml tubes	**4852.1**	1	4353,75
For 60 x 0.5 ml tubes	**4853.1**	1	4353,75
For 384well plates	**4854.1**	1	4353,75
Combi-block for 33 x 0.2 ml and 33 x 0.5 ml tubes	**0253.1**	1	4353,75

Thermal Cycler PRIMEG (Gradient)

With heating block	Art. No.	Pack Qty.	€
For 96 x 0.2 ml tubes	**4863.1**	1	4891,25
For 60 x 0.5 ml tubes	**4864.1**	1	4891,25
For 384well plates	**4865.1**	1	4891,25
Combi-block for 33 x 0.2 ml and 33 x 0.5 ml tubes	**0257.1**	1	4891,25

Instructions for use
can be found on the Internet next to the product description.

Nucleotides

- Available as ready-to-use set or mix, for contamination-free applications
- Purity ≥98 % (HPLC-tested)
- Tested for "long-run-PCR" of up to 30 kb
- DNAse-, RNAse-, Protease- and Phosphatase-free
- Free of PCR inhibitors like modified bases and tetra-pyrophosphate
- Adjusted to pH 8.5 for superior stability even during larger numbers of freeze-and-thaw cycles
- Also available adjusted to pH 7.0 for special applications (see below)
- Highly efficient enzymatic fabrication*

Applicable to
PCR, light-cycling, cDNA synthesis, labelling and primer-extension, mutagenesis-assays, sequencing reactions and *in vitro* transcription.

*of dATP, dGTP, dCTP and dUTP. dTTP ist synthesized chemically.

All Roth nucleotides are manufactured from highest-quality reagents and are most thoroughly tested for quality. This testing procedure not only includes standard-PCR (fig. 1) but also 'longrange-PCR' of up to 30 kb, repeated quantitative light-cycling reactions (fig. 2), and tests for physical stability (fig. 3).

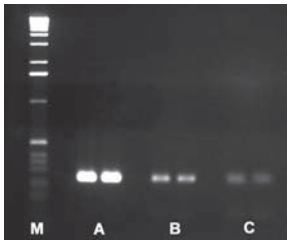


Fig. 1
Sensitivity assay I: Amplification of a 260 bp fragment of human genomic DNA with (left to right) 250 ng (A), 25 ng (B) and 2.5 ng (C) DNA as template (two replicates).

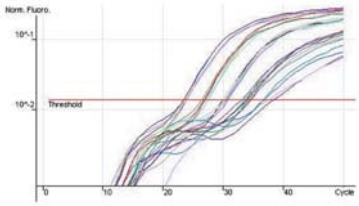


Fig. 2
Sensitivity assay II: Quantitative light-cycling-PCR on recombinant DNA with (left to right) 10 ng, 1 ng, 100 pg, 10 pg, 1 pg DNA as template (six replicates).

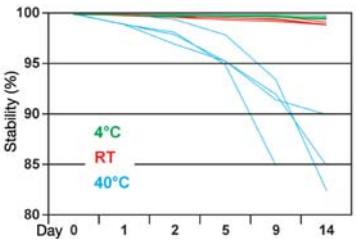


Fig. 3
Stability testing: HPLC analysis of all four dNTPs following incubation periodes of 1-14 days at different temperatures (4 °C - green; room temp. - red; 40 °C - blue). Stability of nucleotides is >99 % even after 14 days incubation at room temp. Even after an incubation period of 9 days at 40 °C, 85 % of all nucleotide molecules are still intact.

dNTP Sets

Free of RNAses, DNAses Proteases, Phosphatases, PCR inhibitors

dNTP-Set 1

≥99 %, dATP, dTTP, dGTP, dCTP
dNTP-Set 1, composed of the nucleotide-single solutions: dATP, dTTP, dGTP, dCTP.
Concentration: 100 mM per dNTP.
Deoxynucleoside triphosphate set
Storage temp. -20 °C • Transport temp.: cooled

K039.1	4 x 25 µmol (250 µl), 100 mM	91,95 €
K039.2	5 x 4 x 25 µmol (250 µl), 100 mM	385,95 €

dNTP-Set 1 (pH 7)

≥99 %, dATP, dTTP, dGTP, dCTP
dNTP-Set 1 (pH 7), composed of the nucleotide-single solutions: dATP, dTTP, dGTP, dCTP.
Concentration: 100 mM per dNTP, **pH 7,0 ±0,1**
Deoxynucleoside triphosphate set
Storage temp. -20 °C • Transport temp.: cooled

0178.1	4 x 25 µmol (250 µl), 100 mM	91,95 €
0178.2	5 x 4 x 25 µmol (250 µl), 100 mM	385,95 €

dNTP-Set 2

≥99 %, dATP, dUTP, dGTP, dCTP
dNTP-Set 2, composed of the nucleotide-single solutions: dATP, dUTP, dGTP, dCTP.
Concentration: 100 mM per dNTP.
Deoxynucleoside triphosphate set
Storage temp. -20 °C • Transport temp.: cooled

L540.1	4 x 25 µmol (250 µl), 100 mM	92,35 €
L540.2	5 x 4 x 25 µmol (250 µl), 100 mM	385,95 €

dNTP-Set 3

>98 %, dATP, dTTP, dITP, dCTP
dNTP-Set 3, composed of the nucleotide-single solutions: dATP, dTTP, dITP, dCTP.
Concentration: 100 mM per dNTP.
Deoxynucleoside triphosphate set
Storage temp. -20 °C • Transport temp.: cooled

P731.1	4 x 25 µmol (250 µl), 100 mM	91,95 €
P731.2	5 x 4 x 25 µmol (250 µl), 100 mM	385,95 €

Valid for all nucleotides:
Storage temp.: -20 °C
Transport temp.: cooled

dNTP Mixes

Roti®-Mix PCR 1
2 mM (per dNTP) dATP, dTTP, dGTP, dCTP
Roti®-Mix PCR 1, nucleotide-mixture containing dATP, dTTP, dGTP, dCTP.
Concentration: 2 mM per dNTP.
Storage temp. -20 °C • Transport temp.: cooled

L541.1	1 ml	plastic	22,50 €
L541.2	5 x 1 ml	plastic	87,65 €

Roti®-Mix PCR 2
2 mM (per dNTP) dATP, dUTP, dGTP, dCTP
Roti®-Mix PCR 2, nucleotide-mixture containing dATP, dUTP, dGTP, dCTP.
Concentration: 2 mM per dNTP.
Storage temp. -20 °C • Transport temp.: cooled

L542.1	1 ml	plastic	22,50 €
L542.2	5 x 1 ml	plastic	87,65 €

Roti®-Mix PCR 3
10 mM (per dNTP) dATP, dTTP, dGTP, dCTP
Roti®-Mix PCR 3, nucleotide-mixture containing dATP, dTTP, dGTP, dCTP.
Concentration: 10 mM per dNTP.
Storage temp. -20 °C • Transport temp.: cooled

L785.1	0,2 ml	plastic	22,50 €
L785.2	5 x 0,2 ml	plastic	87,65 €
L785.3	5 x 1 ml	plastic	368,75 €

Roti®-Mix PCR 3 (pH 7)
10 mM (pro dNTP) dATP, dTTP, dGTP, dCTP
Roti®-Mix PCR 3 (pH 7), nucleotide-mixture containing dATP, dTTP, dGTP, dCTP.
Concentration: 10 mM per dNTP, **pH 7,0 ±0,1**
Storage temp. -20 °C • Transport temp.: cooled

0179.1	0,2 ml	plastic	22,50 €
0179.2	5 x 0,2 ml	plastic	87,65 €

Roti®-Mix PCR 4
10 mM (per dNTP) dATP, dUTP, dGTP, dCTP
Roti®-Mix PCR 4, nucleotide-mixture containing dATP, dUTP,dGTP, dCTP.
Concentration: 10 mM per dNTP.
Storage temp. -20 °C • Transport temp.: cooled

L786.1	0,2 ml	plastic	22,50 €
L786.2	5 x 0,2 ml	plastic	87,65 €

dNTP Solutions

dATP solution
≥99 %, 100 mM solution
2'-Deoxyadenosine-5'-triphosphate
$C_{10}H_{13}N_5O_{12}P_3$
M 488,16 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{259} = 15.4 E x mmol^{-1} x cm^{-1}

K035.1	25 µmol (250 µl)	plastic	31,10 €

dCTP solution
≥99 %, 100 mM solution
2'-Deoxycytidine-5'-triphosphate
$C_9H_{13}N_3O_{13}P_3$
M 464,13 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{272} = 9.1 E x mmol^{-1} x cm^{-1}

K038.1	25 µmol (250 µl)	plastic	31,10 €

dGTP solution
≥99 %, 100 mM solution
2'-Deoxyguanosine-5'-triphosphate
$C_{10}H_{13}N_5O_{13}P_3$
M 504,16 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{252} = 13.7 E x mmol^{-1} x cm^{-1}

K037.1	25 µmol (250 µl)	plastic	31,10 €

dTTP solution
≥99 %, 100 mM solution
2'-Deoxythymidine-5'-triphosphate
$C_{10}H_{14}N_2O_{14}P_3$
M 479,14 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{267} = 9.6 E x mmol^{-1} x cm^{-1}

K036.1	25 µmol (250 µl)	plastic	31,10 €

dUTP solution
≥99 %, 100 mM solution
2'-Deoxyuridine-5'-triphosphate
$C_9H_{12}N_2O_{14}P_3$
M 465,12 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{262} = 10.2 E x mmol^{-1} x cm^{-1}

L539.1	25 µmol (250 µl)	plastic	31,10 €

dITP solution
≥99 %, 100 mM solution
2'-Deoxyinosine-5'-triphosphate
$C_{10}H_{12}N_4O_{13}P_3$
M 489,14 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{249} = 12.2 E x mmol^{-1} x cm^{-1}

P732.1	25 µmol (250 µl)	plastic	31,10 €

Parameters of Nucleotide Solutions

Nucleotides	Art. No.	pH value	Solvent
dNTP-Solution	K035-K038, L539, P732	8.5 ±0.1	Water
dNTP-Set	K039, L540, P731	8.5 ±0.1	Water
dNTP-Mix	L541, L542, L785, L786	8.5 ±0.1	Water
dNTP-Set or -Mix	0178, 0179	7.0 ±0.1	Water
NTP-Solution	K045-K048	8.0 ±0.2	20 mM Tris-HCl*
NTP-Set	K049	8.0 ±0.2	20 mM Tris-HCl*
ddNTP-Solution	K040-K043	8.0 ±0.2	Water
ddNTP-Set	K044	8.0 ±0.2	Water
Labelled Nucleotides	1047, 1048, 1049	7.5 ±0,2	Water

*For highly efficient Reverse Transcription

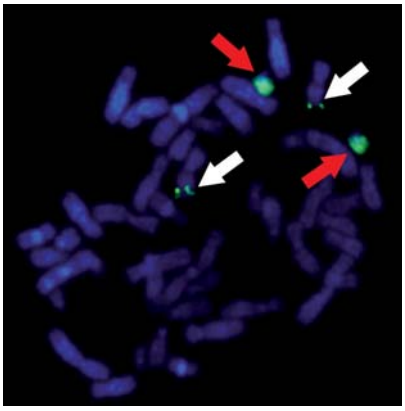


Figure:
Detection of chromosome wcp21q (whole chromosome paint, red arrows) and band 11q23 (BAC, bacterial artificial chromosome, white arrows) by FISH, labelling with fluorescein-12-dUTP.
With kind permission of PD Dr. Thomas Liehr, Institut for Humangenetik and Anthropologie, Friedrich-Schiller-Universität Jena.

Labelled dNTPs

- Ultra pure
- Stabile
- pH 7.5
- Tested for the lack of endo- and exonucleases, ribonucleases, and phosphatases

Applications:
Non-radioactive labelling of DNA via enzymatic reactions like e.g. PCR, reverse transcription, nick-end-translation, end-labelling, or random-priming. Can be incorporated by all standard DNA-polymerases (Taq-polymerase, T4 DNA-polymerase, Klenow fragment and so on).

Biotin-11-dUTP

≥95 %, 1 mM solution

For non-radioactive, enzymatic labelling of DNA.
Biotin-aminocaproyl-[5-(3-aminoallyl)-2'-deoxyuridine-5'-triphosphate]
$C_{28}H_{42}N_6O_{17}P_3S$ • M 859,65 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{240} = 10.7 E x mmol^{-1} x cm^{-1}; ε_{289} = 7.1 E x mmol^{-1} x cm^{-1}; pH: 7.5 ±0.2

Biotin-11-dUTP is able to replace dTTP in growing DNA-strands and is used for efficient non-radioactive DNA-labelling. As a general rule, the labelled DNA is then detected using streptavidin-conjugates by colorimetric (e.g. streptavidin-AP) or fluorometric (e.g. fluorescein-streptavidin) assays. Biotin-11-dUTP can be used for double staining techniques in combination with rhodamine-12-dUTP or fluorescein-12-dUTP and corresponding antibodies.

1047.1	25 nmol (25 µl)	plastic	109,55 €
1047.2	50 nmol (50 µl)	plastic	181,70 €

Fluorescein-12-dUTP

≥95 %, 1 mM solution

For non-radioactive, enzymatic labelling of DNA.
Fluorescein-6-carboxyaminocaproyl-[5-(3-aminoallyl)-2'-deoxyuridine-5'-triphosphate]
$C_{39}H_{38}N_4O_{21}P_3$ • M 991,66 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{495} (pH 9) = 70.0 E x mmol^{-1} x cm^{-1}; pH: 7.5 ±0.2

Fluorescein-12-dUTP is able to replace dTTP in growing DNA-strands and is used for efficient non-radioactive DNA-labelling. Detection of labelled nucleic acids can be done by direct analysis of fluorescent signals (e.g. by fluorescence microscopy) or by incubation with AP-coupled anti-fluorescein antibodies.
Fluorescein-12-dUTP can also be used for double staining techniques in combination with rhodamine-12-dUTP or biotin-11-dUTP and corresponding antibodies or streptavidin-complexes, respectively.
Excitation: 494 nm
Emission: 520 nm

1048.1	25 nmol (25 µl)	plastic	165,55 €
1048.2	50 nmol (50 µl)	plastic	294,05 €

Rhodamine-12-dUTP

≥95 %, 1 mM solution

For non-radioactive, enzymatic labelling of DNA.
Rhodamine-6-carboxyaminocaproyl-[5-(3-aminoallyl)-2'-desoxyuridine-5'-triphosphate]
$C_{39}H_{41}N_6O_{19}P_3$ • M 990,7 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{505} (pH 7) = 8.5 E x mmol^{-1} x cm^{-1}; pH: 7.5 ±0.2

Rhodamine-12-dUTP is able to replace dTTP in growing DNA-strands and is used for efficient non-radioactive DNA-labelling. Detection of labelled nucleic acids can easily be done by direct analysis of fluorescent signals (e.g. by fluorescence microscopy).
Rhodamine-12-dUTP can also be used for double staining techniques in combination with fluorescein-12-dUTP or biotin-11-dUTP and corresponding antibodies or streptavidin-complexes, respectively.
Rhodamine Green, mixture of 5/6 isomeres
Excitation: 505 nm
Emission: 530 nm (red)

1049.1	25 nmol (25 µl)	plastic	166,65 €
1049.2	50 nmol (50 µl)	plastic	289,20 €

dNTP Lyophilisates

dATP
≥95 %, lyophilised
2'-Deoxyadenosine-5'-triphosphate tri-sodium salt
$C_{10}H_{13}N_5O_{12}P_3Na_3 \cdot 3\ H_2O$ • M 611,17 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{259} = 15.4 E x mmol^{-1} x cm^{-1}

K050.1	10 mg	plastic	20,35 €
K050.2	100 mg	plastic	125,70 €

dCTP
≥95 %, lyophilised
2'-Deoxycytidine-5'-triphosphate tri-sodium salt
$C_9H_{13}N_3O_{13}P_3Na_3 \cdot 3\ H_2O$ • M 587,14 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{272} = 9.1 E x mmol^{-1} x cm^{-1}

K053.1	10 mg	plastic	20,35 €
K053.2	100 mg	plastic	126,35 €

dGTP
≥95 %, lyophilised
2'-Deoxyguanosine-5'-triphosphate tri-sodium salt
$C_{10}H_{13}N_5O_{13}P_3Na_3 \cdot 3\ H_2O$ • M 627,16 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{252} = 13.7 E x mmol^{-1} x cm^{-1}

K052.1	10 mg	plastic	20,35 €
K052.2	100 mg	plastic	126,35 €

dTTP
≥95 %, lyophilised
5'-Deoxythymidine-5'-triphosphate tri-sodium salt
$C_{10}H_{14}N_2O_{14}P_3Na_3 \cdot 3\ H_2O$ • M 602,15 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{267} = 9.6 E x mmol^{-1} x cm^{-1}

K051.1	10 mg	plastic	21,40 €
K051.2	100 mg	plastic	132,80 €

Important information on refrigerated transports

All products identified as being particularly temperature-sensitive are shipped in **special ice boxes with freezer packs or in dry ice.**
Additional costs resulting from such, **will be invoiced** (further informations on request).

Please note:
In order to guarantee optimum product quality, the dispatch of refrigerated transport products will be carried out **on Mon and Tue only outside Germany!**
Slight delays in delivery are therefore possible.

NTP Set

NTP-set
≥99 %, ATP, CTP, GTP, UTP
NTP-Set, consisting of the single nucleotide solutions:
ATP, CTP, GTP, UTP.
Concentration: 100 mM per NTP.
Ribonucleoside triphosphate-set
Storage temp. -20 °C • Transport temp.: cooled

K049.1	4 x 25 µmol (250 µl), 100 mM	plastic	119,90 €
K049.2	5 x 4 x 25 µmol (250 µl), 100 mM	plastic	396,70 €

NTP Solutions

ATP solution
≥99 %, 100 mM solution
Adenosine-5-triphosphate
$C_{10}H_{13}N_5O_{13}P_3$ • M 504,16 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{259} = 15.4 E x mmol^{-1} x cm^{-1}

K045.1	25 µmol (250 µl)	plastic	38,20 €

CTP solution
≥99 %, 100 mM solution
Cytidine-5'-triphosphate
$C_9H_{13}N_3O_{14}P_3$ • M 480,13 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{271} = 9.0 E x mmol^{-1} x cm^{-1}

K048.1	25 µmol (250 µl)	plastic	37,55 €

GTP solution
≥99 %, 100 mM solution
Guanosine-5'-triphosphate
$C_{10}H_{13}N_5O_{14}P_3$ • M 520,15 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{253} = 13.7 E x mmol^{-1} x cm^{-1}

K047.1	25 µmol (250 µl)	plastic	37,30 €

UTP solution
≥99 %, 100 mM solution
Uridine-5'-triphosphate
$C_9H_{12}N_2O_{15}P_3$ • M 481,11 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{262} = 10.0 E x mmol^{-1} x cm^{-1}

K046.1	25 µmol (250 µl)	plastic	37,10 €

NTP Lyophilisates

ATP

≥98 %, lyophilised
Adenosine-5-triphosphate di-sodium salt
$C_{10}H_{14}N_5O_{13}P_3Na_2 \cdot 3\ H_2O$
M 605,18 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{259} = 15.4 E x mmol^{-1} x cm^{-1}

K054.1	1 g	plastic	12,40 €
K054.2	5 g	plastic	33,90 €
K054.3	10 g	plastic	53,25 €
K054.4	25 g	plastic	117,20 €
K054.5	50 g	plastic	213,95 €

CTP

≥98 %, lyophilised
Cytidin-5'-triphosphate, di-sodium salt
$C_9H_{14}N_3O_{14}P_3Na_2 \cdot 3\ H_2O$
M 581,16 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{271} = 9.0 E x mmol^{-1} x cm^{-1}

K057.1	100 mg	plastic	19,60 €
K057.2	250 mg	plastic	48,95 €
K057.3	500 mg	plastic	95,15 €
K057.4	1 g	plastic	170,95 €

GTP

≥90 %, lyophilised
Guanosine-5'-triphosphate di-sodium salt
$C_{10}H_{14}N_5O_{14}P_3Na_2 \cdot 3\ H_2O$
M 621,18 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{253} = 13.7 E x mmol^{-1} x cm^{-1}

K056.1	100 mg	plastic	45,50 €
K056.2	250 mg	plastic	87,00 €
K056.3	500 mg	plastic	169,35 €
K056.4	1 g	plastic	278,45 €

UTP

≥90 %, lyophilised
Uridine-5'-triphosphate tri-sodium salt
$C_9H_{12}N_2O_{15}P_3Na_3 \cdot 3\ H_2O$
M 604,12 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{262} = 10.0 E x mmol^{-1} x cm^{-1}

K055.1	100 mg	plastic	35,40 €
K055.2	500 mg	plastic	130,65 €

ddNTP Set

ddNTP-Set

≥98 %, ddATP, ddCTP, ddGTP, ddTTP
ddNTP-set, composed of the nucleotid-single solutions ddATP, ddCTP, ddGTP, ddTTP.
Concentration: 10 mM per ddNTP.
Dideoxynucleoside triphosphate set
Storage temp. -20 °C • Transport temp.: cooled
pH 8.0 ±0.5

K044.1	4 x 1 µmol (100 µl), 10 mM	plastic	137,50 €

ddNTP Solutions

ddATP solution

≥98 %, 10 mM solution
2',3'-Dideoxyadenosine-5'-triphosphate
$C_{10}H_{13}N_5O_{11}P_3$
M 472,16 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{272} = 9.6 E x mmol^{-1} x cm^{-1}; pH 8.0 ±0.5

K040.1	1 µmol (100 µl)	plastic	42,90 €

ddCTP solution

≥98 %, 10 mM solution
2',3'-Dideoxycytidine-5'-triphosphate
$C_9H_{13}N_3O_{12}P_3$
M 448,13 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{272} = 9.6 E x mmol^{-1} x cm^{-1}; pH 8.0 ±0.5

K043.1	1 µmol (100 µl)	plastic	42,90 €

ddGTP solution

≥98 %, 10 mM solution
2',3'-Dideoxyguanosine-5'-triphosphate
$C_{10}H_{13}N_5O_{12}P_3$
M 488,16 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{252} = 13.7 E x mmol^{-1} x cm^{-1}; pH 8.0 ±0.5

K042.1	1 µmol (100 µl)	plastic	42,90 €

ddTTP solution

≥98 %, 10 mM solution
2',3'-Dideoxythymidine-5'-triphosphate
$C_{10}H_{14}N_2O_{13}P_3$
M 463,14 g/mol
Storage temp. -20 °C • Transport temp.: cooled
ε_{267} = 9.5 E x mmol^{-1} x cm^{-1}; pH 8.0 ±0.5

K041.1	1 µmol (100 µl)	plastic	42,90 €

▶ **Reagents for DNA synthesis** - see chapter Organic- & Bioorganic Chemicals!

Reagents for PCR

ready-to-use

Mineral Oil

for molecular biology

For overlaying PCR and other enzymatic reactions.

Light, colourless oil, particularly suitable for overlaying PCR and other enzymatic reactions such as restriction digestion, priming reactions or whole-mount *in situ* reactions incubated in warm temperatures.
Prevents fluid loss and reduces any danger of cross-contamination.

Each batch is functionally tested for its suitability in PCR.

Type analysis:

Colour. ..... clear, colourless
Density (25 °C). 0,818-0,880
Viscosity (40 °C). ..... ≤33,5 cSt
Readily carbonizable substances. ..... complies
Solid paraffin. ..... complies
Suitable for PCR. ..... complies

HP50.1	10 ml	glass	12,60 €
HP50.4	15 ml	dropp. bottle TIP	21,20 €
HP50.2	50 ml	plastic	25,50 €
HP50.3	250 ml	plastic	76,25 €

Water

ROTIPURAN® Low organic

High-purity water for sample preparation in organic trace analysis and for molecular biology.
H_2O
M 18,02 g/mol

Guarantee analysis:

TOC (Total Organic Carbon). ..... ≤20 ppb
Fluorescence (as quinine). ..... ≤100 ppt

Optical absorbance:

200 nm. ..... ≤0,01
254 nm. ..... ≤0,005
300 nm. ..... ≤0,005
400 nm. ..... ≤0,005

HN57.1	1 l	glass	59,70 €
Original pack 6 x 1 l			56,72/1 l
HN57.2	4 l	glass	97,75 €

▶ RNAse-/DNAse free water for molecular biology see page 1201

Ready-Made Primers

- Superior purity
- Standardised quality
- Immediately available

Roth poly d(T)$_{12-18}$ Primer

HPLC-purified, lyophilised

For sequence unspecific priming during reverse transcription.
Mix of d(T) 12 to 18mers. 5 OD_{260} units.
Storage temp. -20 °C • Transport temp.: room temp.
Delivery includes 5 x 1 OD_{260} units (31.2 µg or 7.3 nmol DNA each) poly d(T)$_{12-18}$ Primer in one vial each and 1 ml DEPC-treated water for molecular biology (DNAse-free, RNAse-free).

HP27.1	1 kit	47,20 €

Roth Hexanucleotide Random-Primer Mix

HPLC-purified, lyophilised

For random priming during probe generation or during total genome-amplification.
N_6 mix (N for A, G, C, T). 10 OD_{260} units.
Storage temp. -20 °C • Transport temp.: room temp.
Delivery includes 10 x 1 OD_{260} units (27.4 µg or 15.3 nmol DNA each) of hexanucleotide mixture in one vial each and 1 ml DEPC-treated water for molecularbiology (DNAse-free, RNAse-free).

HP28.1	1 kit	62,90 €

Roth Random-Primer kits for RAPD-PCR

20 x 10mer/kit. 2.0 OD_{260} units per primer, aliquoted in 2 vials each. Desalted and lyophilised.
Storage temp. -20 °C • Transport temp.: room temp.
Primer set for rapid amplification of polymorphic DNA (RAPD)-PCR.
For analysing DNA-polymorphisms or the change in genetic expression samples.
20 x 10mers with 60-80 % GC-assay.

Kit A	Kit B	Kit C	Kit D
Roth A–	Roth B–	Roth C–	Roth D–
01 CAggCCCTTC	01 gTTTCgCTCC	01 TTCgAgCCAg	01 ACCgCgAAgg
02 TgCCgAgCTg	02 TgATCCCTgg	02 gTgAggCgTC	02 ggACCCAACC
03 AgTCAgCCAC	03 CATCCCCCTg	03 gggggTCTTT	03 gTCgCCgTCA
04 AATCgggCTg	04 ggACTggAgT	04 CCgCATCTAC	04 TCTggTgAgg
05 AggggTCTTg	05 TgCgCCCTTC	05 gATgACCgCC	05 TgAgCggACA
06 ggTCCCTgAC	06 TgCTCTgCCC	06 gAACggACTC	06 ACCTgAACgg
07 gAAACgggTg	07 ggTgACgCAg	07 gTCCCgACgA	07 TTggCACggg
08 gTgACgTAgg	08 gTCCACACgg	08 TggACCggTg	08 gTgTgCCCCA
09 gggTAACgCC	09 TgggggACTC	09 CTCACCgTCC	09 CTCTggAgAC
10 gTgATCgCAg	10 CTgCTgggAC	10 TgTCTgggTg	10 ggTCTACACC
11 CAATCgCCgT	11 gTAgACCCgT	11 AAAgCTgCgg	11 AgCgCCATTg
12 TCggCgATAg	12 CCTTgACgCA	12 TgTCATCCCC	12 CACCgTATCC
13 CAgCACCCAC	13 TTCCCCCgCT	13 AAgCCTCgTC	13 ggggTgACgA
14 TCTgTgCTgg	14 TCCgCTCTgg	14 TgCgTgCTTg	14 CATCCgTgCT
15 TTCCgAACCC	15 ggAgggTgTT	15 gACggATCAg	15 CATCCgTgCT
16 AgCCAgCgAA	16 TTTgCCCggA	16 CACACTCCAg	16 AgggAgTAAg
17 gACCgCTTgT	17 AgggAACgAg	17 TTCCCCCCAg	17 TTTCCCACgg
18 AggTgACCgT	18 CCACAgCAgT	18 TgAgTgggTg	18 gAgAgCCAAC
19 CAAACgTCgg	19 ACCCCCgAAg	19 gTTgCCAgCC	19 CTggggACTT
20 gTTgCgATCC	20 ggACCCTTAC	20 ACTTCgCCAC	20 ACCCggTCAC

HP22.1	1 kit	Kit A	182,65 €
HP23.1	1 kit	Kit B	182,65 €
HP24.1	1 kit	Kit C	182,65 €
HP25.1	1 kit	Kit D	182,65 €

1 OD DNA is defined as the amount of DNA recieved by lyophilisation of 1 ml solution containing DNA-concentrations of 1 OD.

Biochemistry

Biological Buffers		1213
Detergents		1216
Enzymes		1221
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Inhibitors	Inhibitor Cocktails	1226
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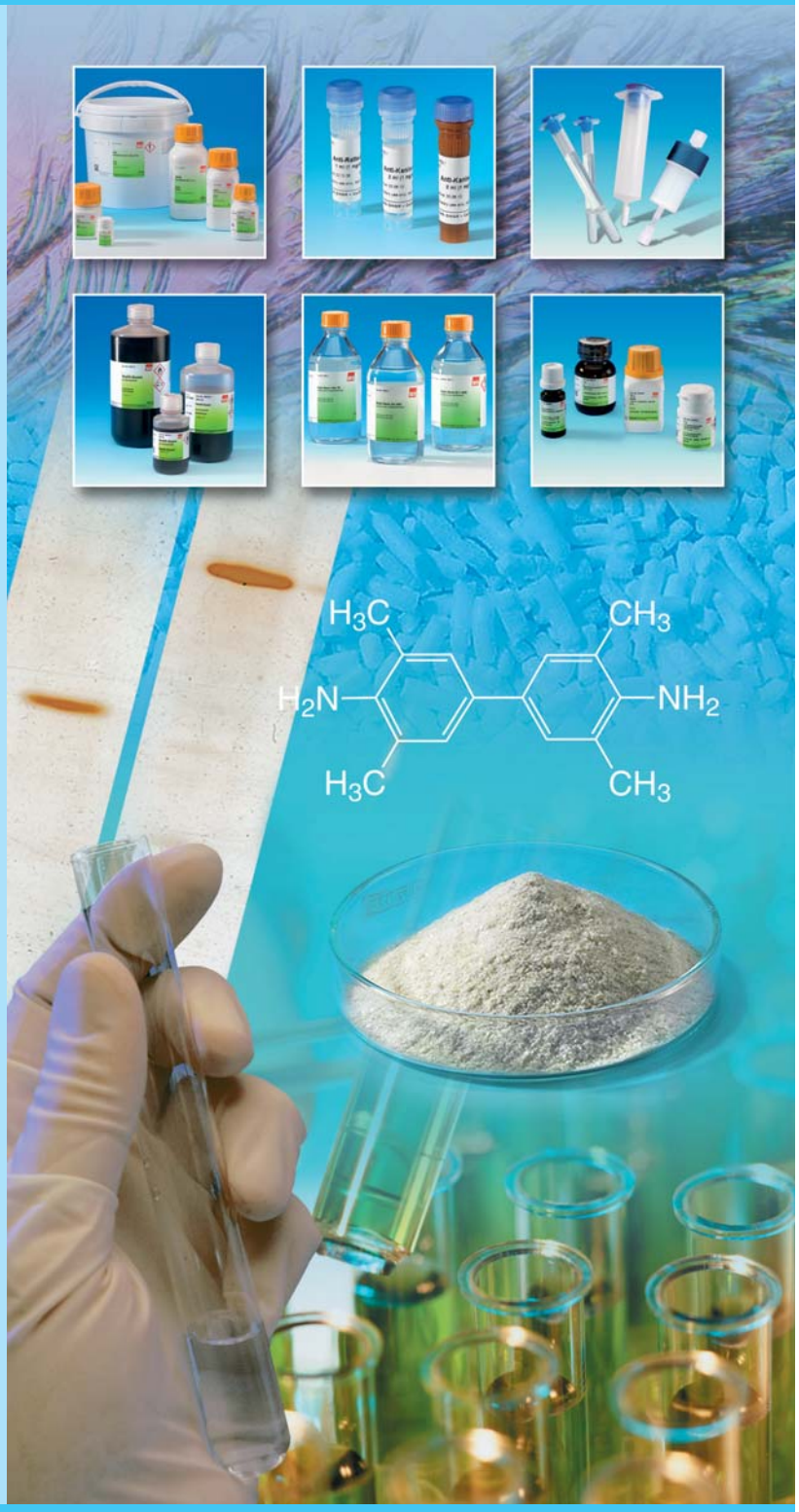


Biological Buffers

PUFFERAN® - for biochemistry, bioinorganic chemistry and molecular genetics

CELLPURE® - especially for cell culture

- Very high purity
- Dissolve easily in water and aqueous media
- No penetration or dissolution of membranes
- Low UV absorption
- No or only very weak complexing with cations
- Chemically stable
- No inhibition or activation of biological or biochemical reactions
- Minimal alteration of pH-value by temperature changes

Application Range of Biological Buffers

Buffer reagents (alphabetical)	pH range	pK_a (25 °C)
ACES	6.1-7.5	6.78
ADA	6.0-7.2	6.59
AMP	8.7-10.4	6.69
AMPSO	8.3-9.7	9.00
BES	6.4-7.8	7.09
BICINE	7.6-9.0	8.26
BIS-TRIS	5.8-7.2	6.46
BIS-TRIS-Propane	6.3-9.5	6.80
Cacodylic acid	5.0-7.4	6.27
CAPS	9.7-11.1	10.40
CAPSO	8.9-10.3	9.60
Carbonate buffers	6.0-8.0	6.35
CHES	8.6-10.0	9.50
Citrate	2.2-6.5	3.13
DIPSO	7.0-8.2	7.52
Glycine	2.2-3.6	2.35
Glycyl-glycine	2.5-3.8	3.14
HEPES	6.8-8.2	7.48
HEPES, EPPS	7.6-8.6	8.00
HEPPSO	7.1-8.5	7.85
Imidazole	6.2-7.8	6.95
MES	5.5-6.7	6.10
MOPS	6.5-7.9	7.14
MOPSO	6.2-7.6	6.87
Phosphate buffers	1.7-2.9	2.15
PIPES	6.1-7.5	6.76
POPSO	7.2-8.5	7.78
Potassium acetate	3.6-5.6	4.76
Pyridine	4.9-5.9	5.23
Sodium acetate	3.6-5.6	4.76
Sodium formiate	3.0-4.5	3.75
Succinate	3.2-5.2	4.21
TAPS	7.7-9.1	8.40
TAPSO	7.0-8.2	7.61
Taurine	8.4-9.6	9.06
TES	6.8-8.2	7.40
TRICINE	7.4-8.8	8.05
Triethanolamine	7.0-8.3	7.76
TRIS	7.5-9.0	8.06

Buffer reagents (buffered pH range)	pH range	pK_a (25 °C)
Phosphate buffers	1.7-2.9	2.15
Glycine	2.2-3.6	2.35
Citrate	2.2-6.5	3.13
Glycyl-glycine	2.5-3.8	3.14
Sodium formiate	3.0-4.5	3.75
Succinate	3.2-5.2	4.21
Potassium acetate	3.6-5.6	4.76
Sodium acetate	3.6-5.6	4.76
Pyridine	4.9-5.9	5.23
Cacodylic acid	5.0-7.4	6.27
MES	5.5-6.7	6.10
BIS-TRIS	5.8-7.2	6.46
ADA	6.0-7.2	6.59
Carbonate buffers	6.0-8.0	6.35
ACES	6.1-7.5	6.78
PIPES	6.1-7.5	6.76
MOPSO	6.2-7.6	6.87
Imidazole	6.2-7.8	6.95
BIS-TRIS-Propane	6.3-9.5	6.80
BES	6.4-7.8	7.09
MOPS	6.5-7.9	7.14
HEPES	6.8-8.2	7.48
TES	6.8-8.2	7.40
DIPSO	7.0-8.2	7.52
TAPSO	7.0-8.2	7.61
Triethanolamine	7.0-8.3	7.76
HEPPSO	7.1-8.5	7.85
POPSO	7.2-8.5	7.78
TRICINE	7.4-8.8	8.05
TRIS	7.5-9.0	8.06
HEPES, EPPS	7.6-8.6	8.00
BICINE	7.6-9.0	8.26
TAPS	7.7-9.1	8.40
AMPSO	8.3-9.7	9.00
Taurine	8.4-9.6	9.06
CHES	8.6-10.0	9.50
AMP	8.7-10.4	6.69
CAPSO	8.9-10.3	9.60
CAPS	9.7-11.1	10.40

A full summary of our Biological Buffer Salts may be found on the following pages.
For safety information and additional data, see chapter Chemicals A-Z.

Product	Purity	Art. No.	Pack Qty.	Pack.	€
ACES	PUFFERAN® ≥99 %	9138.1	10 g	plastic	19,25
		9138.2	100 g	plastic	141,40
ADA	PUFFERAN® ≥99 %	0250.1	50 g	plastic	20,65
		0250.2	100 g	plastic	33,55
		0250.3	500 g	plastic	118,15
AMP	PUFFERAN® ≥90 %	3121.1	250 ml	glass	33,90
AMPSO	PUFFERAN® ≥98 %	7159.1	25 g	plastic	31,75
		7159.2	100 g	plastic	104,20
AMPSO sodium salt	PUFFERAN® ≥98 %	7014.1	25 g	plastic	48,40
		7014.2	100 g	plastic	153,20
BES	PUFFERAN® ≥99 %	9134.1	25 g	plastic	21,40
		9134.2	100 g	plastic	58,60
		9134.3	250 g	plastic	127,95
		9134.4	500 g	plastic	203,20
BES sodium salt	PUFFERAN® ≥99 %	6998.1	25 g	plastic	34,30
		6998.2	100 g	plastic	89,80
BICINE	PUFFERAN® ≥99 %	9162.1	50 g	plastic	36,05
		9162.2	250 g	plastic	117,20
		9162.3	500 g	plastic	166,65
BIS-TRIS	PUFFERAN® ≥99 %	9140.1	50 g	plastic	48,95
		9140.2	250 g	plastic	196,20
		9140.3	500 g	plastic	332,20
BIS-TRIS-Propane	PUFFERAN® ≥98 %	6999.1	25 g	plastic	54,75
		6999.2	100 g	plastic	198,35
Cacodylic acid sodium salt trihydrate	PUFFERAN® ≥98 %	5169.3	10 g	plastic	20,35
		5169.1	50 g	plastic	56,90
		5169.2	250 g	plastic	188,15
CAPS	PUFFERAN® ≥99 %	9168.1	25 g	plastic	17,45
		9168.3	100 g	plastic	44,65
		9168.2	250 g	plastic	106,45
CAPSO	PUFFERAN® ≥98 %	5584.3	25 g	plastic	26,70
		5584.1	100 g	plastic	81,20
		5584.2	500 g	plastic	299,95
CAPSO sodium salt	PUFFERAN® ≥95 %	6861.1	25 g	plastic	25,70
CHES	PUFFERAN® ≥99 %	9166.1	10 g	plastic	13,15
		9166.3	25 g	plastic	21,00
		9166.2	100 g	plastic	56,90
Citric acid	≥99,5 %, p.a., ACS, anhydrous	X863.1	500 g	plastic	18,20
		X863.2	1 kg	plastic	27,85
		X863.3	2,5 kg	plastic	55,80
		X863.5	25 kg	plastic	342,95
DIPSO	PUFFERAN® ≥98 %	7151.1	25 g	plastic	65,50
Glycine	≥99 %, Blotting-Grade	0079.1	250 g	plastic	23,15
		0079.2	500 g	plastic	43,75
		0079.3	1 kg	plastic	69,35
		0079.4	2,5 kg	plastic	138,70
Glycine	PUFFERAN® ≥99 %, p.a.	3908.1	250 g	plastic	21,00
		3908.2	1 kg	plastic	67,65
		3908.3	5 kg	plastic	188,15
		3908.5	25 kg	plastic	654,70
Glycine	CELLPURE® ≥99 %	HN07.1	100 g	plastic	15,60
		HN07.2	500 g	plastic	42,50
		HN07.3	1 kg	plastic	77,30
Glycine	≥99 %, for biochemistry	3187.1	250 g	plastic	17,75
		3187.2	500 g	plastic	23,15
		3187.3	1 kg	plastic	36,25
		3187.4	5 kg	plastic	153,20
Glycylglycine	PUFFERAN® ≥99 %, ultra quality	3794.1	10 g	plastic	15,40
		3794.2	100 g	plastic	78,40
		3794.3	250 g	plastic	167,20
		3794.4	500 g	plastic	304,25
Glycylglycine	PUFFERAN® ≥98,5 %, Buffer Grade	HN74.1	50 g	plastic	31,10
		HN74.2	100 g	plastic	49,35
		HN74.3	250 g	plastic	107,40
		HN74.4	500 g	plastic	192,45

Product	Purity	Art. No.	Pack Qty.	Pack.	€
HEPES	PUFFERAN®, CELLPURE® ≥99,5 %	HN77.1	50 g	plastic	26,80
		HN77.2	100 g	plastic	39,25
		HN77.3	250 g	plastic	74,10
		HN77.4	500 g	plastic	131,70
		HN77.5	1 kg	plastic	231,05
HEPES	≥99,5 %, BioScience-Grade	6763.1	100 g	plastic	33,25
		6763.2	500 g	plastic	128,50
		6763.3	1 kg	plastic	213,95
HEPES	PUFFERAN® ≥99,5 %, p.a. new size	9105.2	100 g	plastic	31,10
		9105.4	500 g	plastic	128,90
		9105.3	1 kg	plastic	212,35
		9105.6	2,5 kg	plastic	428,95
		9105.5	5 kg	plastic	815,95
HEPES	PUFFERAN® ≥99,5 %, Buffer Grade	HN78.1	100 g	plastic	25,70
		HN78.2	500 g	plastic	86,55
		HN78.3	1 kg	plastic	158,60
		HN78.4	5 kg	plastic	719,20
HEPES 0,5 Na	PUFFERAN® ≥96 %	5582.1	50 g	plastic	53,65
HEPES sodium salt	PUFFERAN® ≥99 %	7020.1	25 g	plastic	31,10
		7020.2	100 g	plastic	96,65
HEPPS, EPPS	PUFFERAN® ≥98 %	9164.1	10 g	plastic	18,20
		9164.2	100 g	plastic	85,90
Imidazole	PUFFERAN® ≥99 %, p.a., ultra quality	X998.1	10 g	plastic	15,60
		X998.2	50 g	plastic	41,85
		X998.3	100 g	plastic	70,85
		X998.4	250 g	plastic	161,15
MES	PUFFERAN® ≥99 % new size	4256.2	100 g	plastic	59,05
		4256.5	250 g	plastic	127,95
		4256.3	500 g	plastic	242,45
		4256.4	1 kg	plastic	428,95
MES	≥99 %, for biochemistry	4259.1	50 g	plastic	31,10
		4259.2	100 g	plastic	45,05
		4259.3	250 g	plastic	90,20
		4259.4	500 g	plastic	158,60
		4259.5	1 kg	plastic	289,20
MES monohydrate	PUFFERAN® ≥99,5 %	6066.1	50 g	plastic	24,20
		6066.2	100 g	plastic	40,35
		6066.3	500 g	plastic	155,80
		6066.4	1 kg	plastic	267,70
MES potassium salt	PUFFERAN® ≥99 %	7033.1	25 g	plastic	28,95
		7033.2	100 g	plastic	100,95
MES sodium salt	PUFFERAN® ≥91 %	6922.1	25 g	plastic	21,20
		6922.2	100 g	plastic	77,95
MOPS	PUFFERAN® ≥99,5 % new size	6979.2	250 g	plastic	69,80
		6979.4	500 g	plastic	118,80
		6979.3	1 kg	plastic	228,45
		6979.5	2,5 kg	plastic	482,70
MOPS sodium salt	PUFFERAN® ≥99 %	6927.1	25 g	plastic	26,80
		6927.2	100 g	plastic	76,25
MOPSO	PUFFERAN® ≥98 %	7117.1	25 g	plastic	28,95
		7117.2	100 g	plastic	89,15
		7117.3	1 kg	plastic	665,45
MOPSO sodium salt	PUFFERAN® ≥98 %	7101.1	25 g	plastic	35,40
		7101.2	100 g	plastic	111,30
PIPES	PUFFERAN® ≥99 %	9156.1	25 g	plastic	18,10
		9156.2	100 g	plastic	51,50
		9156.3	250 g	plastic	113,45
		9156.4	500 g	plastic	193,50
PIPES monosodium salt	PUFFERAN® ≥97 %	9153.1	25 g	plastic	32,80
PIPES 1,5 Na	PUFFERAN® ≥96 %	5583.1	50 g	plastic	62,90
		5583.2	250 g	plastic	256,95
PIPES disodium salt	PUFFERAN® ≥95 %	7109.2	100 g	plastic	117,20
POPSO	PUFFERAN® ≥99 %	6632.1	25 g	plastic	37,10
		6632.2	100 g	plastic	117,20
POPSO 1.5 Na	PUFFERAN® ≥99 %	6965.1	25 g	plastic	55,80
		6965.2	100 g	plastic	170,95

Product	Purity	Art. No.	Pack Qty.	Pack.	€
Potassium acetate	≥99 %, p.a.	**T874.1**	500 g	plastic	31,75
		T874.2	1 kg	plastic	48,30
		T874.3	2,5 kg	plastic	94,10
		T874.5	25 kg	plastic	643,95
Potassium dihydrogen phosphate	≥99 %, p.a., ACS	**3904.2**	250 g	plastic	16,70
		3904.1	1 kg	plastic	48,30
		3904.3	5 kg	plastic	196,65
Potassium dihydrogen phosphate	≥99 %, p.a., ACS	**3904.5**	25 kg	plastic	815,95
di-Potassium hydrogen phosphate	≥99 %, p.a., anhydrous	**P749.1**	500 g	plastic	25,70
		P749.2	1 kg	plastic	46,80
		P749.3	2,5 kg	plastic	93,45
		P749.5	25 kg	plastic	751,45
Pyridine	ROTIPURAN® ≥99,5 %, p.a., ACS	**9729.3**	500 ml	glass	58,60
		9729.1	1 l	glass	109,15
		9729.2	2,5 l	glass	238,65
Sodium acetate	≥99 %, p.a., ACS, anhydrous	**6773.1**	250 g	plastic	22,80
		6773.2	1 kg	plastic	59,70
		6773.3	2,5 kg	plastic	123,55
		6773.5	25 kg	plastic	751,45
Sodium carbonate	≥99,5 %, p.a., ACS, anhydrous	**A135.1**	500 g	plastic	18,50
		A135.2	1 kg	plastic	32,15
		A135.3	5 kg	plastic	123,10
Mono sodium citrate	≥99 %, extra pure, anhydrous	**HN13.1**	100 g	plastic	13,80
		HN13.2	500 g	plastic	34,30
		HN13.3	1 kg	plastic	52,60
Sodium dihydrogen phosphate dihydrate	≥99 %, p.a.	**T879.1**	500 g	plastic	21,40
		T879.2	1 kg	plastic	32,15
		T879.3	2,5 kg	plastic	66,55
		T879.5	25 kg	plastic	557,95
Sodium formate	≥99 %, p.a., ACS	**4404.1**	250 g	plastic	24,20
		4404.2	500 g	plastic	42,50
		4404.3	1 kg	plastic	73,00
Sodium hydrogen carbonate	≥99,5 %, p.a., ACS, ISO	**6885.2**	500 g	plastic	14,20
		6885.1	1 kg	plastic	21,75
		6885.3	5 kg	plastic	77,30
		6885.5	25 kg	plastic	321,45
di-Sodium hydrogen phosphate	≥99 %, p.a., ACS, anhydrous	**P030.1**	500 g	plastic	28,95
		P030.2	1 kg	plastic	46,15
		P030.3	2,5 kg	plastic	85,90
Succinic acid disodium salt hexahydrate	≥99 %, for biochemistry	**3195.1**	100 g	plastic	34,95
TAPS	PUFFERAN® ≥99 %	**6982.1**	10 g	plastic	12,80
		6982.2	100 g	plastic	39,70
		6982.3	250 g	plastic	79,45
		6982.4	500 g	plastic	141,80
TAPS sodium salt	PUFFERAN® ≥98 %	**3583.1**	25 g	plastic	33,25
		3583.2	100 g	plastic	110,20
TAPSO	PUFFERAN® ≥99 %	**6628.1**	25 g	plastic	27,85
		6628.2	100 g	plastic	80,10
TAPSO sodium salt	PUFFERAN® ≥99 %	**6974.1**	25 g	plastic	28,50
		6974.2	100 g	plastic	86,55
Taurine	≥99 %, for biochemistry	**4721.1**	100 g	plastic	17,75
		4721.2	500 g	plastic	47,85
TES	PUFFERAN® ≥99 %	**9137.1**	10 g	plastic	24,20
		9137.2	100 g	plastic	127,95
		9137.3	500 g	plastic	256,95
TRICINE	PUFFERAN® ≥99 %	**6977.1**	50 g	plastic	24,65
		6977.4	250 g	plastic	97,75
		6977.2	500 g	plastic	203,20
		6977.3	1 kg	plastic	284,90
		6977.5	2,5 kg	plastic	568,70
Triethanolamine	≥99 %, for synthesis	**6300.1**	1 l	plastic	23,90
		6300.3	2,5 l	plastic	38,60
		6300.2	10 l	tinplate	124,60
Triethanolamine hydrochlorideTRIS	≥99 %, for biochemistry	**4804.1**	100 g	plastic	53,25

Product	Purity	Art. No.	Pack Qty.	Pack.	€
TRIS	PUFFERAN® ≥99,9 %, p.a.	**4855.1**	500 g	plastic	48,05
		4855.2	1 kg	plastic	83,75
		4855.5	2,5 kg	plastic	174,70
		4855.3	5 kg	plastic	348,85
		4855.4	10 kg	plastic	661,15
TRIS	≥99,9 %, Blotting-Grade	**0188.1**	250 g	plastic	33,25
		0188.2	500 g	plastic	56,45
		0188.3	1 kg	plastic	91,95
		0188.4	2,5 kg	plastic	176,85
TRIS	CELLPURE® ≥99,9 %	**3170.1**	100 g	plastic	23,90
		3170.2	500 g	plastic	71,95
TRIS	PUFFERAN® ≥99,9 %, Ultra quality	**5429.1**	500 g	plastic	40,75
		5429.3	1 kg	plastic	76,25
		5429.5	2,5 kg	plastic	165,05
		5429.2	5 kg	plastic	313,90
		5429.4	10 kg	plastic	607,40
TRIS	≥99 %, Ph.Eur., USP	**A411.1**	500 g	plastic	38,20
		A411.2	1 kg	plastic	67,65
		A411.3	5 kg	plastic	299,95
TRIS	PUFFERAN® ≥99,3 %, Buffer Grade	**AE15.1**	500 g	plastic	28,50
		AE15.2	1 kg	plastic	51,10
		AE15.3	5 kg	plastic	220,95
		AE15.4	10 kg	plastic	385,95
		AE15.5	25 kg	plastic	880,45
TRIS acetate	PUFFERAN® ≥99 %	**7125.1**	25 g	plastic	27,85
		7125.2	100 g	plastic	99,90
TRIS carbonate	PUFFERAN®	**9158.1**	50 g	plastic	33,25
		9158.2	500 g	plastic	109,55
TRIS hemisulphate	PUFFERAN® ≥98 %	**6986.1**	25 g	plastic	19,25
		6986.2	100 g	plastic	44,00
TRIS hydrochloride	PUFFERAN® ≥99 %, p.a. new size	**9090.1**	50 g	plastic	13,15
		9090.2	500 g	plastic	81,60
		9090.3	1 kg	plastic	120,95
		9090.5	2,5 kg	plastic	258,00
		9090.4	5 kg	plastic	493,45
TRIS maleate	PUFFERAN®≥98 %	**6991.1**	100 g	plastic	89,15

For additional product data and safety information, see chapter Chemicals A-Z.

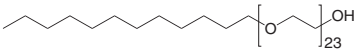
Table for the production of 1 molar Tris-buffer pH 7.2-9.0

pH at:			for 1 litre 1 M-solution	
5 °C	25 °C	37 °C	Tris (g)	Tris-HCl (g)
7.76	7.20	6.91	13.4	140.4
7.89	7.30	7.02	16.0	137.0
7.97	7.40	7.12	19.4	132.2
8.07	7.50	7.22	23.6	127.0
8.18	7.60	7.30	27.8	121.2
8.26	7.70	7.40	33.2	114.4
8.37	7.80	7.52	39.4	106.4
8.48	7.90	7.62	46.0	97.6
8.58	8.00	7.71	53.0	88.8
8.68	8.10	7.80	59.4	80.4
8.78	8.20	7.91	66.8	70.8
8.88	8.30	8.01	74.0	61.4
8.98	8.40	8.10	80.6	52.8
9.09	8.50	8.22	87.2	44.2
9.18	8.60	8.31	93.0	36.6
9.28	8.70	8.42	98.0	30.0
9.36	8.80	8.51	102.6	24.6
9.47	8.90	8.62	106.4	19.2
9.56	9.00	8.70	109.4	15.2

Instructions:
Dissolve the stated amounts Tris plus Tris HCl in 1 l water end volume. You will receive a 1 molar Tris-solution with the stated pH-value. The pH-value of the solution should be rechecked. As Tris and Tris HCl are hygroscopic, they should be dried before weighing. This will increase accuracy.

Detergents

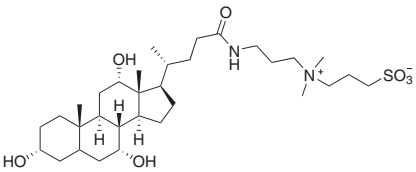
The dissolving power of detergents is utilised to deal with a number of molecular-biological and biochemical problems.
For additional data see chapter Chemicals A-Z.



Brij® 35

for biochemisty
Non-ionic detergent.
Polyoxyethylene lauryl ether, Polyethylene glycol lauryl ether
$C_{58}H_{118}O_{24}$
M 1198,57 g/mol
Copolymer and non-ionoic detergent with polyoxyethylen goup.
Highly resistant against acids and bases. Particularly suited for emulgation of fats at high or low pH values. Also well suited for protein analysis, since Brij® 35 does neither denature nor dissociate proteins.
Application:
0.5 % solution: Solubilize 0.5 g Brij® 35 in 100 ml hot water. Tip: In case some detergent precipitates during cooling, dilute to 150 ml (0.34 % solution) and use 1.5 vol. in the assay.

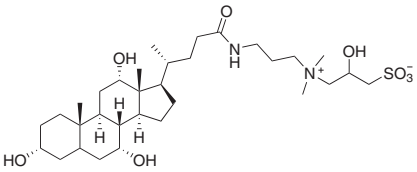
CN21.1	250 g	plastic	16,05 €
CN21.2	500 g	plastic	24,65 €
Original pack 6 x 500 g			23,42/500 g
CN21.3	1 kg	plastic	37,10 €
Original pack 6 x 1 kg			35,25/1 kg



CHAPS

PUFFERAN® ≥98 %, for biochemistry
Buffer substance, zwitterionic detergent
3-[(3-Cholamidopropyl)dimethyl ammonio]-1-propane sulphonate
$C_{32}H_{58}N_2SO_7$
M 614,9 g/mol
Storage temp.: +4 °C
Warning H315-H319-H335

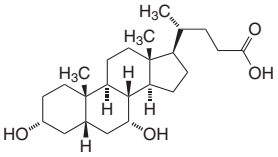
1479.1	5 g	plastic	55,80 €
1479.3	10 g	plastic	93,00 €
1479.2	25 g	plastic	192,45 €
1479.4	100 g	plastic	407,45 €



CHAPSO

PUFFERAN® ≥99 %, for biochemistry
Buffer substance, zwitterionic detergent
3-[(3-Cholamidopropyl)-dimethylamino]-2-hydroxy-1-propanesulphonate
$C_{32}H_{58}N_2O_8S$
M 630,88 g/mol
Storage temp.: +4 °C
Warning H315-H319-H335

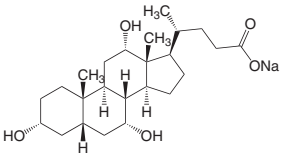
HN73.1	1 g	plastic	54,75 €
HN73.2	5 g	plastic	177,40 €
HN73.3	10 g	plastic	321,45 €



Chenodeoxycholic acid

≥98 %, for biochemistry
Anionic detergent
3α,7α-Dihydroxy-5β-cholanic acid
$C_{24}H_{40}O_4$
M 392,58 g/mol
Warning H361-H302+H312+H332

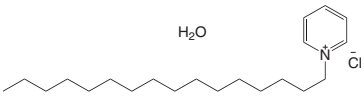
4128.1	5 g	glass	32,15 €
4128.2	10 g	glass	60,10 €
4128.3	25 g	glass	116,65 €



Cholic acid sodium salt

≥99 %, for biochemistry
Anionic detergent
Sodium cholate
$C_{24}H_{39}NaO_5$
M 430,57 g/mol

3407.1	50 g	plastic	54,75 €

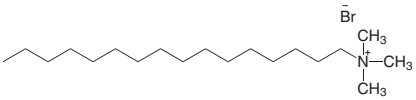


CPC

≥98 %, for biochemistry
Cationic detergent
Hexadecylpyridinium chloride monohydrate, Cetylpyridinium chloride monohydrate
$C_{21}H_{38}ClN \cdot H_2O$
M 358,01 g/mol

Danger H301-H330-H400-H410-H315-H319-H335

CN27.1	100 g	plastic	26,35 €
CN27.2	500 g	plastic	98,40 €
Original pack 6 x 500 g			93,48/500 g

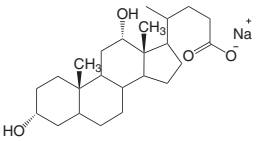


CTAB

≥99 %, for biochemistry
Cationic detergent
Hexadecyl-trimethylammonium bromide, Cetyltrimethylammonium bromide
$C_{19}H_{42}BrN$
M 364,46 g/mol

Danger H400-H302-H315-H318-H335-H373

9161.1	100 g	plastic	18,20 €
9161.3	500 g	plastic	61,85 €
Original pack 6 x 500 g			58,76/500 g
9161.2	1 kg	plastic	110,65 €
Original pack 6 x 1 kg			105,12/1 kg



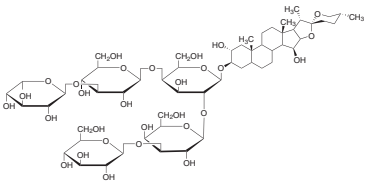
Deoxycholic acid sodium salt

≥98 %, for biochemistry
Anionic detergent
Sodium deoxycholate, DOC
$C_{24}H_{39}NaO_4$
M 414,64 g/mol
Storage temp.: +4 °C

Warning H302-H335-H315-H319

3484.1	10 g	plastic	17,10 €
3484.2	50 g	plastic	52,60 €
3484.3	100 g	plastic	91,30 €

Safety data sheets
can be found on the Internet next to the product description.



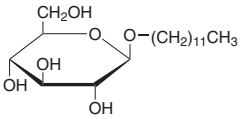
Digitonin

Ultra Quality
Water soluble quality, for biochemistry. Non-ionic detergent.
$C_{56}H_{92}O_{29}$
M 1229,32 g/mol

Danger H301+H311+H331

Steroid glycoside and non-ionic detergent with high binding capacity for cholesterol. Digitonin is used for permeabilisation of plasma membranes as well as for mild solubilisation of membrane-bound proteins.
Application: Use 10 -100 µg/ml for selective permeabilisation of plasma membranes via binding of cholesterol (Mooney, R.A. (1988). *Methods Enzymol.* 159:193-2).

HN76.3	100 mg	glass	71,50 €
HN76.1	250 mg	glass	158,60 €
HN76.2	1 g	glass	526,75 €

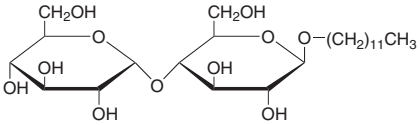


n-Dodecyl-β-D-glucopyranoside

for biochemistry
Non-ionic detergent
n-Dodecyl-β-D-Glc
$C_{18}H_{36}O_6$
M 348,48 g/mol
Storage temp.: +4 °C

Warning H315-H319-H335

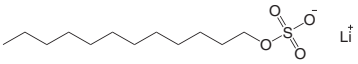
4129.1	500 mg	glass	240,80 €



Dodecyl-β-D-maltoside (DDM)

≥99 %, for biochemistry
Non-ionic detergent
DDM, Lauryl-β-D-maltoside
$C_{24}H_{46}O_{11}$
M 510,63 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
Mainly used for isolation and solubilisation of membrane proteins. Isolated proteins frequently remain folded in native complexes with stabile conformation and high activity.

CN26.1	500 mg	glass	38,20 €
CN26.2	1 g	glass	61,85 €
CN26.3	2,5 g	glass	133,85 €
CN26.4	10 g	glass	443,45 €



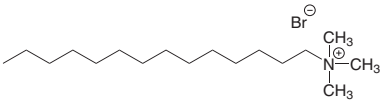
Lithiumdodecyl sulphate (LDS)

≥99 %, for biochemistry
Anionic detergent
LDS, Lithium lauryl sulphate
$C_{12}H_{25}LiO_4S$
M 272,33 g/mol

Danger H228-H318-H315-H335

For special applications in molecular biology, and for release of peptides from protein complexes. Compared with SDS, LDS has higher solubility and, under certain conditions, may be used to replace SDS in PAGE.

CN25.1	10 g	plastic	25,30 €
CN25.2	25 g	plastic	49,35 €
CN25.3	50 g	plastic	89,80 €

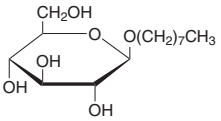


MTAB

≥96 %, extra pure
N,N,N-Trimethyl-1-tetradecanammonium bromide, Myristyltrimethylammonium bromide, Tetradecyltrimethylammonium bromide
$C_{17}H_{38}BrN$
M 336,42 g/mol

Danger H302-H315-H318-H335-H373-H400

7452.1	100 g	plastic	35,40 €
7452.2	500 g	plastic	141,40 €
Original pack 6 x 500 g			134,33/500 g
7452.3	1 kg	plastic	267,70 €
Original pack 6 x 1 kg			254,32/1 kg
7452.4	2,5 kg	plastic	590,20 €

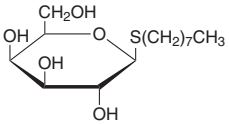


n-Octyl-β-D-glucopyranoside

≥99 %, for biochemistry
Non-ionic detergent
OGP, Octylglucoside
$C_{14}H_{28}O_6$
M 292,38 g/mol
Storage temp.: +4 °C

Non-ionic, non-denaturing, water-soluble detergent, mainly used for isolation of membrane proteins. Easily removable by dialysis.
No photometric absorption at 280 nm.
Recommended working solution: 30 mM
Always prepare working solutions freshly.

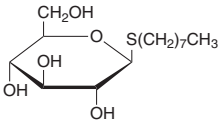
CN23.1	1 g	glass	24,65 €
CN23.2	5 g	glass	89,15 €
CN23.3	10 g	glass	147,85 €



n-Octyl-β-D-thiogalactopyranoside

≥98 %, for biochemistry
Non-ionic detergent
Octyl-β-D-thiogalactoside, n-Octyl-1-thio-β-D-Gal
$C_{14}H_{28}O_5S$
M 308,44 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

4133.1	500 mg	glass	48,30 €
4133.2	1 g	glass	83,75 €



n-Octyl-β-D-thioglucopyranoside

≥95 %, for biochemistry
Non-ionic detergent
Octyl-β-D-thioglucoside, n-Octyl-1-thio-β-D-Glc
$C_{14}H_{28}O_5S$
M 308,44 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

Octyl-β-D-thioglucopyranoside excels by its stability in aqueous solutions. It is also easily removed by dialysis. Hence, it is highly useful for isolation of native membrane proteins.

4139.3	500 mg	glass	33,25 €
4139.1	1 g	glass	50,45 €
4139.2	5 g	glass	188,15 €

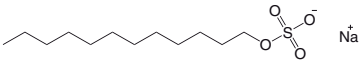
Roti®-Stock 20 % SDS

BioScience-Grade, ready-to-use, 0,2 µm filtered
For molecular biology and electrophoresis.
SDS 20 % ready-to-use solution

Danger H318-H315-H335

20 % stock solution sodium dodecyl sulphate. Store the solution away from light in a dry place. SDS-stock solution and other solutions containing SDS should not be cooled below 24 °C otherwise the SDS may precipitate. The crystals can be easily resolubilised by heating them between 30 to 50 °C.
With original seal.

1057.1	1 l	glass	127,95 €
Original pack 6 x 1 l			121,55/1 l



SDS

≥99,5 %, Blotting-Grade
For Western- and Southern blotting
Sodium dodecyl sulphate, Sodium lauryl sulphate, Dodecyl sulphate sodium salt, Lauryl sulphate sodium salt, SLS
$C_{12}H_{25}NaO_4S$
M 288,38 g/mol

Danger H228-H302+H332-H315-H318-H335-H412

SDS of particularly high purity, tested for absence of heavy metals and for UV-absorption qualities. Particularly suitable for Western- and Southern blotting, as well as for immunodetection and assays in molecular biology.

0183.1	100 g	plastic	44,00 €
0183.2	250 g	plastic	93,45 €
0183.3	500 g	plastic	152,15 €
Original pack 6 x 500 g			144,54/500 g

SDS ultra pure

≥99,5 %, for electrophoresis
Anionic detergent.
Sodium dodecyl sulphate, Sodium lauryl sulphate, Dodecyl sulphate sodium salt, Lauryl sulphate sodium salt, SLS
$C_{12}H_{25}NaO_4S$
M 288,38 g/mol

Danger H228-H302+H332-H315-H318-H335-H412

2326.1	100 g	plastic		36,05 €
2326.4	250 g	plastic	new size	76,25 €
2326.2	500 g	plastic		138,70 €
Original pack 6 x 500 g				131,77/500 g
2326.3	500 g (in 2,5 l glass bottle for prep. of a 20 % sol.)	glass		145,15 €
2326.5	1 kg	plastic	new size	235,45 €
Original pack 6 x 1 kg				223,68/1 kg

SDS Pellets

≥99,5 %, Rotiphorese®-Grade, for electrophoresis NEW
Anionic detergent
Sodium dodecyl sulphate, Sodium lauryl sulphate, Dodecyl sulphate sodium salt, Lauryl sulphate sodium salt, SLS
$C_{12}H_{25}NaO_4S$
M 288,38 g/mol

Danger H302-H315-H318-H412

Ultrapure, dust-free SDS in special quality for electrophoresis.
Each batch is tested for its functionality in electrophoresis.

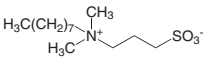
8029.1	100 g	plastic	24,65 €
8029.2	250 g	plastic	49,35 €
8029.3	500 g	plastic	85,90 €
Original pack 6 x 500 g			81,61/500 g
8029.4	1 kg	plastic	161,15 €
Original pack 6 x 1 kg			153,09/1 kg

SDS Pellets

≥99 %, for biochemistry
Anionic detergent.
Sodium dodecyl sulphate, Sodium lauryl sulphate, Dodecyl sulphate sodium salt, Lauryl sulphate sodium salt, SLS
$C_{12}H_{25}NaO_4S$
M 288,38 g/mol

Danger H302-H315-H318-H412

CN30.1	250 g	plastic	24,40 €
CN30.2	500 g	plastic	38,60 €
Original pack 6 x 500 g			36,67/500 g
CN30.3	1 kg	plastic	62,25 €
Original pack 6 x 1 kg			59,14/1 kg
CN30.4	2,5 kg	plastic	113,45 €

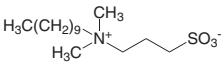


Sulfobetaine-8

≥98 %, for biochemistry
Zwitterionic detergent
N-Octyl-N,N-dimethyl-3-ammonio-1-propane sulphonate, SB-8
$C_{13}H_{29}NO_3S$
M 279,4 g/mol

Warning H315-H319-H335

1800.1	5 g	glass	47,20 €
1800.2	25 g	glass	126,35 €

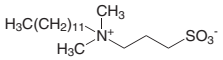


Sulfobetaine-10

≥98 %, for biochemistry
Zwitterionic detergent
N-Decyl-N,N-dimethyl-3-ammonio-1-propane sulphonate, SB-10
$C_{15}H_{33}NO_3S$
M 307,5 g/mol

Warning H315-H319-H335

1816.1	5 g	glass	48,95 €
1816.2	25 g	glass	127,95 €

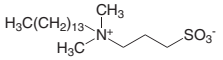


Sulfobetaine-12

≥98 %, for biochemistry
Zwitterionic detergent
N-Dodecyl-N,N-dimethyl-3-ammonio-1-propane sulphonate, SB-12
$C_{17}H_{37}NO_3S$
M 335,5 g/mol

Warning H315-H319-H335

1821.1	5 g	glass	20,35 €
1821.2	25 g	glass	50,00 €
1821.3	100 g	glass	169,35 €

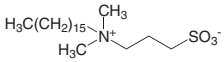


Sulfobetaine-14

≥98 %, for biochemistry
Zwitterionic detergent
N-Tetradecyl-N,N-dimethyl-3-ammonio-1-propane sulphonate, SB-14
$C_{19}H_{41}NO_3S$
M 363,6 g/mol

Warning H315-H319-H335

1822.1	5 g	glass	26,35 €
1822.2	25 g	glass	70,85 €
1822.3	100 g	glass	239,20 €

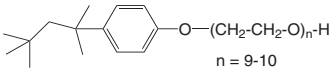


Sulfobetaine-16

≥98 %, for biochemistry
Zwitterionic detergent
N-Hexadecyl-N,N-dimethyl-3-ammonio-1-propane sulphonate, SB-16
$C_{21}H_{45}NO_3S$
M 391,7 g/mol

Warning H315-H319-H335

1823.1	5 g	glass	52,15 €
1823.2	25 g	glass	142,90 €

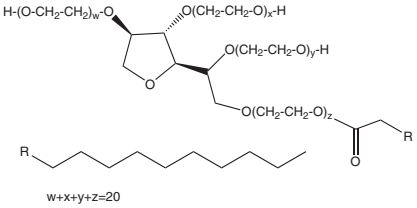


Triton® X 100

extra pure
Non-ionic detergent. For biochemistry and molecular biology.
Polyethylene glycol alkylphenyl ether
$C_{33}H_{60}O_{10}$
M 624 g/mol

Danger H318-H302

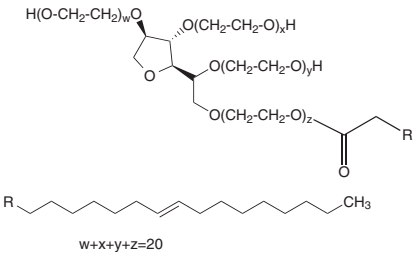
3051.3	250 ml	plastic	15,60 €
3051.4	500 ml	plastic	20,35 €
3051.2	1 l	plastic	28,50 €
Original pack 6 x 1 l			27,08/1 l
3051.1	10 l	plastic	177,40 €



Tween® 20

Ph.Eur.
Non-ionic detergent
Polyoxyethylene-20-sorbitan monolaurate, Polysorbate 20

9127.1	250 g	plastic	19,25 €
9127.2	1 kg	plastic	47,85 €
Original pack 6 x 1 kg			45,46/1 kg
9127.3	2,5 kg	plastic	82,70 €



Tween® 80

Ph.Eur.
Non-ionic detergent
Polyoxyethylene-80-sorbitan monooleate, Polysorbate 80
Tween 80 (polysorbat 80) is recommended by the European Pharmacopeia as surface-active additive for solubilisation of heavily wettable reagents (1 g/l).

9139.1	250 g	plastic	20,65 €
9139.3	500 g	plastic	34,95 €
Original pack 6 x 500 g			33,20/500 g
9139.2	1 kg	plastic	57,55 €
Original pack 6 x 1 kg			54,67/1 kg

Enzymes

Alkaline phosphatase

≥2000 Glycine U/mg protein (approx. 6000 DEA U/mg protein)

From bovine intestinal mucosa. Solution in 50 % glycerol, 5 mM Tris/HCl, 5 mM $MgCl_2$ and 0,1 mM $ZnCl_2$, pH approx. 7,0.

Phosphatase, alkaline; ALP; AP

M ~120 000 g/mol

Storage temp.: +4 °C

One glycine unit (U) is defined as the amount of enzyme that catalyzes the hydrolysis of one µmole of p-nitrophenyl phosphate per min at pH 9.6 and 25 °C (glycine buffer).

6024.1	10 KU	plastic	335,95 €

β-Amylase

20-80 U/mg, lyophil.

Made from barley malt.

Storage temp.: +4 °C

Danger H334

1 Unit enzyme acc. to Zulkowsky releases 1 µmol maltose per minute at 25 °C (pH 4.8).

8717.1	100 mg	glass	49,35 €

Bromelain

~1200 GDU/g, for biochemistry

Made from stems of young pineapple *(Bromeliaceae)*.

Bromelin

Storage temp.: +4 °C

Danger H334-H335-H315-H319

Highly active thiol proteinase (non-specific cystein protease), glycoprotein. Enzyme from *Bromeliaceae*, used in biochemistry and for meat tenderising. Preferable digestion at lysin, alanin, tyrosin and glycin. Degrades hemoglobin, gluten, collagen, globulin, casein and gelatin at pH 4-9. Cream-coloured, hygroscopic powder. Bromelain is activated by cystein, bisufite salts, NaCN, Na_2S, H_2S and benzoate. The definite pH optimum depends on substrate and reaction parameters. pH stability of bromelain increases drastically after binding to the substrate.
One GDU (gelatin digestion unit) will hydrolyse 1.0 mg of amino nitrogen from gelatin in 20 minutes at pH 4.5 at 45 °C. One bromelain tyrosine unit (BTU) corresponds to 1.1 GDU. 1200 GDU/g correspond to approx. 2.4 FIP-units/mg.

Applications:
pH working range: 4.0-8.0
pH optimum: 5-6. Stabile at pH 3.0-6.5
Temperature optimum: 50-65 °C
Inhibitors: Hg^{++}, Ag^{++}, Cu^{++}, antitrypsin, estatin, iodacetate, TLCK, TPCK, and temperatures of over 70 °C
Stock solution: 10 mg/ml in H_2O
Unsoluble in organic solvents (acetone, ethanol, methanol etc.)
Working concentration: substrate dependent

5950.1	10 g	plastic	19,25 €
5950.2	100 g	plastic	85,90 €

Catalase

≥11 700 U/mg material (approx. 40 000 U/mg protein)

From bovine liver, freeze-dried

Storage temp.: -20 °C • Transport temp.: room temp.

One unit (U) is defined as the amount of enzyme that catalyzes the decomposition of one µmole of hydrogen peroxide per min at pH 7.0 and 25 °C.

6025.1	5 MU	plastic	138,70 €

Chymotrypsin

>1000 USP-U/mg, for biochemistry

Made from bovine pancreas.

α-Chymotrypsin

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334-H335-H315-H319

Trypsin content <1 %.

0238.1	100 mg	glass	23,55 €
0238.2	500 mg	glass	49,35 €
0238.3	1 g	glass	81,20 €

Glucose oxidase

~360 U/mg protein (approx. 280 U/mg material)

From *Aspergillus niger*, freeze-dried.

GOx; GOD

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334

One unit (U) is defined as the amount of enzyme that catalyzes the oxidation of one µmole of glucose per min at pH 7.0 and 25 °C.

6028.1	0,5 MU	plastic	170,95 €

β-Glucosidase

≥1000 U/mg, from almonds

ex amygdal

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334

Yellow lyophilised powder. 1 unit β-Glucosidase causes the liberation of 1 µg glucose per minute from salicin at 35 °C. 1000 U (µg) β-Glucosidase correspond to 5 U (µmol).

7512.1	100 mg	glass	23,15 €
7512.2	1 g	glass	177,30 €

Glutamate dehydrogenase

≥10 U/mg material (approx. 40 U/mg protein)

From bovine liver, freeze-dried.

GDH; GLDH; L-Glutamic dehydrogenase

Storage temp.: -20 °C • Transport temp.: room temp.

One unit (U) is defined as the amount of enzyme that catalyzes the reduction of one µmole of 2-oxoglutarate per min at pH 7.3 and 25 °C.

6052.1	10 KU	plastic	141,40 €

Safety data sheets
can be found on the Internet next to the product description.

Hyaluronidase
~500 U/mg, free from salt, lyophilised
ex ovine testes
M ~70000 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334

9978.2	250 mg	glass	56,90 €
9978.1	1 g	glass	181,70 €

Hyaluronidase
~300 U/mg, free from salt, lyophilised
ex ovine testes
M ~70000 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334

Testicular hyaluronidases with hydrolytic and transglycosidic activity. Ideal for decomposition of hyaluronic acid and chondroitin sulphate in extracellular matrix.

Application:
pH optimum 7.0-8.0
Stock solution: 1-300 mg/ml in phosphate buffer or water
Working concentration: 0.1-10 mg/ml

9980.1	250 mg	glass	31,10 €
9980.2	1 g	glass	84,85 €

Lactate dehydrogenase
≥290 U/mg protein
From porcine heart, freeze-dried
LDH; LD; Lactic dehydrogenase
Storage temp.: -20 °C • Transport temp.: room temp.
One unit (U) is defined as the amount of enzyme that oxidizes one µmole of NADH per min at pH 7.4 and 25 °C.

6060.1	0,05 MU	plastic	116,00 €

Lipoxygenase
≥50 000 U/mg, for biochemistry
Made from soy beans. For oxidation of arachidonic acid.
Lipoxidase
M ~108 000 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
Lipoxygenase stereo-specifically catalyses the oxidation of arachidonic acid, initiating the formation of leukotrienes in eicosanoid metabolism. One unit will cause an increase in absorption (234 nm) of 0.001 per minute at 25 °C and pH 9 by oxidation of linoleic acid.

Application:
Well soluble in H_2O or buffer.
Recommended storage of stock solution in aliquots at -20 °C.

CN73.1	100 mg	glass	17,75 €
CN73.2	500 mg	glass	42,90 €
CN73.3	1 g	glass	66,55 €

Lysozyme
~20 000 U/mg, 3x cryst., lyophilised
From chicken egg white, free from albumin.
M ~14000 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334

Salt and albumin free lyophilised powder. Quality product for molecular biology. Ideal for lysis of bacteria for preparing DNA.
1 unit (acc. to Shugar, 1952) equals the amount of enzyme which reduces the absorbance by 0.001 per min. at 450 nm, 25 °C, pH 6.24 - substrate is *Micrococcus lysodeikticus*.

Application:
pH optimum: 6.0-7.0
Inhibitors: imidazole, indole, N-acetyl glucosamine
Working solution: 5-10 mg/ml (bacteria), 1-2 mg/ml (euk. cells)
Buffer: salt solution without detegents (0.1 M potassium phosphate buffer, 50 mM Tris buffer, 1x PBS etc.)
Temperature optimum: 37 °C
Isoelectric point: approx. 11
Lysozyme solution should be frozen only once.

8259.1	1 g	glass	24,95 €
8259.2	10 g	glass	153,20 €
8259.3	25 g	glass	290,80 €

Malate dehydrogenase
≥1250 U/mg protein
From porcine heart, freeze-dried
MDH
Storage temp.: -20 °C • Transport temp.: room temp.
One unit (U) is defined as the amount of enzyme that oxidizes one µmole of NADH per min at pH 7.4 and 25 °C.

6062.1	0,05 MU	glass	130,65 €

Papain
>30 000 USP-U/mg, for biochemistry
Made from *Carica papaya.*
Storage temp.: +4 °C

Danger H334-H335-H315-H319

A non-specific endopeptidase from Papaya latex. Has a very wide substrate range and cleaves proteins more efficiently than trypsin, for example. Is capable of not only hydrolysing peptide bonds, but also acts effectively as an esterase and thiol-esterase.
30.000 USP (Casein) Units is approx. 2 FIP-Units (BAEE-Units). One USP Unit of Papain activity releases the equivalent of 1 µg tyrosine form a specified casein substrate under assay conditions specified by the USP. DTT can be used to increase the activity.

8933.1	25 g	plastic	45,70 €
8933.2	100 g	plastic	127,95 €

Enzyme: a neoclassical, Greek artificial word ενζυμου, *énzymon*, derived from εν-, *en-* (in-) and ζυμη, *zýmé* (yeast, sourdough, archaic)
Ferments: comes from the Latin *fermentum* (ferments, sourdough)

There are six **classes** in which all enzymes are classified according to the particular reaction they catalyse:

- *Oxidoreductases* (catalyse redox reactions)
- *Transferases* (transfer functional groups among substrates)
- *Hydrolases* (cleave bonds via addition of water)
- *Lyases/Synthases* (cleave or synthesise complex products out of basic substrates without cleavage of ATP)
- *Isomerases* (transform chemical isomers)
- *Ligases/Synthetases* (cleave or synthesise complex products out of basic substrates via cleavage of ATP)

Pepsin

≥2000 FIP-U/g, for biochemistry

From porcine gastric mucosa. For detection of trichina in meat.
M 35000 g/mol
Storage temp.: +4 °C

Danger H334-H335-H315-H319

Acidic endopeptidase, the inactive precursor of which, pepsinogen, is produced in the stomach mucosa. Pepsin cleaves proteins preferentially at carboxylic groups of aromatic amino acids such as phenylalanine and tyrosine. Highly active pepsine is preferably used for detection of trichina in pre-digested muscle meat of animals.
1 FIP unit (≈Ph. Eur. unit) of Pepsin activity will, during incubation at 25±0.1 °C for one minute, cause decomposition of haemoglobin to an extent comparable with the colour caused by reaction of 1 micromole of tyrosine with the same dye. 2 000 FIP-Units correspond to 1: 10 000 NF-U and 1: 12 500 BP-U.

Application:
Well soluble in water, stable in aqueous solutions of pH up to 5.5, unstable above pH 6.0. Irreversible inactivated in alkaline medium. Solution is stable in temperatures of up to 60 °C, and also in higher concentrations of urea and guanidine.
pH optimum: 1-2
Isoelectric point: 1.0

KK38.1	50 g	plastic		52,15 €
KK38.2	100 g	plastic		84,40 €
KK38.3	250 g	plastic		177,40 €
KK38.4	1 kg	plastic	BIG PACK	585,90 €
Original pack 6 x 1 kg				556,61/1 kg

Pepsin

≥0,5 Ph.Eur.-U/mg, for biochemistry

Isolated from pigs stomach.
M 35000 g/mol
Storage temp.: +4 °C

Danger H334-H335-H315-H319

0.5 Ph.Eur.-U/mg correspond to approx. 500 FIP-U./g.

0230.1	25 g	glass	23,45 €
0230.2	50 g	glass	37,55 €

Peroxidase

≥250 U/mg material

From horseradish, freeze-dried
HRP, Horseradish peroxidase
Storage temp.: -20 °C • Transport temp.: room temp.

Danger H317-H334

One unit (U) is defined as the amount of enzyme that catalyzes the production of 1 mg of purpurogallin from pyrogallol in 20 seconds at pH 6.0 and 20 °C.

6055.1	0,05 g	plastic	109,15 €

DNAse-free
RNAse-free

Proteinase K

lyophil., ≥30 mAnson U/mg

Isolated from fungi (*Tritirachium album*).
Storage temp.: +4 °C

Danger H315-H319-H334-H317-H335

A non-specific protease with strong proteolytic activity for degrading proteins in biological samples. A quality product for molecular biology with a broad scope of application.

Suitable for:
- Preparing chromosomal DNA for PFGE
- Degrading nucleases during preparation of nucleic acids (includes preparation of native RNA)

Activity: (Haemoglobin, pH 7.5; 25 °C) 30 mAnson-U/mg
Foreign activity: RNase and DNase not detectable
Optimum temperature: +65 °C.
Activity at +65 °C is ca. 12 x higher than at +25 °C.
Over +65 °C, inactivation due to denaturation.
Stability: pH 4.0-12.5.
Also stable even when denaturing agents, e.g. SDS and urea are present.
Activators: Denaturating agents (SDS, urea).
Inhibitors: Inhibition with Hg^{2+}-ions, DFP, PMSF and phenol.
Not inhibited by EDTA, sulfhydryl reagents and trypsin or chymotryps ininhibitors.
Stabilisers: Ca^{2+}-ions (1-5 mM) prevent autolysis.

Application:
Reaction buffer: 50 mM Tris-HCl; pH 7.5; 5 mM $CaCl_2$; 0.5 % SDS
Stock solution: 20 mg/ml in water
Storage temperature (stock solution): -20 °C
Working solution: 50 µg/ml
Art. No. 7528.3: A stock solution with a concentration of 20 mg/ml can be prepared directly by adding 25 ml buffer or water.

7528.1	100 mg	glass		83,75 €
7528.5	250 mg	glass	new size	160,20 €
7528.2	500 mg	glass		284,90 €
7528.3	500 mg (in a 30 ml glass bottle)			317,15 €
7528.4	1 g	glass		478,40 €
7528.6	5 g	glass	new size	1908,15 €

Rennin
for biochemistry
Chymosin, rennase, lab
M ~31000 g/mol
Storage temp.: +4 °C
Danger H334-H335-H315-H319

8178.1	50 g	plastic	54,75 €

Trypsin
5000 USP-U/mg, free from salt
TSE-/BSE-free
Isolated from porcine pancreas, lyophilised.
M ~24,000 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
Danger H334-H335-H315-H319
A pancreatic serine protease with a specificity for peptide bonds between basic amino acids arginine or lysine and another non-specific amino acid. Trypsin is frequently used to suspend cells which grow as monolayers on surfaces. Longer exposure to trypsin can damage cells, so that an inhibitor (serum or trypsin inhibitor from soya beans) should be added upon completion.
One USP Unit will cause an increase in absorption (253 nm) per minute of 0,003 at 25 °C and pH 7,6 using BAEE as substrate.
One (international) Unit (U, 255 nm, BAEE, pH 8) is approx. 90 USP U.
One TAME Unit is approx. 20 USP Units. One NF Unit is one USP Unit.
Ten „BAEE Units“ are approx. 3,3 USP Units.

Application: pH optimum 7,2-8,5.

2193.1	100 mg	glass	26,35 €
2193.2	500 mg	glass	79,05 €

Trypsin
≥2500 USP-U/mg, cryst.
Isolated from porcine pancreas, lyophilised.
M ~24,000 g/mol
Storage temp.: +4 °C
Danger H334-H335-H315-H319
One USP Unit will cause an increase in absorption (253 nm) per minute of 0,003 at 25 °C and pH 7,6 using BAEE as substrate.
One (international) Unit (U, 255 nm, BAEE, pH 8) is approx. 90 USP U.
One TAME Unit is approx. 20 USP Units. One NF Unit is one USP Unit.
Ten „BAEE Units“ are approx. 3,3 USP Units.

5455.1	100 mg	glass	21,75 €
5455.2	1 g	glass	76,90 €

Urease
≥220 Nessler U/mg material
From jack bean, freeze-dried
M ~480000 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
One unit (U) is defined as the amount of enzyme that catalyzes the liberation of 1 µmole of NH_3 per min at pH 7.0 and 25 °C.

6065.1	0,25 MU	plastic	149,45 €

Urease
~1 U/mg, for biochemistry
From jack beans *Canavalia ensiformis*.
M ~480000 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
Hydrolase belonging to the Amidases. Metallo-enzyme. Urease hydrolasis urea, resulting in ammonia and carbon dioxide, or in ammonia- and carbonate ions, respectively. The molecule isolated from Jack beans is composed of 6 subunits of approx. 91 kD each with an overall size of approx. 544 kD. Nickel is the cofactor. Using high amounts of urea as substrate (200 mM), urease is applied for visualisation of the connection between reaction rate and time. Detection is carried out via measurement of conductivity, or, photometrically, via colour change of bromothymol blue. Furthermore, model system for catalytic activation of carbon dioxide in metallo-organic chemistry.
1 Unit enzyme hydrolyses 1 µmol urea per minute at 25 °C (pH 8.0).

Application:
pH optimum: 7.4.
Recommended reaction buffer system is 40 mM potassium phosphate buffer, pH 7.4. Heavy metals (e.g. lead) are inhibitory.

7537.1	5 g	plastic	117,20 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Cell Passage and Use of Trypsin
Background and recommendations for cell passages plus protocol for trypsination

Usage of Trypsin (Art. No. 2193) for Cell Passage

Preparation of a 10 % Trypsin stock solution:
10 g Trypsin in 100 ml 10x Trypsin buffer

10x Trypsin buffer stock solution:
80 g NaCl (endotoxin-free Art. No. HN00)
3 g KCl (endotoxin-free Art. No. HN02)
0.73 g Na_2HPO_3 x 2 H_2O (Art. No. 4984)
0.2 g KH_2PO_3 (Art. No. 3904)
20 g Glucose (endotoxin-free Art. No. HN06)
7 g EDTA (Art. No. 8043)
ad 1 Litre, pH 7.2 (NaOH, Art. No. K021)
Sterilize by filtration (0.2 µm) and store in aliquots (e.g. 10 ml each) at -20 °C.
Durability approx. 1 year.

Preparation of working solution:
Dilute stock solution 1:10 with sterile distilled water.
Durability approx. 1 week.

We recommend to use endotoxin-free water for preparation of stock- and working solution. Water made by common distillers frequently is polluted with bacteria. Although these microorganisms are removed by sterile filtration, the released endotoxins may affect cultured cells heavily. Endotoxin-free water can be obtained under order number 3255.

Coenzymes

Adenosin-5'-triphosphate disodium salt

≥98 %, for biochemistry

Coenzyme of kinases.

ATP disodium salt

$C_{10}H_{14}N_5Na_2O_{13}P_3$

M 551,10 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Discovered in 1929 by Karl Lohmann. Main molecular currency of energy in all cells and highly important regulator of energy providing processes. During hydrolysis of phospho-anhydride bonds, energy of 30.5 kJ/mol (ADP) or 45.6 kJ/Mol (AMP), respectively, is released. Ligand of purinergic receptors and intercellular signalling molecule. Additionally, ATP is coenzyme of phosphate-transferring kinases like proteine kinases A, proteine kinases C, calmodulin-dependent kinases, and substrate of adenylate cyclases, which synthesize the second-messenger molecule cAMP.

HN35.1	5 g	glass	21,40 €
HN35.2	10 g	glass	31,10 €
HN35.3	25 g	glass	57,55 €
HN35.4	100 g	glass	192,45 €

Coenzyme Q 10

≥98 %, for biochemistry

Ubiquinone 50

$C_{59}H_{90}O_4$

M 863,37 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Ubiquinones represent a vital component in electron transport of the mitochondrial respiratory chain (hydrogen/electron and oxygen carriers). They, therefore, are almost ubiquitously distributed through the species, with the only exclusion of gram positive bacteria and cyanobacteria. Coenzyme Q functions as electron carrier between flavoproteins and cytochrome molecules of the respiratory chain.
Well soluble in organic solvents (e. g. acetone, diethyl ether, chloroform) and fats. Virtually insoluble in water.

4047.1	25 mg	glass	62,25 €

Flavine-adenine-dinucleotide disodium salt

≥95 %, CELLPURE®

FAD-Disodium salt, Riboflavin-5'-adenosine diphosphate disodium salt

$C_{27}H_{31}O_{15}N_9Na_2P_2$

M 865,55 g/mol

Storage temp.: +4 °C

6833.1	10 mg	glass	23,15 €
6833.2	50 mg	glass	34,95 €
6833.3	100 mg	glass	46,15 €

Flavine-adenine-dinucleotide disodium salt

≥95 %, for biochemisty

FAD-Disodium salt, Riboflavin-5'-adenosine diphosphate disodium salt

$C_{27}H_{31}O_{15}N_9Na_2P_2$

M 865,55 g/mol

Storage temp.: +4 °C

5581.2	10 mg	glass	17,10 €
5581.3	25 mg	glass	21,40 €
5581.1	100 mg	glass	42,90 €
5581.4	500 mg	glass	53,65 €
5581.5	1 g	glass	85,90 €

NAD

~98 %, for biochemistry

NAD free acid, β-Nicotinamide adenine dinucleotide, DPN, Coenzyme I, β-NAD.

$C_{21}H_{27}N_7O_{14}P_2$

M 663,4 g/mol

Storage temp.: +4 °C

AE11.1	1 g	glass	27,45 €
AE11.2	5 g	glass	109,15 €
AE11.3	10 g	glass	190,85 €

NADH disodium salt

≥98 %, for biochemistry

NADH-Na_2, β-Nicotinamide adenine dinucleotide disodium salt, $DPNH_2$-Na_2

$C_{21}H_{27}N_7O_{14}P_2Na_2$

M 709,4 g/mol

Storage temp.: +4 °C

AE12.1	1 g	glass	40,75 €
AE12.2	5 g	glass	179,55 €
AE12.3	10 g	glass	332,20 €

NADP disodium salt

≥97 %, for biochemistry

NADP-Na_2, β-Nicotinamide adenine dinucleotide phosphate disodium salt.

$C_{21}H_{26}N_7O_{17}P_3Na_2$

M 787,4 g/mol

Storage temp.: +4 °C

AE13.1	250 mg	glass	33,25 €
AE13.2	500 mg	glass	59,70 €
AE13.3	1 g	glass	112,35 €

NADPH tetrasodium salt

≥97 %, for biochemistry

NADPH-Na_4, β-Nicotinamide adenine dinucleotide phosphate tetrasodium salt.

$C_{21}H_{26}N_7O_{17}P_3Na_4$

M 833,4 g/mol

Storage temp.: +4 °C

AE14.1	100 mg	glass	74,75 €
AE14.2	250 mg	glass	166,65 €
AE14.3	500 mg	glass	292,95 €

Inhibitors

Enzyme inhibitors are molecules that bind to enzymes and decrease their activity. The classification of inhibitors, which can stem from various substance classes, results from the type of inhibition (reversible with subclasses, or irreversible) or the target molecule (e.g. serin protease inhibitors).
Generally, for inhibition of specific proteins in biochemical assays single specific inhibitors are used, while a suitable inhibitor cocktail is recommended for work on protein mixtures such as cellular or tissue extracts.
At Roth you will find both inhibitor cocktails for all common extracts, as well as the most important individual inhibitors.

Inhibitor Cocktails

Inhibitor Cocktail	Standard	BroadRange	Plus	Tissue	Bacteria	His-tag
Art. No.	**3743**	**3749**	**3751**	**3755**	**3758**	**3760**
Shipment	lyophilised (uncooled)	lyophilised (uncooled)	in 1 ml DMSO (uncooled)	lyophilised (uncooled)	lyophilised (uncooled)	in 1 ml DMSO (cooled)
Dilute in	100 ml H_2O dist.	1 ml H_2O dist.	-	1 ml H_2O dist.	1 ml DMSO + 4 ml H_2O dist.	-
Stock Solution	-*	approx. 100x	for 20 g	approx. 100x (for 2 g)	approx. 40x (for 20 g *E.coli*)	approx. 100x (for 10 g)
Inhibitor conc. in	1 x solution	1 ml stock solution	1 ml stock solution	1 ml stock solution	5 ml stock solution	1 ml stock solution
AEBSF	1,67 mM	50 mM	100 mM	50 mM	20 mM	100 mM
Aprotinin	-	15 µM	80 µM	15 µM	-	-
Bestatin	-	-	5 mM	-	1,7 mM	5 mM
E-64	-	100 µM	1,5 mM	100 µM	200 µM	1,5 mM
EDTA	13,44 mM	50 mM	-	-	85 mM	-
Leupeptin	2,0 µM	100 µM	2 mM	100 µM	-	0,2 mM
Pepstatin A	1,46 µM	-	1 mM	-	2 mM	-
Phosphoramidon	-	-	-	-	-	2 mM
Recommended for	Extracts without special proteases, basic sol. for own inhibitors	Broad band effects. Extracts from eukaryotic tissue	Broad band effects. Extracts from mammalian cells and tissue	Extracts from mammalian cells and tissue	Bacterial extracts	Extractions of His-tagged proteins

Please note our **Technical Information Brochure** on the Internet next to the products:

Protease Inhibitor Cocktails
Overview and recommendations for application

Inhibitor Cocktail Standard

for biochemistry

General cocktail of protease inhibitors.
Storage temp.: -20 °C • Transport temp.: room temp.

Danger H314-H332-H373

Inhibitor cocktail for inhibition of standard proteases. Inhibits serine proteases, metalloproteases, cysteinproteases, trypsin-like proteases, and aspartic proteases.
Recommended as cocktail for protease inhibition during standard extraction without presence of special proteases, or as basic solution for supplementation with own inhibitors.

Well water-soluble. The premixed powder may easily be reconstituted in 100 ml distilled water or extraction buffer to form a 1x inhibitor solution.
End concentrations in 1x solution are:
AEBSF: 1.67 mM
EDTA: 13.44 mM
Leupeptin: 2.1 µM
Pepstatin A: 1.46 µM
Storage of inhibitor solution: 4 °C max. 90 days
Do not freeze the solution!

3743.1	1 vial	plastic	117,20 €

Inhibitor Cocktail BroadRange

for biochemistry

Broad range cocktail of protease inhibitors.
Storage temp.: -20 °C • Transport temp.: room temp.

Danger H314-H332-H373

Inhibitor cocktail for inhibition of a broad range of proteases. Inhibits serine proteases, esterases, metalloproteases, cysteinproteases, and trypsin-like proteases.
Recommended as cocktail for protease inhibition during tissue extraction.
1 vial is prepared for the inhibition of proteases from 1-2 g material.

Well water-soluble. The premixed powder may easily be reconstituted in 1 ml distilled water to form a approx. 100x inhibitor stock-solution.
Concentrations in stock-solution are:
AEBSF: 50 mM
Aprotinin: 15 µM
E-64: 100 µM
EDTA: 50 mM
Leupeptin: 100 µM
Storage of aliquoted inhibitor solution: -20 °C max. 1 month

3749.1	1 vial	plastic	50,00 €

Inhibitor Cocktail Plus

ready-to-use, for biochemistry

Broad range cocktail of protease inhibitors for extracts of mammalian cells or tissue.

Storage temp.: -20 °C • Transport temp.: cooled

Warning H315-H319

Inhibitor cocktail for inhibition of a broad range of proteases. Inhibits serine proteases, esterases, aminopeptidase B, leucin-aminopeptidases, cysteinproteases, trypsin-like proteases, and aspartic proteases. Recommended as cocktail for protease inhibition particularly in extracts from mammalian cells or tissue. 1 ml is prepared for the inhibition of proteases from 20 g cells or tissue.

Provided as stock-solution in DMSO.
Concentrations per vial are:
AEBSF: 100 mM
Aprotinin: 80 µM
Bestatin: 5 mM
E-64: 1.5 mM
Leupeptin: 2 mM
Pepstatin A: 1 mM
Storage of inhibitor solution: -20 °C max. 6 months

3751.1	1 ml	plastic	80,10 €

Inhibitor Cocktail His-tag

ready-to-use, for biochemistry

Broad range cocktail of protease inhibitors for extraction of His-tagged proteins.

Storage temp.: -20 °C • Transport temp.: cooled

Danger H318-H315

Inhibitor cocktail for inhibition of a broad range of proteases. Inhibits serine proteases, aminopeptidase B, leucin-aminopeptidases, cysteinproteases, aspartic proteases, and metalloendopeptidases.
Recommended as cocktail for protease inhibition particularly for extraction of His-tagged proteins from bacterial extracts. 1 ml is prepared for the inhibition of proteases in extracts from 10 g bacterial cells.
Recommended dilution approx. 1:100.

Provided as stock-solution in DMSO.
Concentrations per vial are:
AEBSF: 100 mM
Bestatin: 5 mM
E-64: 1.5 mM
Pepstatin A: 0.2 mM
Phosphoamidon: 2 mM
Storage of inhibitor solution: -20 °C max. 6 months

3760.1	1 ml	plastic	87,65 €

Inhibitor Cocktail Tissue

for biochemistry

Cocktail of protease inhibitors for extracts of mammalian cells or tissue.

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H314

Inhibitor cocktail. Inhibits serine proteases, esterases, cysteinproteases, and trypsin-like proteases.
Recommended as cocktail for protease inhibition particularly in extracts from mammalian cells or tissue.

Well water-soluble and hygroscopic. The premixed powder may easily be reconstituted in 1 ml distilled water to form an inhibitor stock-solution. 1 vial is prepared for the inhibition of proteases from approx. 2 g cells or tissue. Recommended dilution is 1:100. End concentration for the respective extract has to be optimized.
Concentrations in stock-solution are:
AEBSF: 50 mM
Aprotinin: 15 µM
E-64: 100 µM
Leupeptin: 100 µM
Storage of aliquoted inhibitor solution: -20 °C max. 6 months

3755.1	1 vial	plastic	42,90 €

Inhibitor Cocktail Bacteria

for biochemistry

Broad range cocktail of protease inhibitors for extracts from bacteria.

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H314

Inhibitor cocktail for inhibition of standard proteases. Inhibits serine proteases, aminopeptidase B, leucin-aminopeptidases, metalloproteases, cysteinproteases, and aspartic proteases.
Recommended as cocktail for protease inhibition in extracts from bacteria.

Well soluble in DMSO and hygroscopic. The premixed powder (Art. No. 3947) may easily be reconstituted in 1 ml DMSO and may then be diluted with 4 ml distilled water to form a slightly opaque inhibitor stock-solution. 1 vial is prepared for the inhibition of proteases from approx. 20 g *E. coli*. Recommended dilution approx. 1:40.
Concentrations in stock-solution are:
AEBSF: 20 mM
Bestatin: 1.7 mM
E-64: 200 µM
EDTA: 85 mM
Pepstatin A: 2 mM
DMSO (1 ml) for reconstitution of the lyophilized inhibitor mix is included (Art. No. 3949).
Storage of aliquoted inhibitor solution: -20 °C max. 6 months.
Contents of this Kit may not be bought separately.

3758.1	1 set	plastic	89,15 €

Individual Inhibitors

AEBSF hydrochloride

≥98 %, for biochemistry

Inhibitor of serine proteases

4-(2-Aminoethyl)benzenesulfonyl fluoride hydrochloride

$C_8H_{10}FNO_2S \cdot HCl$

M 239,69 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H314

Serine protease inhibitor. Irreversible inhibition of trypsin, chymotrypsin, plasmin, kallikrein, thrombin by sulphurizing a functional group in the active centre of an enzyme. Due to its low toxicity, AEBSF is a good alternative to PMSF.

Application:
Easily water-soluble, resulting in an acidic pH-value. Optimal at pH 6.5, alkali-labile. Avoid pH-value 7 and do not exceed pH-value 9.
Stock solution: 5-50 mg/ml (20-200 mM) in H_2O
Storage of stock solution: at -20 °C max. 6 months
Working concentration: 0.1-5 mM

2931.1	25 mg	plastic	17,75 €
2931.2	100 mg	plastic	34,95 €
2931.3	500 mg	plastic	129,55 €

4-Aminobenzamidine dihydrochloride

≥98 %, for biochemistry

Potent inhibitor of serine proteases.

p-Aminobenzamidine dihydrochloride

$C_7H_9N_3 \cdot 2\ HCl$

M 208,09 g/mol

Storage temp.: +4 °C

Warning H315-H319-H335

Competitive inhibitor of trypsin and trypsin-like enzymes, thrombin and plasmin.

Application:
Stock solution: 100-200 mg/ml (0.5-1 M) in H_2O and alcohol
Storage of stock solution at -20 °C
Working concentration: 100-400 µg/ml (0.5-2 mM)
Aminobenzamidine is sensitive to oxidation. It is recommended to prepare fresh solutions each time for use. Stock solutions should only be stored for a short time.

CN71.1	1 g	glass	13,90 €
CN71.2	5 g	plastic	54,75 €
CN71.3	10 g	plastic	99,90 €

Antipain dihydrochloride

≥30 U/mg, for biochemistry

Inhibitor of serin/cystein proteases and trypsin-like serin proteases.

N-(Nα-Carbonyl-Arg-Val-Arg-al)-Phe dihydrochloride

$C_{27}H_{44}N_{10}O_6 \cdot 2\ HCl$

M 677,6 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Serine/cysteine protease inhibitor and in general of proteases similar to trypsin. Antipain was isolated from streptomycin (actinomycetes). Reversible inhibition of papain (derivation of the name: anti-papain), trypsin, cathepsin A, B, D, plasmin, chymotrypsin, pepsin and calpain I. Antipain has a similar spectrum of activity to leupeptin.

Application:
Stock solution: 50 mg/ml (75 mM in H_2O, DMSO or ethanol
Storage of stock solution: at -20 °C max. 1 month
Working concentration: 10-50 µg/ml (15-75 µM)

2933.1	5 mg	plastic	49,35 €
2933.2	25 mg	plastic	179,00 €

Aprotinin

≥3,0 PEU/mg, for biochemistry

Inhibitor of serine proteases.

M 6500 g/mol

Storage temp.: +4 °C

Inhibitor for inhibition of serin proteases, lyophilized and made of beef lung. Aprotinin inhibits trypsin, chymotrypsin, plasmin and kallikrein with high activity.
Dissolves easily in water; pH-optimum: 7.0-8.0.
Specific Activity: ≥3.0 PEU/mg corresponding to ≥5400 KIU/mg
Activity: Kininogenase Inhibitor Units (KIU) = PEU x 1800
Kininogenase Inhibitor Units (KIU) correspond to Kallikrein Inhibitor Units.

Application:
Stock solution: 1.54 mM (10 mg/ml) in H_2O or buffer
Storage of stock solution: in aliquots at -20 °C
Recommended end concentration: 1.54 µM (10 µg/ml)

A162.1	10 mg	glass	32,80 €
A162.2	50 mg	glass	97,75 €
A162.3	100 mg	glass	175,80 €
A162.4	500 mg	glass	643,95 €

Bacitracin

≥60 IU/mg, Ph.Eur., for biochemistry

Peptide antibiotic and protease inhibitor.

$C_{66}H_{103}N_{17}O_{16}S$

M 1422,72 g/mol

Storage temp.: +4 °C

Inhibits cell wall biosynthesis in gram-positive bacteria and *Neisseria* by interaction with murein biosynthesis.
Also used as protease-inhibitor for inhibition of the gluthatione-insuline-transhydrogenase or some endopeptidases.

Application:
Stock solution: 100-1000 mg/ml in H_2O or ethanol
Storage of stock solution at -20 °C
Working concentration: 0.1-1 mg/ml (0.07-0.7 mM)
Bacitracin is very stable in a pH range of 4-5, but is rapidly inactivated in pH of over 5 at room temperature.
Do not use at a pH of over 8.

5655.1	5 g	glass	48,95 €
5655.2	25 g	plastic	207,40 €

Benzamidine hydrochloride monohydrate

≥98 %, for biochemistry

Inhibitor of serine proteases.

$C_7H_8N_2 \cdot HCl \cdot H_2O$

M 174,63 g/mol

Storage temp.: +4 °C

Warning H315-H319-H335

Competitive inhibitor of trypsin and trypsin-like enzymes, acrosin, thrombin and plasmin.

Application:
Stock solution: 100-150 mg/ml (0.65-1 M) in H_2O and alcohol
Storage of stock solution at -20 °C
Working concentration: 150-750 µg/ml (1-5 mM)
Benzamidine is sensitive to oxidation. It is recommended to prepare fresh solutions each time for use. Stock solutions should only be stored for a short time.

CN38.1	5 g	plastic	16,45 €
CN38.2	10 g	plastic	23,15 €
CN38.3	25 g	plastic	44,65 €

Bestatin hydrochloride

≥98 %, for biochemistry

Inhibitor of aminopeptidases

N-[(2S,3R)-3-Amino-2-hydroxy-4-phenyl-buturyl]-L-leucin hydrochloride

$C_{16}H_{24}N_2O_4 \cdot HCl$

M 344,84 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Aminopeptidase inhibitor. Competitive and specific inhibition of aminopeptidase B, leucin-aminipeptidase and triaminopeptidase.
Does not inhibit aminopeptidase A, trypsin, chymotripyin, elastase, papain, pepsin, thermolysin. Bestatin does not have an antibacterial effect and is non-fungicidal, its low toxicity making it easy to use.

Application:
Stock solution: 1-15 mM (0.35-5mg/ml) in methanol
Storage of stock solution: at -20 °C max. 1 month
Working concentration: 10-100 µM

2937.1	5 mg	plastic	70,85 €
2937.2	25 mg	plastic	252,55 €

Safety data sheets
can be found on the Internet next to the product description.

E-64

≥99 %, for biochemistry

Inhibitor of cystein proteases

N-[N-(L-3-trans-Carboxyoxirane-2-carbonyl)-leucyl]-agmatine,

N-(trans-Epoxysuccinyl)-L-leucine-4-guanidinobutylamide

$C_{15}H_{27}N_5O_5 \cdot 0{,}5\ H_2O$

M 357,41 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Irreversible, strong and highly selective inhibition of cysteine protease (e.g. papain, bromelain, ficin, cathepsin B, H and L, tumor-cathepsin, calpain etc.). Does not inhibit serine proteases except trypsin. Low toxicity, high cell permeability and stability against reducing reagents makes E-64 an excellent alternative to leupeptin or antipain.

Application:
Stock solution: 1 mM (360 µg/ml) in H_2O, DMSO or ethanol
Storage of stock solution: at -20 °C max. 3 months
Working concentration: 1-10 µM

2935.1	5 mg	plastic	82,70 €
2935.2	25 mg	plastic	295,65 €

EDTA disodium salt dihydrate

≥99 %, p.a., ACS

For molecular biology and biochemistry.

Ethylenediamine tetraacetic acid disodium salt dihydrate,

Titration complex III

$C_{10}H_{14}N_2Na_2O_8 \cdot 2\ H_2O$

M 372,24 g/mol

Warning H332-H373

EDTA forms chelate complexes with Mg^{2+}-ions and other bivalent metal cations. It can therefore be applied as a general inhibitor for all enzymes which require such metal cations to function (e.g. DNases and metal proteases).

Application:
Stock solution: 0.5 M in water, pH 8.5.
Recommended final concentration for enzyme inhibition 1-10 mM.
The disodium salt of EDTA only dissolves when the pH-value is around 8.0.

8043.3	100 g	plastic	19,90 €
8043.1	250 g	plastic	31,75 €
8043.2	1 kg	plastic	93,00 €
Original pack 6 x 1 kg			88,35/1 kg
8043.4	5 kg	plastic	342,95 €
8043.5	25 kg	plastic BIG PACK	762,20 €

EGTA

≥99 %, p.a.

For molecular biology and biochemistry.

Ethylene glycol bis(β-aminoethyl)-ether) N,N,N',N' tetraacetic acid

$C_{14}H_{24}N_2O_{10}$

M 380,35 g/mol

Unspecific protease inhibitor highly similar to EDTA. Inhibition results from chelating of calcium- and magnesium ions leading to their removal from the surrounding medium. However, affinity to calcium^{2+} is much higher than that to magnesium^{2+}. The inhibitory effect can be compensated by an excess of calcium^{2+} or magnesium^{2+}.
pK_a calcium (pH 7): approx. 6.9

3054.1	10 g	plastic	32,15 €
3054.2	50 g	plastic	124,20 €
3054.3	100 g	plastic	216,65 €

▶ Geldanamycine see page 1230

Genistein

≥98 %, for biochemistry

Inhibitor of tyrosine specific protein kinases.

Prunetol, Genisteol, 4',5,7-Trihydroxyisoflavone

$C_{15}H_{10}O_5$

M 270,24 g/mol

Storage temp.: +4 °C

Competitive inhibitor of ATP binding to the catalytic domain of tyrosin kinases. Exceptional are the insulin receptor tyrosin kinase and the serin-/threonin specific proteases, which will not be inhibited by genistein. An additional, tyrosin kinase independent, effect of genistein is the inhibition of topoisomerases I and II.

Application:
Stock solution: 100 mg/ml (370 mM) in DMSO
Storage of stock solution: +4 °C oder -20 °C
Working concentration: 10-100 µM

0716.1	25 mg	plastic	59,05 €
0716.2	50 mg	plastic	84,40 €
0716.3	100 mg	plastic	145,15 €

The Mechanisms of Enzyme Inhibition

Depending on the binding of the inhibitor, you may find both *reversible* and *irreversible inhibition*.

In **reversible enzyme inhibition** the inhibitor doesn't bind closely to the enzyme and can be separated or displaced in succession. It lowers its activity and/or the speed constant of the reaction of the substrate to the product. It also establishes a balance between the enzyme-inhibitor complexes with or without substrate. Metabolic processes are typical examples of this, which, depending on the physiological state of the cells, either are enhanced or inhibited.

Competitive inhibitors are reagents which compete with substrate (A) for the binding site in the enzyme's active center and increase the Michaelis Menten constant of the enzyme. They are either extremely similar to the substrate (but are not converted and can be displaced again by the substrate) or even represent a second substrate and thereby competitively inhibit the conversion of substrate A.

In *non-competitive inhibition* the inhibitor does not bind in the active center but through binding, it changes the enzyme's tertiary structure to such an extent that a product can no longer be produced/set free.

Uncompetitive inhibition is a special case where the inhibitor can only interact with the enzyme-substrate complex and it changes both the MM-constant as well as the maximum reaction speed.

In *partial-competitive inhibition*, binding of the inhibitor lowers the affinity of the enzyme to the substrate without influencing the speed constants.

In **irreversible inhibition**, the inhibitor binds so closely that it can no longer be separated from the enzyme and thus the activity of the enzyme is permanently reduced or destroyed. Typical examples of this are protein-synthesis inhibitive antibiotics or "suicide substrates" which bind covalently to the active center.

β-Glycerophosphate disodium salt pentahydrate

≥97 %, for biochemistry

Phosphatase inhibitor

$C_3H_7Na_2O_6P \cdot 5\ H_2O$

M 306,12 g/mol

Simple organic phosphate donor and substrate for phosphatase.
As additive for cell culture media and lysis buffer.

Application:
Stock solution: 1 M (306 mg/ml) in H_2O, aliquot in 1 ml reaction vials after 0.2 µm filtration
Storage of stock solution: at -20 °C
Working concentration: 10-50 mM

6847.1	50 g	glass	44,00 €
6847.2	100 g	glass	81,20 €
6847.3	250 g	glass	188,05 €
6847.4	500 g	glass	360,15 €
Original pack 6 x 500 g			342,14/500 g

Geldanamycin

≥98 %, for biochemistry

HSP90 inhibitor, tyrosin kinase inhibitor. Benzoquinone ansamycin antibiotic. Binds specifically to the heat shock protein HSP90.

$C_{29}H_{40}N_2O_9$
M 560,64 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

The specific binding of geldanamycin to heat shock protein 90 (HSP90) and its ER homologue GP96 leads to inhibition of the chaperone, results in degradation of Hsp90 substrates and, subsequently, to deregulation of central cell mechanisms - cell cycle, cell proliferation, apoptosis/cell vitality. Geldanamycin arrests cells in G_2 phase, thus interfering with angiogenesis and oncogenesis. Due to its antitumor potential it may be used as antibiotic against several eucaryotic carcinogenic cell lines. Additionally, geldanamycin is used as inhibitor of tyrosin-kinase and during analysis of several other physiological regulatory mechanisms.

Application:
Stock solution: 1000x in DMSO or methanol
Storage of stock solution at -20 °C, max. 2 weeks at 4 °C
Working concentration: 1-10 µg/ml
Photo sensitive! Store protected from light.

HN71.1	1 mg	glass	61,85 €
HN71.2	5 mg	glass	152,55 €
HN71.3	10 mg	glass	218,80 €

Leupeptin hemisulphate

≥96,5 %, for biochemistry

Reversible inhibitor of serine- and cystein proteases.
Acetyl-Leu-Leu-argininal
$C_{20}H_{38}N_6O_4 \cdot 0{,}5\ H_2SO_4$
M 475,99 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

Leupeptin competitively inhibits calpain, cathepsin B, kallikrein, papain, plasmin and trypsin. Inhibition of thrombin is controversely discussed. Little or non-inhibiting for pepsin, cathepsin A and D and chymotrypsin.

Application:
Stock solution: 5 mg/ml (10 mM) in H_2O, ethanol, acetic acid and DMF.
Stock solution is stabile at +4 °C for approx. 7 days.
Recommended storage of stock solution at -20 °C (6 months).
Working concentration: 0.5-50 µg/ml (1-100 µM)
Working solutions are stabile only for few hours. Due to its aldehyde groups, leupeptin may interfere with protein detection assays (e. g. Bradford).

CN33.1	10 mg	glass	42,50 €
CN33.2	25 mg	glass	89,15 €
CN33.3	50 mg	glass	158,60 €
CN33.4	100 mg	glass	295,65 €

▶ HSP90 Inhibitor Novobiocin see p. 1368

Please note our **Technical Information Brochure** on the Internet next to the products:

Protease Inhibitors
Overview and recommendations for application

Pefabloc® SC-Protease Inhibitor

≥95 %, for biochemistry

Irreversible inhibitor of serine proteases.
4-(2-Aminoethyl)-benzylsulphonyl fluoride hydrochloride
$C_8H_{10}NSO_2F \cdot HCl$
M 239,7 g/mol
Storage temp.: +4 °C

Danger H314

Broadband inhibitor for serine proteases. Reacts covalently with the serin of the active center. Alternative to PMSF and DFP with a great number of advantages to standard inhibitors:

- Extremely low toxicity (LD_{50} >2.800 mg/kg)
- Stability in neutral range
- High solubility in aqueous buffers
- Wide spectrum of specifity for serin protease
- Minimal reaction to cell growth

Application:
Stock solution 5-50 mg/ml in water; stable with neutral pH.
Working concentration: 1-5 mM.
Pefabloc® reacts with thiols. DTT and β-mercaptoethanol reduce the inhibitory effect.

®Registered trademark of Pentapharm AG, Basel.

A154.1	100 mg	glass	49,35 €
A154.2	500 mg	glass	195,65 €
A154.3	1 g	glass	342,95 €

Proteinase Inhibitor Cocktail - General Recommendation

We recommend using the following mixture as a standard cocktail for inhibiting proteases in protein solutions. Please note, however, that it may be necessary to adapt the concentration of individual inhibitors in your experiments if the inhibitory efficiency is not adequate.

Simple inhibitor cocktail for low-protease extracts

Inhibitor	Art. No.	Conc.	Amount	Inhibition of
Aprotinin	A162	1.54 µM	10 µg/ml	Serin proteases, esterases
EDTA*	8043	10 mM	3.7 mg/ml	Metall proteases
PMSF	6367	1 mM	147 µg/ml	Serin- and cystein proteases
Trypsin-Inhibitor	5279	-	10 µg/ml	Trypsin and trypsin-like proteases

Broadband inhibitor cocktail for tissue extracts

Inhibitor	Art. No.	Conc.	Amount	Inhibition of
AEBSF	2931	1 mM	0.25 mg/ml	Serin proteased
Aprotinin	A162	1.54 µM	10 µg/ml	Serin proteases, esterases
Bestatin	2937	50 µM	17.5 µg/ml	Amino peptidases
E-64	2935	5 µM	1.8 µg/ml	Cystein proteases
EDTA*	8043	10 mM	3.7 mg/ml	Metall proteases
Leupeptin	CN33	50 µM	25 µg/ml	Serin- and cystein proteases, trypsin-like proteases
Pepstatin A	2936	1 µM	0.7 µg/ml	Acidic proteases, aspartat proteases

*EDTA-concentration can be reduced to 0.2 mM because of downstream assays.

The inhibitors may be prepared in each case as a 100x or 1000x stock solution (see individual products for further information). Aprotinin, DTT, EDTA and the trypsin inhibitor may be mixed to a ready-to-use cocktail and aliquoted frozen at -80 °C. PMSF is not water-soluble and should be added separately to the protein solution.

Pepstatin A

≥98 %, for biochemistry

Inhibitor of acidic/aspartic proteases

Iva-Val-Val-Sta-Ala-Sta

$C_{34}H_{63}N_5O_9$

M 685,91 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Inhibits acidic proteases (aspartat proteases). Isolated from streptomycin and other actinomycetes. Strong, highly selective inhibition of pepsin, renin, cathepsin D, chymosin, protease B and also of retroviral proteases. No inhibitive effect on thiolproteases, neutral proteases and serine proteases. Hardly toxic.

Application:
Stock solution: 1 mM (685 µg/ml) in DMSO or methanol
Storage of stock solution: at -20 °C max. 1 month, at +4 °C max. 1 week
Working concentration: 0.5-1 µM
It may be necessary to add 10-50 % acetic acid to completely dissolve pepstatin A.

2936.1	5 mg	plastic	27,85 €
2936.2	25 mg	plastic	81,60 €
2936.3	100 mg	plastic	256,95 €

Phenylmethyl sulphonyl fluoride (PMSF)

≥99 %, for biochemistry

Irreversible inhibitor of serine and cystein proteases.

α-Toluene sulphonyl fluoride, PMSF

$C_7H_7FO_2S$

M 174,2 g/mol

Danger H301-H314

General, irreversible inhibitor of serin proteases (chymotrypsin, trypsin and thrombin) and for the dystin-protease papain. Inhibiton by sulphonation of the serine localised in the enzymatic active site.
Reversible inhibitor of cysteine-proteases. K_i = 0.91 ±0.01 mM

Application:
Dissolves easily in isopropanol, ethanol and methanol. Not stable in aqueous solution.
Stock solution: 17.4 mg/ml (100 mM) in isopropanol, ethanol or methanol. For stock solutions of 200-250 mM heat shortly (approx. 30 mins) to 30 °C. Stock solutions should be stored at -20 °C. Short term storage of few weeks may be done at +4 °C in the dark.
Working concentration: 17-174 µg/ml (0.1-1 mM). Not stable in aqueous solutions (half-life value of 1 h at pH 7.5/RT).

At every stage of isolating or purifying the proteins, PMSF should be added fresh from the stock solution. PMSF is often not sufficient as the only protease inhibitor in the preparation to protect against decomposition processes, as for example high salt concentration (3.0 M) impairs the inhibitory effect of PMSF.
PMSF reacts with thiols. DTT and β-mercaptoethanol reduce the inhibitory effect.

For your convenience, Art. No. 6367.4 comes packed in a 30 ml brown glass bottle. Addition of 20 ml 2-propanol results in a 100 mM stock solution.

6367.1	5 g	plastic	27,85 €
6367.2	25 g	plastic	91,95 €
6367.3	100 g	plastic	261,25 €
6367.4	348 mg, in 30 ml glass bottle		13,15 €

Radicicol

≥98 %, for biochemistry

Strong HSP90 inhibitor, macrolactone antibiotic. Binds specifically to the heat shock protein HSP90.

$C_{18}H_{17}ClO_6$

M 364,79 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H301-H315-H319-H335

The strong specific binding of radicicol to heat shock protein 90 (HSP90) leads to deregulation of its target mechanisms: cell cycle, cell proliferation, apoptosis/cell vitality. Also binds to yeast HSP90, *E.coli* HtpG and TRAP-1. Antifungal effects are probably caused by inactivation of chitin synthase in fungal cells.

Application:
Stock solution: 10 mg/ml (27 mM) in ethanol or DMSO
Storage of stock solution at -20 °C, max. 2 weeks at 4 °C
Working concentration: 5-300 µM
Photo sensitive! Store protected from light.

HN72.1	1 mg	glass	87,00 €
HN72.2	5 mg	glass	349,40 €
HN72.3	10 mg	glass	536,45 €

Trypsin inhibitor

≥10000 BAEE U/mg

Made from soy beans. High-activity inhibitor of trypsin, chymotrypsin, and other proteolytic enzymes.

Storage temp.: +4 °C

Trypsin inhibitor inhibits Trypsin with high effiency, and, to a lesser extent, chymotrypsin. Additionally, there is a light inhibiting effect on plasmin, kallikrein, thrombin and a few other proteolytic enzymes.
1 mg of lyophilisate inhibits at minimum 10.000 BAEE Units of trypsin.
Application in cell culture (stock solution 1 mg/ml): Following trypsination, add the same volume inhibitor solution as was used for trypsin. Zentrifuge cells (5 mins, 1000 rpm), and remove supernatant. Resuspend cells in medium and cultivate further.

Application:
Stock solution: 1-10 mg/ml in H_2O, PBS or other phosphate-buffers.
Solutions of higher concentration may be hazy and slightly yellow-coloured.
Storage of stock solution: in aliquots at -20 °C.
Recommended end concentration: 1-100 µg/ml.
pH optimum: pH 7.6 - 8.0.

2949.1	25 mg	plastic	28,70 €
2949.2	100 mg	plastic	71,50 €
2949.3	250 mg	plastic	149,45 €
2949.4	500 mg	plastic	252,65 €
2949.5	1 g	plastic	428,95 €

Trypsin inhibitor

salt free ≥7000 BAEE U/mg

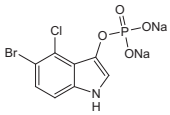
Made from soy beans. Inhibition of trypsin, chymotrypsin, plasmin, kallikrein, thrombin and other proteolytic enzymes; free from salt.

Storage temp.: -20 °C • Transport temp.: room temp.

Application:
Stock solution: 10 mg/ml in H_2O or PBS.
Storage of stock solution: in aliquots at -20 °C.
Recommended end concentration: 2-100 µg/ml.

5279.1	100 mg	glass	17,10 €
5279.4	250 mg	glass	32,80 €
5279.5	500 mg	glass	54,75 €
5279.2	1 g	glass	92,35 €
5279.3	5 g	glass	375,20 €

Substrates

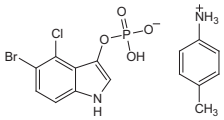


BCIP-Na_2

≥99 %

Substrate for alkaline phosphatase, in particular in immunoblot procedures.
5-Bromo-4-chloro-3-indolyl phosphate disodium salt, X-phosphate disodium salt
$C_8H_4BrClNO_4PNa_2 \cdot 1{,}5\ H_2O$
M 397,46 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
In combination with NBT ideal for colorimetric detection of alkaline phosphatase activity, in particular in immunoblot procedures.
Dissolves easily in water (20 mg/ml). Bad solubility in DMF.
Protect from light and humidity.

A155.1	100 mg	glass	25,70 €
A155.2	500 mg	glass	107,40 €
A155.3	1 g	glass	188,15 €
A155.4	5 g	glass	633,20 €



BCIP-p-toluidine salt / X-Phos

≥99 %, BioScience-Grade

Histochemical substrate for phosphatase.
5-Bromo-4-chloro-3-indolyl phosphate p-toluidine salt, X-Phos
$C_{15}H_{15}N_2O_4BrClP$
M 433,63 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H371

In combination with NBT ideal for colorimetric detection of alkaline phosphatase activity, in immunohistochemical procedures.
By enzymatic dephosphorylation BCIP is converted to indoxyl which subsequently tautomerizes to the ketone. In basic pH values, this ketone dimerizes and, in doing so, releases H^+ ions. The dye precipitates in the direct vicinity of the phosphatase, hence staining this site in a weak blue colour. Enhencement and darkening of this colour is achieved by adding NBT (Art. No. 4421).
Dissolves easily in dimethylformamide (20 mg/ml), hardly soluble in water.
Protect from light and humidity.

6368.1	500 mg	glass	33,25 €
6368.2	1 g	glass	63,45 €
6368.3	5 g	glass	241,90 €

Coelenterazine

≥95 %, for biochemistry

Luciferase substrate
$C_{26}H_{21}N_3O_3$
M 423,48 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.

Warning H315-H319-H335

Substrate of the Renilla luciferase used for monitoring of the mitochondrial Calcium flux and of reportergenes. Coelenterazine is applied in biolumi-nescence resonance energy transfer (BRET) assays, ELISAs, HTS and in chemiluminescent detection of superoxide anion and peroxynitrite in cells or tissues.

4094.3	1 mg	glass	52,15 €
4094.4	2,5 mg	glass	95,70 €

DAB

≥98 %, p.a.

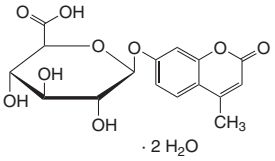
Substrate of horseradish peroxidase. For detection of endogenous peroxidase and for immunohistochemical stainings.
3,3',4,4'-Tetra-aminobiphenyl tetrahydrochloride, 3,3'-Diaminobenzidine tetrahydrochloride
$C_{12}H_{14}N_4 \cdot 4\ HCl$
M 360,10 g/mol
Storage temp.: +4 °C

Warning H315-H319-H341-H351-H335

Popular substrate of peroxidases. DAB is used for biochemical and histological detection of endogenous peroxidases like catalase and cytochome oxidase. Additionally, it is the most common substrate for horseradish peroxidase (HRP) in histochemical and cytological assays. DAB is oxidised by HRP, forming a brown precipitate, which is unsoluble in aqueous and organic solvents. This precipitate can be detected in visible light and does not bleach during long-term storage.

Application:
Stock solution: 1-2 % (10-20 mg/ml) in 50 mM Tris buffer, pH 7.3
Storage of stock solution in aliquots at -20 °C
Working concentration: 0.05-0.1 % (0.5-1 mg/ml) DAB in buffer (PBS, TBS, pH 7.0-7.6) containing 0.01 % hydrogen peroxide
Always use freshly prepared working solution. For oxidation high concentrations of fresh hydrogen peroxide are needed.

CN75.1	1 g	glass	21,40 €
CN75.2	5 g	plastic	67,65 €
CN75.3	10 g	plastic	115,60 €

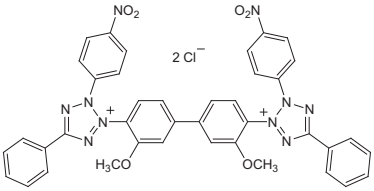


MUG

≥99 %, p.a.

Substrate for β-glucuronidase. For detection of *E. coli*.
4-Methylumbelliferyl-β-D-glucuronide dihydrate
$C_{16}H_{16}O_9 \cdot 2\ H_2O$
M 388,33 g/mol
Storage temp.: -20 °C • Transport temp.: room temp.
Ideal for fluorometric detection of β-glucoronidase hydrolysed by MUG to 4-methylumbelliferone. Detection occurs via long wave UV light (366 nm).

6394.1	50 mg	glass	21,40 €
6394.2	250 mg	glass	57,95 €
6394.3	1 g	glass	181,70 €



NBT

≥98 %, p.a.

Nitro-BT, Nitroblue tetrazolium chloride

$C_{40}H_{30}Cl_2N_{10}O_6$

M 817,65 g/mol

Storage temp.: +4 °C

Used in combination with BCIP-toluidine salt (X-phosphate) for detection of alkaline phosphatase activity by producing an indigo dye precipitate. Colour enhancer for staining with alkalic phosphatase. During dimerisation of ketonized X-Phos, H^+ ions are set free which reduce NBT to purple-coloured diformazan. Both dyes precipitate in the direct vicinity of the phosphatase, hence staining this site in a dark violet.
Store at +4 °C. Please also see assay protocol for use of BCIP/NBT in immunoblot procedures.

Application:
Stock solution: 0.5 g NBT in 10 ml 70 % dimethylformamide.
Protect from light and humidity.

4421.1	100 mg	glass	15,95 €
4421.2	500 mg	glass	40,75 €
4421.3	1 g	glass	77,30 €
4421.4	5 g	glass	274,15 €

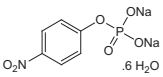
Assay protocol for use of BCIP/NBT in immunoblot procedures:

Stock solutions (All solutions are stable for at least 1 year at 4 °C):
0.5 g NBT in 10 ml 70 % dimethylformamide;
0.5 g BCIP (p-toluidine salt) in 10 ml 100 % dimethylformamide.
Incubation buffer for alkaline phosphatase:
100 mM NaCl, 5 mM $MgCl_2$,100 mM Tris (pH 9.5).

Fresh substrate solution:
66 µl NBT stock solution + 10 ml incubation buffer, mix well,
add 33 µl BCIP stock solution. Use within 1 hour.

Blot development:
Approx. 10 ml substrate solution per 15 x 15 cm^2 membrane surface. Develop at room temperature until bands become visible (approx. 30 mins).

Reaction stop: Rinse with PBS/20 mM EDTA.



pNPP

≥99 %, p.a.

Substrate for alkalic phosphatase, particularly for ELISA.

p-Nitrophenyl phosphate, 4-Nitrophenyl phosphate disodium salt hexahydrate

$C_6H_4NNa_2O_6P \cdot 6\ H_2O$

M 371,12 g/mol

Storage temp.: +4 °C

Substrate of the alkalic phosphatase for use in ELISAs. During reaction of the substrate, a soluble, yellow product is formed that is detected photometrically at 405 nm wave length.

Application:
Working solution: 1 mg/ml in diethanolamine substrate buffer
(10 mM diethanolamine, 0.5 mM $MgCl_2$, pH 9.5).
For endpoint analysis the reaction may be stopped via addition of 2-3 M NaOH.

4165.1	2,5 g	glass	14,55 €

ready-to-use

Roti®-Lumin

ready-to-use

Chemoluminescence substrate for peroxidase mediated detection systems. HRP substrate.

Storage temp.: +4 °C

- Sensitive and reliable
- For all standard membrane types
- Low background
- No cumbersome preparation of peroxidase buffers
- Suitable for multiple stripping and reprobing

Roti®-Lumin is a kit for chemoluminescent detection of peroxidase-linked reporters (e.g. HRP-antibodies), as can be found in Western-Blot assays. In comparison to chromogen substrates, Roti®-Lumin displays increased sensitivity and reduced background reaction.

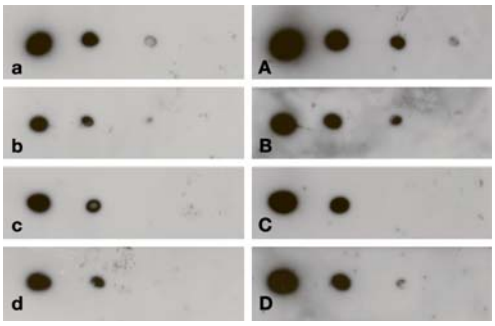


Figure:
Sensitivity of Roti®-Lumins. Detection of a polyclonal antibody (left to right 4 pg, 400 fg, 40 fg, 4 fg) on Roti®-PVDF (Art. No. T830.1).
Staining in PBST via a HRP-conjugated anti-rabbit antibody (1:2000).
a/A: Roti®-Lumin ultra; b/B: Roti®-Lumin plus; c/C: Roti®-Lumin;
d/D: Product of a competitor, recommended for femtogram range.
a/b/c/d: 10 sec. exposition, A/B/C/D: 1 min. exposition.

Mechanism:
Roti®-Lumin is transformed by the HRP into an excited dianion in the presence of hydrogen peroxide. When the dianion is reversed back to its normal state, light is emitted. The light emission of Roti®-Lumin reaches its maximum within 5 minutes and remains at the maximum level for approx. 1-2 hours.

Applications:
Roti®-Lumin consists of two solutions, which should be mixed at a 1:1 ratio before use. It can be used with nitrocellulose, nylon and PVDF membranes. Optimal results can be achieved with Immobilon-P® or Roti®-PVDF.
Can be used for Western-Blotting, ELISA, Southern- Blotting, Dot-Blotting and colony hybridisation. Membranes may be stripped from bound probes using Roti®-Free stripping buffer, and may thus undergo multiple reprobing.

A kit consists of:
120 ml (25 ml) Roti®-Lumin 1 (Art. No. P079) and 120 ml (25 ml) Roti®-Lumin 2 (Art. No. P080).
Sufficient for approx. 2400 cm^2 (500 cm^2) membrane.
Contents of this Kit may not be bought separately.

P078.2	1 mini kit	plastic	53,65 €
P078.1	1 kit	plastic	198,80 €

ready-to-use

Roti®-Lumin plus

ready-to-use, spray

Highly efficient chemoluminescence spray substrate for HRP-mediated Western-Blot detection systems.

Storage temp.: +4 °C • Transport temp.: cooled

- Very easy to use
- Spray-and-go or mix by pipetting
- Optimised signal strength for detections in upper femtogram range
- Well suited for medium- and long-term exposition
- Suitable for NC membranes, optimised for PVDF membranes

Efficient Western-Blot substrate based on luminol, for chemoluminescent detection of horseradish peroxidase (HRP) on membranes. Through an optimised composition, high signal strength is achieved over a very stable plateau of over 30 mins.

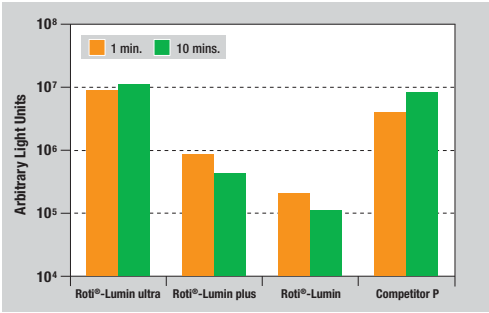


Figure:
Relative sensitivity of Roti®-Lumins. Measurement of the relative light emission following ECL reaction with solubilised HRP. Competitor P: Product of a competitor, recommended for femtogram range.

Application notes:
For a mini blot of 7 x 8 cm size 3-4 pump strokes are necessary.
- Spray the membrane with solution 1
- Afterwards spray membrane with solution 2
- Incubate approx. 1 min (wrap membrane in saran foil etc.)
- Exposition

In case passed down protocols are to be used the spray-bottles may easily be unscrewed, mixing and applying the solutions by pipetting.

A kit consists of:
20 ml (100 ml) solution 1 (Art. No. 3936) and 20 ml (100 ml) solution 2 (Art. No. 3937) in pump spray bottles, or of 250 ml solution 1 (Art. No. 3936) and 250 ml solution 2 (Art. No. 3937) in refill-bottles. 2 x 100 ml is sufficient for approx. 10.000 cm^2 membrane (approx. 150 minigel blots).
Contents of this Kit may not be bought separately.

3692.1	1 mini kit (spray)	121,40 €
3692.2	1 kit (spray)	251,55 €
3692.3	1 kit (bottles)	407,45 €

Instructions for use
can be found on the Internet next to the product description.

ready-to-use

Roti®-Lumin ultra

ready-to-use, spray

Superior chemoluminescence spray substrate for HRP-mediated Western-Blot detection systems. HRP substrate.

Storage temp.: +4 °C • Transport temp.: cooled

- Very easy to use
- Spray-and-go or mix by pipetting
- Superior performance for detections in lower femtogram range
- Perfectly suited for all exposition times
- Suitable for NC membranes, optimised for PVDF membranes

Significantly enhanced Western-Blot substrate based on luminol, for chemoluminescent detection of horseradish peroxidase (HRP) on membranes. Through a special, optimised composition, a particularly high signal strength is achieved for over 30 mins. with a second increase at 10 to 15 mins. after application. Roti®-Lumin ultra is, therefore, one of the most sensitive HRP-Chemoluminescence substrate available.

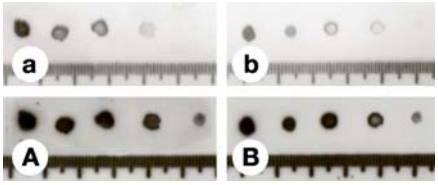


Figure:
Superior sensitivity of Roti®-Lumin ultra even with a very short exposition of 10 seconds. Detection of 2 µl each of a HRP complex in dilution series 1:1 to 1:10.
a/A: Roti®-Lumin ultra; b/B: Product of a competitor, recommended for femtogram range.
a/b: 10 sec. exposition, A/B: 5 mins. exposition.

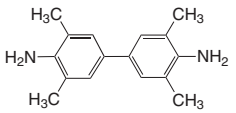
By using pump spray bottles no time-consuming pre-mixing of solutions is required - substrate solution 1 and enhancer solution 2 are simply sprayed onto the membranes. Hereby, the spray technique guarantees a very smooth and regular distribution of the substrate on the membrane surface, hence avoiding artefacts caused by uneven distribution of pipetted substrate. The superior signal strength allows detection of proteins in single femtograms, as well as significant reduction of concentrations of expensive antibodies.

Application notes:
For a mini blot of 7 x 8 cm size 3-4 pump strokes are necessary.
- Spray the membrane with solution 1
- Afterwards spray membrane with solution 2
- Incubate approx. 1 min (wrap membrane in saran foil etc.)
- Exposition

In case passed down protocols are to be used the spray-bottles may easily be unscrewed, mixing and applying the solutions by pipetting.

A kit consists of:
20 ml (100 ml) solution 1 (Art. No. 3990) and 20 ml (100 ml) solution 2 (Art. No. 3991) in pump spray bottles. 2 x 100 ml is sufficient for approx. 10.000 cm^2 membrane (approx. 150 minigel blots).
Contents of this Kit may not be bought separately.

3734.1	1 mini kit (spray)	213,95 €
3734.2	1 kit (spray)	869,70 €



TMB

≥98 %, p.a.

3,3',5,5'-Tetramethylbenzidine

$C_{16}H_{20}N_2$

M 240,35 g/mol

Storage temp.: +4 °C

Used as a highly sensitive substrate for peroxidases, particularly in ELISA procedures. Can replace carcinogenic benzidine.
Dissolves easily in acetone, chloroform and ethanol.

Application:
Working solution: 1 mg TMB in 0.1 ml dimethyl sulfoxide, add 9.9 ml 0.1 M sodium acetate (pH 6). Filter and add H_2O_2 ad 0.01 %. Always prepare freshly!
Application: approx. 50 µl per 96well, incubate for 10-30 mins. at room temperature. Add 50 µl 1 M H_2SO_4 and quantitate photometrically at 450 nm (acc. to: Bos *et. al.* (1981) *J. Immunoassay* 2:187).
Protect from light.

6350.1	1 g	glass	48,30 €
6350.2	5 g	plastic	149,45 €
6350.3	25 g	plastic BIG PACK	697,70 €

Detection of peroxidase activity (Immunoassay):

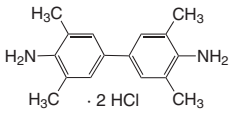
Dissolve 1 mg TMB in 0.1 ml dimethylsulfoxide (Art. No. 4720); add 9.9 ml of a 0.1 M sodium acetate solution (pH 6.0) (Powder: Art. No. 6779), filter and add H_2O_2 (Art. No. 8070) (final concentration 0.01 %).

Always prepare freshly!

Incubation 10-30 mins at room temperature (approx. 50 µl per microtitre well; finally add 50 µl 1 M H_2SO_4, Art. No. X873, per well).

Photometric quantitation at 450 nm.

Reference: Bos, E.S. *et al.*, (1981) *J. Immunoassay* 2, (3/4), 187.



TMB dihydrochloride

≥99 %, for biochemistry

Water-soluble peroxidase substrate

3,3',5,5'-Tetramethylbenzidine dihydrochloride, TMB · 2 HCl

$C_{16}H_{20}N_2 \cdot 2\ HCl$

M 313,27 g/mol

Storage temp.: +4 °C

Tetramethylbenzidine dihydrochloride is used as highly sensitive substrate for detection of horseradish peroxidase labelled probes, particularly in solution-based assays like ELISA techniques. It produces a soluble, blue-coloured end product, which can be read spectrophotometrically.
The dihydrochloride form is well water-soluble, making it a versatile tool in laborartory science.

Application:
Stock solution: 0.1 mg/ml in 50 % acetic acid or phosphate citrate buffer (50 mM NaH_2PO_4, 25 mM citric acid, pH 5.0). For solubilisation, heat to 45 °C and sonicate. Colourless.
Storage of stock sol.: At +4 °C if tightly sealed. Oxidation can be seen by colour-shift to a faint blue.
Working solution: Immediately prior to use add 2 µl / 10 ml of 30 % hydrogen peroxide.
(Liem *et al.* (1979) *Anal Biochem*, 98:388-93)

4107.2	1 g	glass	57,55 €
4107.1	500 mg	glass	35,40 €

X-α-Gal

≥98 %, for biochemistry

Colorimetric substrate of α-galactosidase.

5-Bromo-4-chloro-3-indolyl-α-D-galactopyranoside

$C_{14}H_{15}BrClNO_6$

M 405,63 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Chromogenic substrate of α-galactosidase (melibiase, α-D-galactoside galactohydrolase), an enzyme that is necessary for metabolization of the disaccharide melibiose as a carbon source.
Used for selection of positive clones in yeast two-hybrid screens.

Application:
Stock solution: 2-20 mg/ml in DMF
Working concentration: 20-50 µg/ml in agar plates

HN36.1	25 mg	glass	66,55 €
HN36.2	100 mg	glass	203,20 €
HN36.3	250 mg	glass	471,95 €

X-β-Gal

DNAse-free Protease-free RNAse-free

≥99 %, BioScience-Grade

Colorimetric substrate of β-galactosidase.
For biochemistry and molecular biology.

5-Bromo-4-chloro-3-indoxyl-β-D-galactoside

$C_{14}H_{15}BrClNO_6$

M 408,6 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Ideal for colorimetric detection of β-galactosidase activity, for instance during blue-/white selection.

Application:
Stock solution: 100 mg/ml (240 mM) in DMF, store at -20 °C in the dark.
Working solution: For blue/white selection of recombinant clones on agar plates use 0.3 µl stock solution per ml broth/agar.

2315.1	100 mg	glass	19,25 €
2315.2	500 mg	glass	53,65 €
2315.3	1 g	glass	101,60 €
2315.4	5 g	glass	349,40 €

▶ IPTG see page 1195

X-Gluc

≥99 %, for microbiology

Glucuronidase substrate

5-Bromo-4-chloro-3-indolyl-β-D-glucuronide cyclohexyl ammonium salt monohydrate, X-GlcA

$C_{20}H_{26}N_2O_7ClBr \cdot H_2O$

M 539,81 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

For colorimetric detection of glucuronidase activity. During hydrolysis of X-gluc two molecules are formed, glucuronic acid and 5-bromo-4-chloro-indoxyle, which is then being oxidized to a deep-blue indigo-dye.
X-Gluc is used for detection of contaminations by *E. coli* bacteria in food, waters and feeds. In molecular genetics, it is widely used as marker for expression analysis of target genes.

0018.1	100 mg	glass	92,35 €
0018.2	500 mg	glass	349,40 €
0018.3	1 g	glass	590,20 €

Summary of Substrates

Product	Enzyme	Detection	Signalling product (example)	Art. No.	Pack Qty.	€
Acetylthiocholine iodide	Acetylcholine esterase	colour (yellow)	soluble (neurohistology)	**4001.1**	1 g	22,05
				4001.2	5 g	67,20
				4001.3	10 g	120,95
BCIP-disodium salt	Alkalic Phosphatase	colour (brown-violet)	precipitate (blotting)	**A155.1**	100 mg	25,70
				A155.2	500 mg	107,40
				A155.3	1 g	188,15
				A155.4	5 g	633,20
BCIP-p-toluidin salt, X-Phos	Alkalic Phosphatase	colour (brown)	precipitate (blotting)	**6368.1**	500 mg	33,25
				6368.2	1 g	63,45
				6368.3	5 g	241,90
2-Butyrylthiocholine iodide	Cholinesterases	colour (yellow)	soluble (activity assay)	**8452.1**	1 g	16,70
				8452.2	5 g	53,65
				8452.3	10 g	99,90
L-Carnosine	Carnosinase	fluorometry	soluble (activity assay)	**4148.1**	1 g	24,20
				4148.2	5 g	79,05
6-Chloro-3-indoxyl-β-D-galactopyranoside (Rose gal, Salmon gal)	β-D-Galactosidase	colour (salmon)	precipitate (microbiology)	**4251.1**	25 mg	31,10
				4251.2	50 mg	40,35
				4251.3	100 mg	57,95
6-Chloro-3-indoxyl-β-D-glucuronic acid CHA-salt (Rose glucuronide CHA-salt, Salmon glucuronide CHA-salt)	β-Glucuronidase	colour (salmon)	precipitate (microbiology)	**4057.1**	10 mg	28,95
				4057.2	50 mg	42,90
				4057.3	100 mg	71,95
6-Chloro-3-indoxyl-phosphate-p-toluidin salt	Alkalic Phosphatase	colour (pink)	precipitate (blotting, *in situ*, histochemistry)	**4247.1**	50 mg	43,55
				4247.2	100 mg	79,05
Chloronaphthol	Horse raddish peroxidase	colour (blue)	precipitate (blotting)	**4104.1**	5 g	26,35
				4104.2	10 g	43,55
				4104.3	25 g	84,85
Coelenterazine	Luciferase	chemoluminescence	soluble (ELISA, BRET)	**4094.3**	1 mg	52,15
				4094.4	2,5 mg	95,70
Creatine phosphate disodium salt tetrahydrate	Creatine kinase	fluorometry	soluble (activity assay)	**8459.1**	1 g	17,75
				8459.2	5 g	50,45
				8459.3	10 g	81,20
Diaminobenzidine (DAB)	Horse raddish peroxidase	colour (brown)	precipitate (blotting)	**CN75.1**	1 g	21,40
				CN75.2	5 g	67,65
				CN75.3	10 g	115,60
8-Hydroxyquinoline-β-D-glucuronic acid, sodium salt	β-D-Glucuronidase	colour (brown)	precipitate (microbiology)	**8432.1**	100 mg	45,05
				8432.2	250 mg	77,30
				8432.3	500 mg	132,15
Indoxylglucopyranoside	β-D-Glucosidase	colour (blue)	precipitate (activity assay)	**4243.1**	250 mg	48,95
				4243.2	500 mg	79,05
				4243.3	1 g	141,80
D-Luciferin (free acid)	Luciferase	fluorometry	soluble (transfection)	**CN24.1**	10 mg	50,00
				CN24.2	25 mg	105,25
				CN24.3	50 mg	185,45
D-Luciferin sodium salt	Luciferase	fluorometry	soluble (transfection)	**4096.1**	10 mg	30,00
				4096.2	25 mg	53,65
4-MU-β-D galactopyranoside	β-D-Galactosidase	fluorometry	soluble (activity assay)	**4084.1**	500 mg	27,85
				4084.2	1 g	42,90
				4084.3	5 g	160,20
4-MU-β-D galactosaminide	β-D-Galactosaminidase	fluorometry	soluble (microbiology)	**4083.1**	100 mg	38,60
				4083.2	250 mg	68,30
				4083.3	500 mg	113,45
4-MU-α-D glucopyranoside	α-D-Glucosidase	fluorometry	soluble (activity assay)	**4086.1**	100 mg	37,55
				4086.2	250 mg	66,15
4-MU-β-D glucopyranoside	β-D-Glucosidase	fluorometry	soluble (activity assay)	**4093.1**	500 mg	39,70
				4093.2	1 g	67,65
				4093.3	2,5 g	132,15
4-MU-β-D glucuronide (MUG)	β-D-Glucuronidase	fluorometry	soluble (activity assay)	**6394.1**	50 mg	21,40
				6394.2	250 mg	57,95
				6394.3	1 g	181,70
4-MUP phos (methylum belliferyl phoshate)	Phosphatases	fluorometry, UV-spectrometry	soluble (activity assay)	**4103.1**	250 mg	31,10
				4103.2	1 g	91,30
Naphthyl phosphate	Acidic phosphatases	colour (red)	precipitate (microbiology)	**KK26.1**	1 g	19,60
				KK26.2	5 g	63,35
4-Nitrophenyl-α-L fucopyranoside	α-L-Fucosidase	colour (yellow)	soluble (serum analysis)	**4018.1**	100 mg	53,65
				4018.2	250 mg	105,25

Product	Enzyme	Detection	Signalling product (example)	Art. No.	Pack Qty.	€
Nitrotetrazolium blue chloride (NBT)	Alkalic Phosphatase	colour (brown-violet)	precipitate (blotting)	**4421.1**	100 mg	15,95
				4421.2	500 mg	40,75
				4421.3	1 g	77,30
				4421.4	5 g	274,15
ONP-β-D galactopyranoside (ONPG)	β-D Galactosidase	colour (yellow)	soluble (microbiology)	**CN22.1**	5 g	29,60
				CN22.2	10 g	50,45
ONP-β-D glucopyranoside	β-D-Glucosidase	colour (yellow)	soluble (activity assay)	**4077.1**	500 mg	36,05
				4077.2	1 g	60,10
PNP-N-acetyl-β-D glucosaminide (PNAG)	β-D-Glucosaminidase	colour (yellow)	soluble (activity assay)	**4062.1**	100 mg	24,20
				4062.2	500 mg	71,50
				4062.3	1 g	132,80
PNP-α-D galactopyranoside (PNPG)	α-D-Galactosidase	colour (yellow)	soluble (membrane biochemistry)	**4063.1**	100 mg	19,25
				4063.2	500 mg	43,55
				4063.3	1 g	68,70
PNP-β-D galactopyranoside	β-D-Galactosidase	colour (yellow)	soluble (microbiology, activity assay)	**4081.1**	1 g	28,95
				4081.2	2,5 g	68,30
				4081.3	5 g	126,85
PNP-β-D galactosaminide	N-Acetyl-β-D-Galactos-aminase	colour (yellow)	soluble (ELISA, activity assay)	**4058.1**	250 mg	56,45
				4058.2	500 mg	99,45
PNP-β-D glucopyranoside	β-D-Glucosidase	colour (yellow)	soluble (ELISA, activity assay)	**4082.1**	500 mg	33,25
				4082.2	1 g	53,65
				4082.3	5 g	213,95
PNP-β-D xyloside	β-D-Xylosidase	colour (yellow)	soluble (activity assay)	**4079.1**	100 mg	23,90
				4079.2	500 mg	73,00
				4079.3	1 g	131,70
pNPP	Alkalic Phosphatase	colour (yellow)	soluble (ELISA, activity assay)	**4165.1**	2,5 g	14,55
Roti®-Lumin	Horse raddish peroxidase	chemoluminescence	precipitate (blotting)	**P078.2**	1 mini kit	53,65
				P078.1	1 kit	198,80
Roti®-Lumin plus	Horse raddish peroxidase	chemoluminescence	precipitate (blotting)	**3692.1**	1 mini kit (spray)	121,40
				3692.2	1 kit (spray)	251,55
				3692.3	1 kit (bottles)	407,45
Roti®-Lumin ultra	Horse raddish peroxidase	chemoluminescence	precipitate (blotting)	**3734.1**	1 mini kit (spray)	213,95
				3734.2	1 kit (spray)	869,70
Tetramethylbenzidine (TMB)	Horse raddish peroxidase	colour (blue)	soluble (ELISA)	**6350.1**	1 g	48,30
				6350.2	5 g	149,45
				6350.3	25 g	697,70
Tetramethylbenzidine dihydrochloride (TMB)	Horse raddish peroxidase	colour (blue)	soluble (ELISA)	**4107.1**	500 mg	35,40
				4107.2	1 g	57,55
X-β-D-cellobioside	β-D-Cellobiosidase	colour (blue)	precipitate (histochemistry)	**4152.1**	50 mg	92,35
X-α-gal	α-D-Galactosidase	colour (blue)	precipitate (Yeast-Two-Hybrid)	**HN36.1**	25 mg	66,55
				HN36.2	100 mg	203,20
				HN36.3	250 mg	471,95
X-β-gal	β-D-Galactosidase	colour (blue)	precipitate (blue/white selection)	**2315.1**	100 mg	19,25
				2315.2	500 mg	53,65
				2315.3	1 g	101,60
				2315.4	5 g	349,40
X-β-D-glucosaminide	N-Acetyl-β-D-Glucosamini-dase	colour (blue)	precipitate (histochemistry)	**4149.1**	25 mg	46,15
				4149.2	100 mg	127,95
X-α-D-glucoside (X-glc)	α-D-Glucosidase	colour (blue)	precipitate (microbiology)	**8434.1**	100 mg	67,20
				8434.2	250 mg	133,20
				8434.3	500 mg	212,35
X-β-D-glucoside (X-glu)	β-D-Glucosidase	colour (blue)	precipitate (microbiology)	**4041.1**	50 mg	35,40
				4041.2	100 mg	59,05
X-gluc CHA salt	β-D-Glucuronidase	colour (blue)	precipitate (microbiology, detection of transgenic organisms)	**4056.1**	50 mg	34,85
				4056.4	1 g	424,65
X-β-D-glucuronic acid (X-gluc)	β-D Glucuronidase	colour (blue)	precipitate (detection of living cells)	**0018.1**	100 mg	92,35
				0018.2	500 mg	349,40
				0018.3	1 g	590,20

For additional product data and safety information, see chapter Chemicals A-Z.

Safety data sheets
can be found on the Internet next to the product description.

Albumins / BSA (Bovine Serum Albumin)

BSA are proteins yielded from blood, which function as binding and transport proteins in blood circulation. Depending on the preparation process, the albumins contain different quality and quantities of metabolic products, enzymes, peptides, fatty acids, vitamines, etc. and are suitable for different applications.

TSE-/BSE-free

Albumin Fraction V

≥98 %, powdered, for molecular biology

Wide range of applications, e.g. as protein standard or blocking reagent.

BSA • M~66 000 g/mol • Store at +4 °C

BSA made of fresh bovine plasma by fractionation (Cohn method) and subsequent crystallisation from alcohol solution at a low temperature.

Guarantee analysis:

Appearance	beige, fine powder
Assay (HPLC)	≥98 %
Solution (2 % in H_2O)	clear
pH-value (2 % in H_2O)	6,5-7,5
Loss on drying	≤6 %
Sulphated ash	≤3 %
Nitrogen (N)	≥14 %
Fat	≤1 %

8076.1	10 g	plastic	24,55 €
8076.2	50 g	plastic	77,95 €
8076.4	200 g	plastic	268,25 €
8076.3	500 g	plastic	600,95 €
Original pack 6 x 500 g			570,90/500 g
8076.5	1 kg	plastic	1037,40 €
Original pack 6 x 1 kg			985,53/1 kg

Molar extinction coefficient: 44.020 · M^{-1} · cm^{-1}
(acc. to 0.667 x cm^{-1} for a 0.1 % solution).

Albumin Fraction V, US-Origin

≥98 %, powdered, for molecular biology and biochemistry

Suitable as blocking or stabilising reagent in all general assays. Recommended if BSA with US-Origin is required.

BSA • M~66 000 g/mol • Store at +4 °C

Highly pure albumin of Cohn's Fraction, prepared from blood of cattle certified for US-origin. Albumin Fraction V, US-Origin may well be used for all standard assays where blocking with BSA is necessary, as well as for stabilisation of antibodies or enzymes. Many lots show exceedingly low content of protease and IgGs. BSA, US-Origin is particularly recommended if the use of albumin with certified US-Origin is dictated by process regulations. Available in large bulk format on request.
BSA made of fresh bovine plasma by fractionation (Cohn method) and subsequent crystallisation from alcohol solution at a low temperature.

Guarantee analysis:

Appearance	powder to flakes
Colour	off-white to beige
Origin	**USA**
Assay	≥98 %
Protein	≥96 %
Dry extract	≥97 %
Sodium (Na)	<9,2 mg/g
Chloride (Cl)	<6,4 mg/g
Calcium (Ca)	<3 mg/g
Potassium (K)	<2 mg/g
Phosphorus (P)	<0,3 mg/g
Heavy metals	<0,6 ppm
pH (in water)	5,0-7,5

3854.1	10 g	plastic	27,85 €
3854.2	50 g	plastic	84,40 €
3854.3	200 g	plastic	289,20 €
3854.4	500 g	plastic	643,95 €
Original pack 6 x 500 g			611,75/500 g
3854.5	1 kg	plastic	1073,95 €
Original pack 6 x 1 kg			1020,25/1 kg

Albumin, nuclease-free

DNAse-free
RNAse-free

>99 %, nuclease-free, for molecular biology

Especially suitable for incubation methods with restriction-endonucleases and nucleic acid modifying enzymes.

BSA, lyophilised, acetylated • M ~66 000 g/mol • Store at +4 °C

Manufactured from heat-treated, unfractionised Albumin. Product has been acetylated to inactivate nucleases and proteases. In molecular biology, bovine serum albumin (BSA) is one of the most frequently used stabilisers in incubation and storage buffers.
Albumin, nuclease-free, has been acetylated and may thus hinder polymerases used in PCR.
Product has undergone extensive quality and performance controls.

Guarantee analysis:

Protein (in dry substance)	≥95 %
Immunoglobuline	<1 %
Assay	>99 %
Water	<1 %
Ash	<2 %
Nicking activity	**none detected**
Ribonucleases activity	**none detected**
Exonucleases activity	**none detected**
Phosphatases activity	none detected

Acetylated from BSA solutions.

8895.1	10 mg	glass	28,95 €
8895.2	100 mg	glass	156,45 €

Albumin Fraction V, pH 5,2

>97 %, powdered, for protein analysis

Non-neutralized albumin. Suitable as protein standard or hapten carrier, recommmended for use in ELISA and Western-Blotting.

BSA • M~66 000 g/mol • Store at +4 °C

Albumin Fraction V, pH 5.2 is basically suitable for all applications using albumin of Cohn-fraction V, e.g. for stabilisation of enzymes and antibodies, or as hapten carrier in immunoassays. The pH value of albumin pH 5.2 is close to its pI and the protein is only weakly charged. It is, therefore, particularly recommended for use in ELISA and Western blotting, since it may help in further reducing background signals.
Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcoholic solution.

Guarantee analysis:

Appearance	flakes
Colour	pale yellow to greenish
Assay	>97 %
Protein	>92 %
Dry extract	>95 %
pH-value (10 % solution)	**5,2 ±0,4**

2834.1	10 g	plastic	36,45 €
2834.2	50 g	plastic	117,75 €
2834.3	200 g	plastic	375,20 €
2834.4	500 g	plastic	772,95 €
Original pack 6 x 500 g			734,30/500 g

Albumin Fraction V, biotin-free

≥98 %, biotin-free, for molecular biology

Excellent as blocking and stabilising reagent in all biotin/streptavidin-mediated detection systems.

BSA • M~66 000 g/mol • Store at +4 °C

Tried and tested albumin preparation, suitable for all immunoassays, for stabilising proteins, enzymes and antibodies and as a blocking-reagent in hybridisation. Tested for its absence of biotin. Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcohol solution.

Guarantee analysis:

Appearance	fine to coarse powder
Colour	beige
Assay	≥98 %
Solution (2 % in H_2O)	soluble
pH-value (2 % in H_2O)	6,5-7,5
Loss on drying	≤6 %
Sulphated ash	≤3 %
Nitrogen (N)	≥14 %
Fat	≤1 %
Biotin	**none detected**

0163.1	10 g	plastic	31,10 €
0163.2	50 g	plastic	96,25 €
0163.4	200 g	plastic	332,20 €
0163.3	500 g	plastic	751,45 €
Original pack 6 x 500 g			713,88/500 g

DNAse-free
RNAse-free

Protease-free

Albumin, IgG free

>98 %, IgG-free, for biochemistry and molecular biology

Recommended as blocking and stabilising reagent in all antibody-mediated detection systems.

BSA • M ~66 000 g/mol • Store at +4 °C

Albumin, highly purified and tested for presence of immunoglobulins (IgGs), proteases, RNAse, and DNAse. Albumin, IgG-free is particularly recommended for use as stabilising reagent in antibody solutions, and as blocking reagent in all assays using detection systems via antibodies. Also very well suited for stabilising of
hot-start-PCRs mediated by antibodies, or as blocking reagent in antibody-detected hybridisations.

For purification of Albumin, IgG-free, an extensive heat-shock/diafiltration method is used, which has been shown to bring more highly purified products than the standard process acc. to Cohn. The process is taking place in a closed system.

Guarantee analysis:

Appearance	flakes
Colour	yellow to beige
Assay (HPLC)	>98 %
Dry extract	≥94 %
Iron (Fe)	<15 mg/g
Sodium (Na)	<10 mg/g
Chloride (Cl)	<0,5 %
Solution (2 % in H_2O)	soluble
pH-value (2 % in H_2O)	6,5-7,5
IgG (HPLC)	**none detected**
Protease	none detected
DNAse	none detected
RNAse	none detected

3737.1	10 g	plastic	50,45 €
3737.2	50 g	plastic	139,65 €
3737.3	200 g	plastic	418,20 €
3737.4	500 g	plastic	865,40 €
Original pack 6 x 500 g			822,13/500 g

Albumin Fraction V, protease-free

Protease-free

≥98 %, for molecular biology

For all sensitive enzymatic assays.

BSA • M~66 000 g/mol • Store at +4 °C

Excellent in sensitive immuno assays, as a stabilising reagent for proteins, enzymes and antibodies and also suitable as a blocking reagent in hybridisation techniques. BSA produced from fresh beef plasma by fractionating in acc. with Cohn and subsequent crystallisation at low temperatures from the alcoholic solution.

Guarantee analysis:

Appearance	flakes
Colour	yellow to beige
Assay	≥98 %
Protein	≥92 %
Loss on drying	≤5,0 %
pH-value (10 % in water)	6,5-7,4
Protease (hemoglobine hydrolysis)	**none detected**

T844.1	10 g	plastic	50,45 €
T844.2	50 g	plastic	116,00 €
T844.4	200 g	plastic	381,65 €
T844.3	500 g	plastic	794,45 €
Original pack 6 x 500 g			754,73/500 g

Albumin Fraction V, fatty acid-free

≥95 %, fatty acid-free, for molecular biology

Excellent when working with membrane-associated proteins.

BSA • M~66 000 g/mol • Store at +4 °C

Suitable for all immunoassays, for stabilising proteins, enzymes and antibodies and as a blocking-reagent during hybridisation. Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcohol solution.

Guarantee analysis:

Appearance. ..... flakes
Colour. ..... pale yellow to beige
Assay. ..... ≥95 %
Protein. ..... ≥92 %
Dry extract. ..... ≥95 %
pH-value (10 % in water). 6,5-7,4
Total fatty acids. ..... <0,01 %

0052.1	1 g	glass	17,10 €
0052.2	10 g	plastic	89,15 €
0052.3	50 g	plastic	353,70 €

Albumin Fraction V, endotoxin-tested

>98 %, low endotoxin, CELLPURE®

With low endotoxin content. Recommended for culturing of cell lines.

BSA • M~66 000 g/mol • Store at +4 °C

Albumin Fraction V, low endotoxin is recommended for use during culturing of eukaryotic cells.
Bovine serum albumin is basically suitable for stabilisation of all enzymes and antibodies, as well as for blocking of hybridisations and immunoassays. Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcohol solution.

Guarantee analysis:

Appearance. ..... flakes
Colour. ..... pale yellow
Assay. ..... >98 %
Protein. ..... >92 %
Water content. ..... <5,0 %
pH-value (10 % in H_2O). ..... 7,0 ±0,5
Endotoxin content. ..... <15 E.U./mg

CP84.1	10 g	plastic	32,15 €
CP84.2	50 g	plastic	98,80 €
CP84.3	500 g	plastic	794,45 €

Original pack 6 x 500 g 754,73/500 g

Albumin Fraction V, very low endotoxin

>98 %, very low endotoxin, CELLPURE®

With extremely low endotoxin content. Recommended for the culture of primary cells and cell lines, as well as for sensitive cell culture assays.

BSA • M~66 000 g/mol • Store at +4 °C

Albumin Fraction V, very low endotoxin is particularly recommended for use during culturing of eukaryotic cells and in cell culture assays. This albumin of superior quality is thoroughly tested for its very low endotoxin content, therefore providing trouble-free cell culture assays and reliable results even when handling primary cells or stem cells.
Bovine serum albumin is basically suitable for stabilisation of all enzymes and antibodies, as well as for blocking of hybridisations and immunoassays. Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcohol solution.

Guarantee analysis:

Appearance. ..... light flakes
Colour. ..... pale yellow
Assay. ..... >98 %
Protein. ..... >920 mg/g
Water content. ..... <5,0 %
pH-value (10 % in H_2O). 6,5-7,4
Endotoxin content. ..... <2.0 E.U./mg

CP77.1	10 g	plastic	131,05 €
CP77.2	50 g	plastic	514,95 €

Lactalbumin

for microbiology

Storage temp.: +20 °C

Lactalbumin is produced by enzymatic hydrolysis of milk whey. It consists of peptides, amino acids and carbohydrates, simple and complex.
It is used in media for culturing of bacterial cells (e.g. *lactobacilli*), for tissue culture, production of vaccines and in fermentation procedures.

Type analysis:

Total nitrogen. ..... ≥10 %
Amino nitrogen. ..... ≥4,8 %
Loss on drying. ..... ≤6 %
Ash. ..... ≤15 %
pH (2 % solution). 6,5-7,5

7597.1	250 g	plastic	68,30 €
7597.2	500 g	plastic	117,75 €

Original pack 6 x 500 g 111,86/500 g

Recommended Application of Albumins

Albumin	Art. No.	Recommended Application
Fraction V	8076	Stabilisation of proteins and blocking reagent in protein biochemical detection systems. Basically suitable for all assays unless specific requirements apply (see below-listed albumins).
Fraction V, US-Origin	3854	Stabilisation of proteins and blocking reagent in all standard biochemical detection systems. Recommended if albumin with certified origin USA has to be used.
Fraction V, pH 5.2	2834	Stabilisation of proteins and blocking reagent. Particularly recommended for Western-Blotting and ELISAs
Fraction V, protease-free	T844	Stabilisation of proteins and blocking reagent in sensitive enzymatic detection systems, activity tests or protein/protein-interaction assays. Also recommended for stabilisation of antibodies.
Fraction V, biotin-free	0163	Stabilisation of proteins and blocking reagent in all biotin / streptavidin-mediated detection systems (membrane-bound- or coating-plate-assays, as well as soluble assays).
Fraction V, fetty acid-free	0052	Stabilisation of proteins and blocking reagent in detection systems. Particularly recommended for experiments on metabolism proteins, membran-associated proteins and cell surface proteins.
Albumin, nuclease-free	8895	Stabilisation of nucleic acids and proteins for nucleic acid modification or nucleic acid/protein-interaction, e.g. endonucleases, RNPs, transcription factors and so on. Also recommended as blocking reagent in nucleic acid/protein-interaction assays.
Albumin, IgG-free	3737	Stabilisation of antibodies. Blocking reagent in all antibody-mediated detection systems and Radio-Immuno Assays (RIAs). Reduces false-positive signals.
Fraction V, endotoxin-tested	CP84	Cell culture, standard cell lineages, cell sorting, short-term assays.
Fraction V, very low endotoxin	CP77	Cell culture. Superior quality and purity, suitable for sensitive cells like primary cells, stem cells, cloning and 3D-cultures. Also recommended for cell stressing assays like transfections, *in vitro* infections, or cell fusion.
Lactalbumin	7597	Cell culture, fermentation procedures, tissue culture.

Protein Isolation
Magnetic Beads

ready-to-use

- Easy and standardized handling
- Handling is identical to standardized protocols for beads of other suppliers, own established protocols may be used
- Applicable for a wide variety of buffers and media
- Well suited for manual and automated applications

Matrix for simple and efficient binding and isolation of biotinylated compounds (proteins, peptides, nucleic acids, antibodies etc) and for cell sorting.

The magnetic properties enable easy and quick washing steps, allowing one preparation to take place in approx. 10 mins. Handling is easy and identical to standardized protocols for beads of other suppliers, providing easy establishment of the assays. Results are well reproducible with high recovery rates.

The Matrix of Roti®-MagBeads Streptavidin consists of uniform, superpara-magnetic silica beads. The small bead size of 1 µm in average provides a large surface with excellent binding capacities.

In those beads, nano-meter-sized particles of magnetic iron(II/III)oxide are embedded in silicium oxide, resulting in high magnetic mobility. The surface is made from pure streptavidin-silicium oxide, coated with streptavidin, COOH groups, protein A or protein G.

Type analysis:

Concentration. ..... 10 ±0,5 mg/ml
Size distribution. ..... 0,7-1,4 µm
Mean particle sizing (CI90 %). ..... 1,0 ±0,05 µm
Bead number. ..... 6-12 x 10^9 Beads/ml
Magnetic iron content. ..... ≥50 %

Roti®-MagBeads Streptavidin
10 mg/ml, ready-to-use, for biochemistry

Magnetic silica gel beads for isolation of biotin-coupled biomolecules.
Storage temp.: +4 °C

- Easy and standardized handling
- Superior binding capacity of up to 3-7 nMol/mg
- Applicable for a wide variety of buffers and media
- For cell sorting, purification of proteins/nucleic acids and immunoassays

Roti®-MagBeads Streptavidin is a matrix for simple and efficient binding followed by subsequent isolation of biotinylated compounds such as proteins and peptides, nucleic acids, antibodies and other biomolecules. Also useful for positive or negative cell sorting. The magnetic properties enable easy and quick washing steps, allowing one preparation to take place in approx. 10 mins.

The small bead size of 1 µm in average provides a large surface with excellent binding capacities. Handling is easy and identical to standardized protocols for beads of other suppliers, providing easy establishment of the assays. The absence of excess streptavidin ensures specific binding to the beads and low loss of samples. Results are well reproducible with high recovery rates. Beads are compatible with down-stream applications like sequencing and *in vitro* transcription.

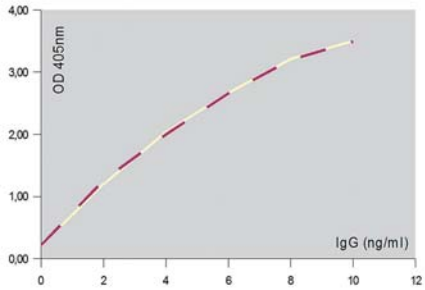
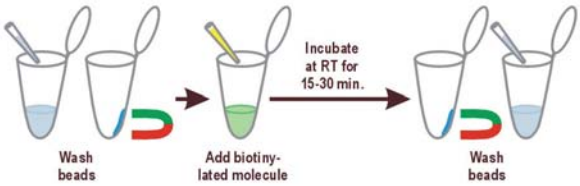


Figure: ELISA in micro plates. Assays were performed with Roti®-MagBeads Streptavidin (striped red line) and reference beads (yellow line). Binding of a biotinylated primary antibody to target protein and immobilisation by Roti®-MagBeads Streptavidin. Detection of target protein by binding of a secondary, protein specific antibody (peroxidase-labelled) measured in a micro plate-reader.

The Matrix of Roti®-MagBeads Streptavidin consists of uniform, super-para-magnetic silica beads coated with covalently coupled streptavidin. In those beads, nanometer-sized particles of magnetic iron(II/III)oxide are embedded in silicium oxide, resulting in high magnetic mobility. The surface is made from pure streptavidin-silicium oxide.



Well suited for automated and manual applications.

Biotin binding capacity ..... 3-7 nMol/mg
Suspension in PBS (pH 7,4); 0,05 % Tween 20; 0,05 % sodium azide.

HP57.2	50 µl	plastic	18,85 €
HP57.3	1 ml	plastic	203,20 €
HP57.1	2 ml	plastic	342,95 €

Instructions for use
can be found on the Internet next to the product description.

Roti®-MagBeads COOH

10 mg/ml, for biochemistry and molecular biology

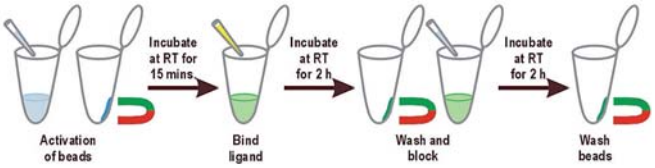
Activated magnetic silica gel beads for covalent coupling of chosen ligands.
Storage temp.: +4 °C

- Fast and easy batch format without columns
- Allows harsh pH values and high ionic strength
- For ligand coupling prior to purification of biomolecules, immunoassays, and cell sorting

Roti®-MagBeads COOH is a matrix for simple and efficient coupling of any chosen ligand that can be coupled to carboxylic groups, such as antibo-dies, proteins and oligonucleotides. Subsequently, the coated beads can be used for isolation of proteins and peptides, nucleic acids and other bio-molecules, and for positive or negative cell sorting. In case antibodies are coupled to the beads, immunoassays can be carried out.

The high ligand coupling capacity combined with low non-specific binding minimizes the signal-to-noise ratio. Subsequent assays are well reproducible with high recovery rates.

The Matrix of Roti®-MagBeads COOH consists of uniform, superpara-magnetic silica beads coated with activated surface (-COOH). The surface is made from pure activated silicium oxide and allows application of harsh pH values as well as of media with high ionic strength.



Well suited for automated and manual applications.
Suspension in PBS (pH 7,4); 0,05 % sodium azide

HP58.2	50 µl	plastic	12,05 €
HP58.1	2 ml	plastic	83,75 €

Roti®-MagBeads Protein A

10 mg/ml, ready-to-use, for biochemistry

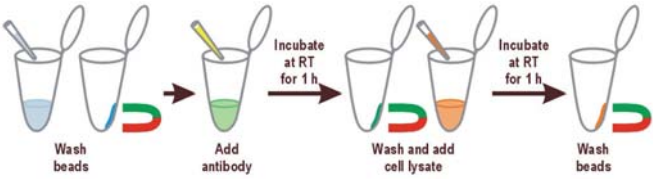
Magnetic silica gel beads for binding and isolation of immunoglobulins.
Storage temp.: +4 °C

- High affinity for Fc domains of a variety of species
- Well suited for isolation from small samples
- For purification of immunoglobulins and for immunoassays

Roti®-MagBeads Protein A is a matrix for simple and efficient isolation of immunoglobulins as well as a carrier for all sorts of immunoassays like immunoprecipitation, ELISA, protein-protein interaction assays. Protein A forms reversible complexes with several immunoglobulin subclasses from the following species: human (except IgG1), mouse (except IgG1), guinea pig, rabbit, hamster, pig.

The absence of excess protein A ensures specific binding to the beads and low loss of probes. Results are well reproducible with high recovery rates.

The Matrix of Roti®-MagBeads Protein A consists of uniform, super-para-magnetic silica beads coated with covalently coupled protein A (42 kDa) isolated from *Staphylococcus aureus*. The surface is made from pure protein A coated silicium oxide.



Well suited for automated and manual applications.
Suspension in PBS (pH 7,4); 0,05 % sodium azide

HP59.2	50 µl	plastic	16,70 €
HP59.1	1 ml	plastic	166,65 €

Roti®-MagBeads Protein G

10 mg/ml, ready-to-use, for biochemistry

Magnetic silica gel beads for binding and isolation of immunoglobulins.
Storage temp.: +4 °C

- Recombinant protein G with enhanced binding specificity for Fc domains
- Well suited for isolation from small samples
- For purification of immunoglobulins and for immunoassays

Roti®-MagBeads Protein G is a matrix for simple and efficient isolation of immunoglobulins as well as a carrier for all sorts of immunoassays like immunoprecipitation, ELISA, protein-protein interaction assays. Protein G forms reversible complexes with several immunoglobulin subclasses from the following species: human, mouse, rat (except IgG 1+2 B), goat, rabbit, hamster, cow, horse.

The absence of excess protein G ensures specific binding to the beads and low loss of probes. Results are well reproducible with high recovery rates.

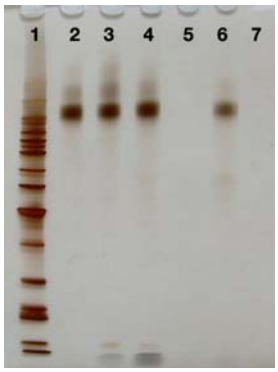
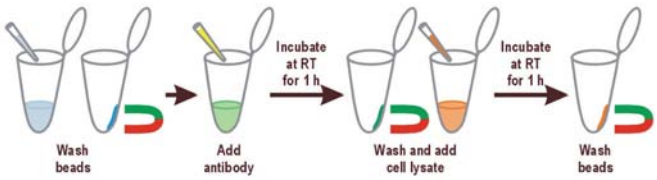


Figure: Specific absorption of bovine IgG by Roti®-MagBeads Protein G. Roti®-MagBeads Protein G, Roti®-MagBeads Protein A, and Roti®-MagBeads Stretavidin were incubated with a solution containing bovine IgG and BSA, Fraction V. Protein bound to Roti®-MagBeads was detected by SDS PAGE and identified as IgG. No unspecific binding of BSA could be detected.
Lane 1: Marker
Lanes 2, 3, 4, 6: **Roti®-MagBeads Protein G**
(different incubation conditions)
Lane 5: **Roti®-MagBeads Protein A**
(Protein A has very low affinity for bovine IgG)
Lane 7: **Roti®-MagBeads Streptavidin**

The Matrix of Roti®-MagBeads Protein G consists of uniform, superpara-magnetic silica beads coated with covalently coupled protein G (26 kDa). In those beads, nanometer-sized particles of magnetic iron (II/III)oxide are embedded in silicium oxide, resulting in high magnetic mobility. The surface is made from pure protein G coated silicium oxide. In order to enhance the binding specificity in the recombinant protein G used here, the albumin, cell wall and cell membrane binding domains present on the wild type form have been removed.



Well suited for automated and manual applications.
Suspension in PBS (pH 7,4); 0,05 % sodium azide

HP60.2	50 µl	plastic	16,70 €
HP60.1	1 ml	plastic	166,65 €

Separators

Roti®-Mag Tube-Separator

For collection of magnetic beads in reaction tubes.

The Roti®-Mag Tube Separator has been designed for fast and efficient collection of Roti®-Mag Beads magnetic particles during elution of biological molecules in reaction tubes. The separator has been equipped with 12 particularly strong permanent magnets, providing magnetic force for separation in 1 to 24 tubes in parallel. It, therefore, enables for single tube preparation as well as high-throughput applications.

Short separation times (under 2 mins.) are allowed by the close proximity of magnets and tubes. The use of transparent acrylic glass ensures permanent visual control of the separation process without the need to remove the tubes from the block. 24 non-magnetic sockets for reaction tubes have been included to provide a whole working station for both, magnetic separation and resuspension.

Usable with 2 x 12 tubes of 1.5 and 2.0 ml volumes.

Usable for	Art. No.	Pack Qty.	€
2 x 12 tubes á 1.5 and 2 ml	**2807.1**	1	392,40

Roti®-Mag 96well-Separator

For collection of magnetic beads in 96well plates.

The Roti®-Mag Tube Separator has been designed for fast and efficient high-throughput collection of Roti®-Mag Beads magnetic particles during elution of biological molecules in 96well plates. Each separator is made from acrylic glass and is equipped with 24 particularly strong permanent magnets of 7.5 mm diameter.

The close proximity of the magnets strongly pulls the beads of four adjacent wells, collecting the beads very efficiently and in short time (under 2 mins.) and, hence, enabling high speed and quantitative buffer exchange.
For resuspension of the beads, plates are removed from the magnet stand.

Usable with 96well plates of 300 µl up to 2 ml well volume.

Usable for	Art. No.	Pack Qty.	€
96well plates (300 µl - 2 ml)	**2808.1**	1	392,40

Ultra filtration

Roti®-Spin Centrifugal Devices

For purification and concentration of biomolecules and for purification of solutions.

- Applicable for nucleic acids, proteins/peptides, other biomolecules >6 kD and very small bioparticles
- Can be used to replace standard techniques like precipitation, dialysis, gel filtration, gel purification, column chromatography, gradient centrifugation etc.
- Gentle: No shearing of DNA of up to 100 kb, proteins remain native and enzymatically active
- Applicable for purification of all labelled probes (isotope-, fluorescent-, chromogenic labelling)
- Very high recovery rates of >90 % (when using devices of appropriate MWCO)

Centrifugal devices for ultrafiltration of biomolecules. The membranes made of highly chemical-resistant polyethersulfone have been tightly sealed to prevent leakage and loss of samples. Furthermore, the membranes underwent special treatment minimising the binding of biomolecules, in order to optimise sample recovery-rates.

Roti®-Spin Centrifugal Devices can be applied to a variety of applications and can be used to replace tedious and labour-intensive methods like gel filtration, gel purification or precipitation. Application is time-saving and very simple - only few centrifugal steps are necessary to concentrate and recover your sample. During this, the sample remains untouched in the upper reservoir, and cross-contamination is efficiently prevented even when large numbers of samples are handled. Centrifugation can easily be performed in the cold room or at specially designated benches like isotope laboratories or in laminar flow hoods.

MWCO:
For convenient and successful application, centrifugal devices with membranes in 4 colour-coded molecular weight cut-offs (MWCO) are available. In order to choose the appropriate MWCO please use the following thumb-rule:
Centrifugation of proteins/peptides: MWCO ≤1/3 of sample molecule size.
Centrifugation of nucleic acids: MWCO ≤ ½ sample molecule size.

Overview for selection the right pore size

MWCO	Molec. size	DNA size
3 kD	10 - 20 kD	<50 bp
10 kD	30 - 90 kD	50 - 200 bp
30 kD	90 - 180 kD	200 bp - 1 kb
100 kD	>300 kD	>1 kb

Sample volumes:
Maximum sample volume: Roti®-Spin MINI: 50-500 µl
Final concentrate volume: Roti®-Spin MINI 15-20 µl

Applications (examples):
Desalting or buffer exchange following restriction digest, PCR or such; separation of free nucleotides and polymerised DNA; removal of contaminating compounds (like DNA) from stock solutions (e.g. PCR-buffers); concentration of DNA or proteins; separation of proteins of different size; sample preparation prior to HPLC.

Roti®-Spin MINI

Type	MWCO (kD)	Colour	Art. No.	Pack Qty.	€
Roti®-Spin MINI-3	3	grey	**CL12.1**	25	106,45
Roti®-Spin MINI-10	10	blue	**CL13.1**	25	106,45
Roti®-Spin MINI-30	30	red	**CL14.1**	25	106,45
Roti®-Spin MINI-100	100	clear	**CL15.1**	25	106,45

Affinity Chromatography

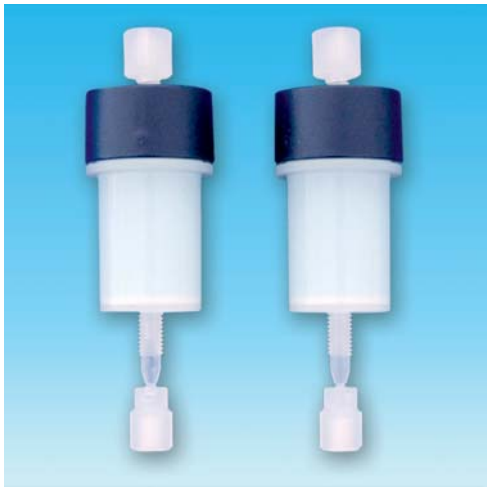
Roti®garose Beads & Columns for Isolation of His-tag Proteins

Ion charged IDA-agarose beads for low pressure affinity chromatography. IMAC matrix.

Immobilized metal ion affinity chromatography (IMAC) still is the most widely used method to obtain high yield of very pure proteins with reasonable effort. Roti®garose His Beads offer the perfect solution for your specific application of low flow column chromatography or protein isolation in batch mode.
The matrix of Roti®garose His Beads consists of crosslinked and beaded 6 % agarose, IDA-conjugated and charged with divalent ions. Roti®garose His beads result in eluates with considerably low metal contamination. The tridentate IDA cross-linker provides easy elution with low amounts of imidazole.
Additionally, Roti®garose Beads may repeatedly be regenerated, making them very cost-effective.
The Matrix is stable in all commonly used reagents including denaturing and reducing reagents (like 8 M urea, 6 M guanidinium hydrochloride, 5 mM DTT).

- Simple and rapid one-step purification of His-tagged proteins from total lysates
- High recovery rate of very pure proteins
- Superior binding capacity
- Easy elution and regeneration
- Very low ion leaching
- Compatible with denaturing and reducing reagents

Nickel Charged IMAC Beads and Columns



ready-to-use

Roti®garose-His/Ni Cartridges

for biochemistry

For isolation of His-tagged proteins by high pressure affinity chromatography.
Affinity chromatography colums/nickel charged, IMAC columns
Storage temp.: +4 °C

Danger H225

Prepacked cartridges with Nickel charged IDA-agarose bead matrix for medium pressure affinity chromatography (MPLC).
Optimal for automated liquid chromatography, or if proteins shall be isolated under pressure.

Suitable for ÄKTA™FPLC™ and for sample application via peristaltic pump or syringe.

Matrix volume 5 ml, whole volume 10 ml.
For approx. 500 mg His labelled protein.

- Very fast and simple purification of His-tagged proteins from total lysates
- Superior recovery rate of pure His-tagged proteins
- Binding capacity (purified 6xHis protein) of 110 mg per ml matrix
- Recommended flow rate 5 ml/min.
- Recommended pressure 5 bar [0,5 MPa] (70 psi)
- Standard ports (10-32)
- Very versatile. Applicable with ÄKTA™FPLC™, pump and syringe.
- Easy elution and regeneration
- Very low Nickel leaching
- Compatible with denaturing and reducing reagents
- For medium pressure flow chromatography

Roti®garose His/Ni Cartridges are prepacked and may be used directly.
The Matrix is stable in all commonly used reagents including denaturing and reducing reagents (like 8 M urea, 6 M guanidinium hydrochloride, 5 mM DTT). Slurry in 20 % ethanol.
Column material made from polypropylene and polyethylene (frit).

1318.1	1x5 ml	147,30 €
1318.2	5x5 ml	623,50 €

Nickel chelates recognize two exposed histidine tags with good specificity and very high affinity, making the Ni^{2+} charged matrix the first choice for all **standard applications**. Roti®garose His/Ni beads give **very high yields of pure proteins** with considerably low metal contamination.

Type analysis:

Particle size (beads, columns).	50-150 µm
Particle size (cartridges)	20-50 µm
Beads (cross-linked agarose)	6 %
Ligand	IDA
Metal ion	nickel
Binding capacity (DHAK-6xHis) (beads, columns)	117 mg/ml
Binding capacity (DHAK-6xHis) (cartridges)	110 mg/ml
Activating agent	Epichlorohydrin
Stabilizer	20 % ethanol

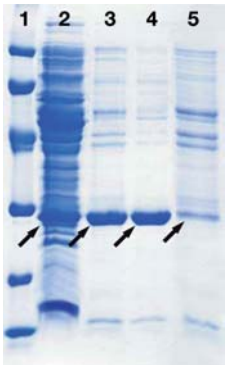


Figure: SDS-PAGE of 6xHis-fuculose aldolase, 28 kDa (arrows). Very high yield of well purified proteins.
1: Marker, 2: Protein raw extract, 3,4: 6xHis target protein purified with Roti®garose His/Ni Beads or Column, respectively, 5: 6xHis target protein purified by competitor product.

Roti®garose-His/Ni Beads

for biochemistry

For isolation of His-tagged proteins by affinity chromatography.
Agarose beads for affinity chromatography, IMAC matrix/nickel charged
Storage temp.: +4 °C

Danger H225

Nickel charged IDA-agarose beads for low pressure affinity chromatography. Slurry in 20 % ethanol.
Suitable for all general applications, or if proteins of very small amount shall be isolated without loss.

- One-Step purification of His-tagged proteins from total lysates
- Superior recovery rate of pure His-tagged proteins
- Binding capacity (purified 6xHis protein) of 117 mg per ml matrix
- Easy elution and regeneration
- Very low Nickel leaching
- Compatible with denaturing and reducing reagents
- For batch mode and gravity flow column chromatography

The Matrix is stable in all commonly used reagents including denaturing and reducing reagents (like 8 M urea, 6 M guanidinium hydrochloride, 5 mM DTT). May be autoclaved at 121 °C for 30 mins.

1308.1	25 ml	plastic	259,65 €
1308.2	100 ml	plastic	676,20 €

ready-to-use

Roti®garose-His/Ni Columns

for biochemistry

For isolation of His-tagged proteins by affinity chromatography.
Affinity chromatography colums/nickel charged, IMAC columns
Storage temp.: +4 °C

Danger H225

Prepacked columns with Nickel charged IDA-agarose bead matrix for low pressure affinity chromatography.
Suitable for all general applications, or if proteins of very small amount shall be isolated without loss.

Matrix volume 1 or 5 ml, whole volume 12 or 35 ml, respectively.
For approx. 100 and 500 mg His labelled protein.

- Fast and simple purification of His-tagged proteins from total lysates
- Superior recovery rate of pure His-tagged proteins
- Binding capacity (purified 6xHis protein) of 117 mg per ml matrix
- Easy elution and regeneration
- Very low Nickel leaching
- Compatible with denaturing and reducing reagents
- For gravity flow chromatography

Roti®garose His/Ni Columns are prepacked and may be used directly. The Matrix is stable in all commonly used reagents including denaturing and reducing reagents (like 8 M urea, 6 M guanidinium hydrochloride, 5 mM DTT). Slurry in 20 % ethanol.
Column material made from polypropylene and polyethylene (frit).
May be autoclaved at 121 °C for 30 mins.

1314.1	8x1 ml	198,90 €
1314.2	5x5 ml	499,90 €

Cobalt Charged IMAC Beads and Columns

Cobalt chelates recognize two exposed, vicinal histidins with superior specificity and good affinity, resulting in acceptable to **good recovery rates, yielding proteins of superior purity**. This matrix is, therefore, the perfect choice if extremely pure proteins are required, or if hard-to-separate proteins shall be isolated.

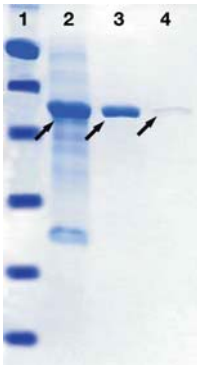


Figure: SDS-PAGE of highly expressed 6xHis-glutaryl acylase, 58 kDa (arrows). Good yield of extremely pure proteins.
1: Marker, 2: Protein raw extract, 3: 6xHis target protein purified with Roti®garose His/Co Beads, 4: 6xHis target protein purified by competitor product.

Type analysis:
Particle size. .....50-150 µm
Beads (cross-linked agarose).....6 %
Ligand.....IDA
Metal ion. ..... Cobalt
Binding capacity (DHAK-6xHis)..... 135 mg/ml
Activating agent. ..... Epichlorohydrin
Stabilizer..... 20 % ethanol

Roti®garose-His/Co Beads
for biochemistry

For isolation of His-tagged proteins by affinity chromatography.
Agarose beads for affinity chromatography, IMAC matrix/cobalt charged
Storage temp.: +4 °C

Danger H225

Cobalt charged IDA-agarose beads for low pressure affinity chromatography. Slurry in 20 % ethanol.
Perfect choice if extremely pure proteins are required, or if hard-to-separate proteins shall be isolated.

- One-Step purification of His-tagged proteins from total lysates
- Good recovery rate of extremely pure His-tagged proteins
- Binding capacity (purified 6xHis protein) of 135 mg per ml matrix
- Easy elution and regeneration
- Very low Cobalt leaching
- Compatible with denaturing and reducing reagents
- For batch mode and gravity flow column chromatogrphy

The Matrix is stable in all commonly used reagents including denaturing and reducing reagents (like 8 M urea, 6 M guanidinium hydrochloride, 5 mM DTT).
May be autoclaved at 121 °C for 30 mins.

1235.1	25 ml	plastic	260,70 €
1235.2	100 ml	plastic	676,20 €

ready-to-use

Roti®garose-His/Co Columns
for biochemistry

For isolation of His-tagged proteins by affinity chromatography.
Affinity chromatography colums/cobalt charged, IMAC columns
Storage temp.: +4 °C

Danger H225

Prepacked columns with Cobalt charged IDA-agarose bead matrix for low pressure affinity chromatography.
Perfect choice if extremely pure proteins are required, or if hard-to-separate proteins shall be isolated.

Matrix volume 1 or 5 ml, whole volume 12 or 35 ml, respectively.
For approx. 120 and 600 mg His labelled protein.

- Fast and simple purification of His-tagged proteins from total lysates
- Good recovery rate of extremely pure His-tagged proteins
- Binding capacity (purified 6xHis protein) of 135 mg per ml matrix
- Easy elution and regeneration
- Very low Cobalt leaching
- Compatible with denaturing and reducing reagents
- For gravity flow chromatography

Roti®garose His/Co Columns are prepacked and may be used directly.
The Matrix is stable in all commonly used reagents including denaturing and reducing reagents (like 8 M urea, 6 M guanidinium hydrochloride, 5 mM DTT). Slurry in 20 % ethanol.
Column material made from polypropylene and polyethylene (frit).
May be autoclaved at 121 °C for 30 mins.

1267.1	8x1 ml	198,90 €
1267.2	5x5 ml	499,90 €

Protein A Coated Agarose Beads for Antibody Purification via Low Pressure Affinity Chromatography

For rapid and simple purification of antibodies with reasonable effort, affinity chromatography still is the first choice in most cases. Roti®garose Protein A Beads offer the perfect solution for isolation of your specific antibodies, either in low flow column chromatography or in batch mode.
The matrix of Roti®garose Protein A Beads consists of cross-linked and beaded 4 % agarose, coated and covalently coupled with protein A from *Staphylococcus aureus*. The recombinant protein A has high affinity for IgG from a variety of different mammalian species, also binding some populations of IgA and IgM. *rec*Protein A shares IgG binding properties with natural protein A of *S. aureus* Cowan strain I. Most immunoglobulins may be eluted in 100 mM glycin or citric acid buffer (pH 3,0).

- One-Step purification of immunoglobulins from cell lysates and biological solutions
- Binding capacity (human IgG) of approx. 25 mg per ml matrix
- Superior affinity for IgG from various mammalian species
- High yield of very pure immunoglobulins
- Covalent binding of protein A in high ligand density
- For batch mode and gravity flow

Type analysis:

Particle size	50-150 µm
Beads (cross-linked agarose)	4 %
Ligand	recombinant protein A
Chemical bonding	covalent
Ligand density (Protein A)	ca. 3 mg/ml
Binding capacity (humane IgG)	ca. 25 mg/ml
Stabilizer.	20 % ethanol

Roti®garose-Protein A Beads

for biochemistry

For purification of immunoglobulins by affinity chromatography.
Agarose beads for affinity chromatography, IMAC matrix/Protein A conjugated
Storage temp.: +4 °C

Danger H225

Protein A coated agarose beads for low pressure affinity chromatography. High-performance affinity resin for antibody purification.
Slurry in 20 % ethanol.

1278.1	5 ml	plastic	461,20 €
1278.2	25 ml	plastic	1601,75 €

Roti®garose-Protein A MINI columns

for biochemistry

For purification of immunoglobulins by affinity chromatography.
Affinity chromatography columns/protein A conjugated
Storage temp.: +4 °C

Danger H225

Prepacked columns with Protein A coated agarose beads for low pressure affinity chromatography. High-performance affinity resin for antibody purification.
Matrix volume 100 µl, whole volume 1 ml. For approx. 2,5 mg IgG.
Slurry in 20 % ethanol.

4065.1	5x100 µl	220,40 €

▶ MIDI and MAXI columns see next page

Roti®garose-Protein A MIDI columns

ready-to-use

for biochemistry

For purification of immunoglobulins by affinity chromatography.
Affinity chromatography columns/protein A conjugated
Storage temp.: +4 °C

Danger H225

Prepacked columns with Protein A coated agarose beads for low pressure affinity chromatography. High-performance affinity resin for antibody purification.
Matrix volume 1 ml, whole volume 12 ml. For approx. 25 mg IgG.
Slurry in 20 % ethanol.

4066.1	1x1 ml	212,35 €

Roti®garose-Protein A MAXI columns

ready-to-use

for biochemistry

For purification of immunoglobulins by affinity chromatography.
Affinity chromatography columns/protein A conjugated
Storage temp.: +4 °C

Danger H225

Prepacked columns with Protein A coated agarose beads for low pressure affinity chromatography. High-performance affinity resin for antibody purification.
Matrix volume 5 ml, whole volume 35 ml. For approx. 125 mg IgG.
Slurry in 20 % ethanol.

4070.1	1x5 ml	499,90 €

Type	Matrix volume	Total volume	Frit pore size	Binding capacity (human IgG)
MINI	100 µl	1 ml	20 µm	2,5 mg
MIDI	1 ml	12 ml	20 µm	25 mg
MAXI	5 ml	35 ml	20 µm	125 mg

Cellulose Beads for Purification of GST-tagged Proteins

Loaded cellulose, for easy and fast purification of GST-tag proteins by affinity chromatographie.

- Easy to pack
- Highly specific
- Recovery rates >95 %
- Isolation in one step
- Very easy application
- Can be repeatedly regenerated

Cost effective and highly specific alternative to loaded Sepharose™ or agarose, ideal for purification of recombinant proteins from bacterial extracts.

Glutathione cellulose

for biochemistry

For purification and concentration of GST-tagged proteins.
Storage temp.: +4 °C

Warning H226

- Recovery of over 95 % highly pure GST-tagged proteins in one easy step
- Highly specific for glutathione-S-transferase tags
- Good protein binding capacity of ≥10 mg/ml
- Mild conditions keep proteins native and functional
- Easy to pack
- Can be repeatedly regenerated

Resign for purification of proteins by affinity chromatography, based on the binding of the glutathione-S-transferase (GST) to its substrate glutathione. Proteins with recombinant GST-tags are recovered from crude extracts with rates of up to over 95 %. Hereby, unspecific binding of proteins is highly reduced and mild conditions stabilize the biological activity of the proteins purified. Proteins are eluted by a mild Tris/glutathione buffer.
The matrix consists of cellulose beads with excellent flow behaviour.
The cellulose beads are loaded with glutathione via a 10-atom linker arm, providing excellent binding capacity and minimizing steric hindrance.
The matrix is easy to pack and results in very evenly packed columns.

Type analysis:

Dynamic binding capacity. ..... ≥10 mg/ml
Ligand (Glutathion). ..... 10-20 µmol/ml
Matrix exclusion limit. ..... $4x10^6$ Da
Maximum linear flow rate (H_2O). ..... 450 cm/h
Recommended flow rate. ..... <400 cm/h
Maximum operating pressure (H_2O). ..... 2,0 bar
Particle volume. ..... 15,7 ml/g
Particle size. ..... 80-100 µm
Stability (1 M acetate pH 4, 6 M guanidine-Cl). ..... 1 h
Stability (pH 2-14). ..... ≤2 h
Stability (pH 3-11). ..... ≤1 week
Solvent. ..... 20 % Ethanol

HP56.1	5 ml	glass	89,15 €
HP56.2	25 ml	glass	364,45 €
HP56.3	50 ml	glass	643,95 €

Columns and Accessories

Empty columns for protein isolation

Empty columns for protein isolation by chromatography.
Chemically stabile and versatile.
Column material: Polypropylene, Material column frit: Polyethylene.

Delivery includes end caps for Columns Grav S, M and L.
Delivery includes top caps with Luer lock and screw lock plus end caps for columns Luer.
Delivery includes plugs and end caps for columns Inject. Luer-connection w/o screw thread.

Technical specifications:

Type	Figure	Matrix volume	Total volume	Frit pore size	Chromatography by
Spin	①	100-250 µl	1,5 ml	20 µm	Centrifugation
Grav S	②	100-200 µl	1 ml	20 µm	Gravity
Grav M	③	0,5-2 ml	12 ml	20 µm	Gravity
Grav L	③	2-6 ml	35 ml	20 µm	Gravity
Luer	④	50-100 µl	0,8 ml	35 µm	Pressure
Inject	⑤	1 ml	1 ml	10 µm	Pressure

Type	Art. No.	Pack Qty.	€
Spin	**1541.1**	25	60,20
Spin	**1541.2**	100	206,40
Grav S	**1515.1**	20	96,25
Grav M	**1516.1**	50	177,40
Grav L	**1518.1**	50	213,95
Luer	**1527.1**	25	129,00
Inject	**1532.1**	5	63,45

Empty cartridges for protein isolation

Empty columns for protein isolation by pressure chromatography.

Chemically stabile and versatile. In case longer column beds are needed, 2 or 3 cartridges may be interconnected using the Luer adapter (0198.1, 10-32, male/female luer connector), resulting in a matrix of up to 10 cm. Compatible with common chromatography instruments like ÄKTA™FPLC™.

Column material: Polypropylene, Material column frit: Polyethylene.

Delivery includes empty cartridges plus end plugs.
For storage of packed cartridges, column plugs (0197.1) have to be used. Please order separately.

Technical specifications:

Product	Figure	Volume*	Inner ∅	Frit pore size	Chromatography by
Empty cartridges	①	1 ml	6,2 mm	12 µm	Pressure

* The actual filling volume depends on the respective resin used, varying between approx. 1 and 1.3 ml.

Product	Image	Art. No.	Pack Qty.	€
Empty cartridges	①	**1345.1**	5	135,45
Column plugs	②	**0197.1**	10	69,90
Luer adapter	③	**0198.1**	1	22,60

Reagents

Spectra/Gel™ Absorbent

For concentration of dialysed proteins and microparticles.

Warning H319

- Most easy to handle
- Compatible with all types of dialysis membranes and -systems (MWCO: 100 up to 300 000 D)
- Suitable for concentration of very small molecules
- Contamination of samples excluded
- Cost efficient

Easy and cost efficient concentration of proteins, microparticles and other macromolecules.

Application:
After dialysis, the dialysis tubing containing the sample is simply coated with Spectra/Gel™ Absorbent. Made of polyacrylate-polyalcohol, Spectra/Gel™ removes water and small molecules like salt ions from the sample by absorption through the membrane without affecting or contaminating the biomolecules. Grain size 100-850 µm.
The duration of the process depends on the desired final concentration, the MWCO of the dialysis membrane, and the surface to volume ratio of the tubing. E.g. concentration of 5 ml sample through a MWCO of 15 kD results in a final volume of 0.5 ml in approx. 60 min. The wet granulate may be easily wiped off and the concentrated sample be removed from the opened dialysis tubing.
One package (500 g) suffices for up to 50 applications.

0115.1	500 g	plastic	111,30 €
Original pack 6 x 500 g			105,74/500 g

Instructions for use
can be found on the Internet next to the product description.

Summary of Reagents for Protein Isolation and Stabilisation

Product	Purity	Art. No.	Pack Qty.	€
1,4-Dithioerythritol	≥99 %, p.a.	**8814.1**	5 g	57,95
		8814.3	10 g	97,75
		8814.2	25 g	230,60
1,4-Dithiothreitol	≥99 %, p.a.	**6908.1**	5 g	53,65
		6908.3	10 g	80,55
		6908.2	25 g	190,85
		6908.4	100 g	567,10
Glycerol	≥99,5 %, p.a., anhydrous	**3783.1**	1 l	48,95
		3783.3	1 l	52,90
		3783.2	2,5 l	87,65
		3783.4	2,5 l	95,60
Guanidine hydrochloride	≥99,7 %, p.a., Protein Grade	**0035.1**	100 g	51,50
		0035.2	500 g	186,55
		0035.3	1 kg	267,70
Guanidine hydrochloride solution	55 % in water (5,75 M)	**9465.1**	1 l	57,55
HEPES	≥99,5 %, p.a.	**9105.2**	100 g	31,10
		9105.4	500 g	128,90
		9105.3	1 kg	212,35
	new size	**9105.6**	2,5 kg	428,95
		9105.5	5 kg	815,95
Lysozyme	~20 000 U/mg, 3x cryst., lyophilised	**8259.1**	1 g	24,95
		8259.2	10 g	153,20
		8259.3	25 g	290,80
2-Mercaptoethanol	≥99 %, p.a.	**4227.3**	100 ml	13,45
		4227.1	250 ml	18,85
		4227.2	1 l	42,90
PIPES	≥99 %	**9156.1**	25 g	18,10
		9156.2	100 g	51,50
		9156.3	250 g	113,45
		9156.4	500 g	193,50
Roti®-Stock 10x PBS	BioScience-Grade, ready-to-use, filtered and steam sterilised	**1058.1**	1 l	106,45
Roti®-Stock 10x PBST	BioScience-Grade, ready-to-use, filtered and steam sterilised	**1059.1**	1 l	113,95
Roti®-Stock 10x TBS	BioScience-Grade, ready-to-use, filtered and steam sterilised	**1060.1**	1 l	111,70
Roti®-Stock 10x TBST	BioScience-Grade, ready-to-use, filtered and steam sterilised	**1061.1**	1 l	115,60
D(+)-Saccharose	≥99,5 %, p.a.	**4621.1**	1 kg	18,85
		4621.2	5 kg	78,40
		4621.5	25 kg	181,70
Sodium ethylmercuri-thiosalicylate	≥97 %	**6389.1**	10 g	64,00
		6389.2	50 g	241,90
Trichloroacetic acid	≥99 %, p.a.	**8789.2**	500 g	50,00
		8789.1	1 kg	85,50
Tris-(2-carboxyethyl)-phosphine hydrochloride	≥98 %, for biochemistry	**HN95.1**	1 g	44,00
		HN95.2	5 g	142,90
TRIS hydrochloride	≥99 %, p.a.	**9090.1**	50 g	13,15
		9090.2	500 g	81,60
		9090.3	1 kg	120,95
	new size	**9090.5**	2,5 kg	258,00
		9090.4	5 kg	493,45
Triton® X 100	extra pure	**3051.3**	250 ml	15,60
		3051.4	500 ml	20,35
		3051.2	1 l	28,50
		3051.1	10 l	177,40
Urea	≥99,5 %, p.a.	**3941.3**	500 g	13,45
		3941.1	1 kg	23,15
		3941.2	5 kg	95,15

For additional product data and safety information, see chapter Chemicals A-Z.

Scintillation Cocktail

ready-to-use

Rotiszint® eco plus

LSC-universal cocktail

For hydrophilic and lipophilic samples.

Danger H318-H315-H412-H302

- Very high sample acceptance capacity
- High counting efficiency
- Low photo- and chemoluminescence
- Very good colour- and chemical quench resistance
- Environmentally safe and non-carcinogenic
- Virtually odor- and colourless
- High flash point
- No permeation through plastic vials

Multi-purpose, ready-to-use scintillation cocktail for Liquid Scintillation Counting (LSC) of β radiators (e.g. ^{3}H, ^{14}C, ^{32}P). Excellent sample acceptance capacity for all aqueous and organic samples, optimally suited for solutions with high ionic strength. Rotiszint®-eco plus may be used in general in all biological, biochemical and chemical areas, contemporary typical application are e.g. measurement of cell culture supernatants, routine analyses, and enzymatic assays. Also well suitable for filter plates.

In Rotiszint®-eco plus, di-isopropyl naphthalene is the base reagent of primary scintillators. The cocktail is free of carcinogenic or environmentally dangerous reagents.

Rotiszint®-eco plus is perfectly suited for measurement of solutions, showing a counting efficiency of 47 % (^{3}H). Through its emulsifying character, Rotiszint®-eco plus elutes samples from filter plates, thus making it also suitable for counting of filter samples. For reliable quantitative elution we recommend addition of a sample specific elution buffer.
Note: Use of alkylating elution buffers may cause chemoluminescence.

We recommend the use of Rotilabo®-dispensers (Art. No. Y837.1-Y842.1) and telescopic suction pipe (Art. No. AA92.1).

0016.4	100 ml	glass	17,10 €
0016.3	5 l	plastic	241,90 €
Original pack 2 x 5 l			229,81/5 l

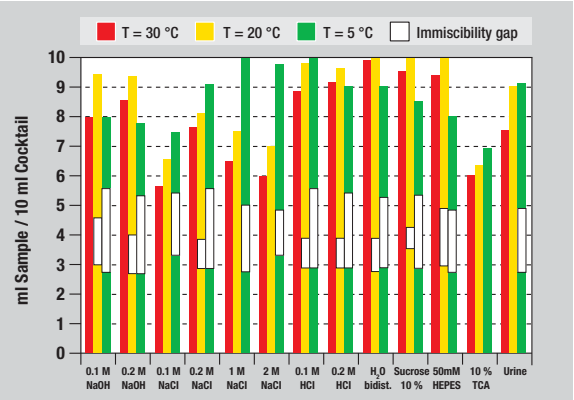


Fig.: Typical sample acceptance capacity
The immiscibility gap is characterized by two phases and may not be used for measurement. By increasing or reducing sample amount in relation to scintillation cocktail, the immiscibility gap may be avoided. Sample acceptance capacities of PBS, TBS etc. equal this of 0.1 M NaCl. Sample acceptance capacities of BSA solutions, cell culture supernatants etc. equal this of HEPES.

Application and quench of Rotiszint® eco plus

Rotiszint® eco plus: Efficiency in solution (^{3}H) 47 %, (^{14}C) 90 %

Ideal for measuring **solutions**.

Please note when measuring **filter discs**:
Rotiszint® eco plus contains emulsifying components and elutes the samples from the discs. This increases measuring efficiency, however involves the risk of non-quantitative elution, so that the measurements may not be reproduced as reliably in some cases. The rate of yield when eluting from filter discs can be increased by adding tissue solutizers, whereby the chemical and color quench are also increased. It must be determined for each individual experiment which mixture is suitable.

Advantages of Rotiszint® eco plus

Rotiszint® eco plus is based on the solvent di-isopropyl naphthaline (DIN), which due to its environmental friendliness is easy to handle, store and ship. It also fulfills all the measuring demands required of efficient scintillation cocktails.

Rotiszint® eco plus is produced without benzene, toluene, xylene and pseudocumene. The solvent has low vapour pressure, therefore there is no irritation caused by a bad odour. The solution is hardly flammable and economical in use. It is also biodegradable. Rotiszint® eco plus has high counting efficiency, excellent quench resistance, good sample stability, no chemiluminescence and no diffusion through plastic vials.

Rotiszint® eco plus comes in black 5 l plastic bottles, which can be used as storage containers. They enable easy, safe and place-saving storage.

A practical dispenser helps to remove the required amount of cocktail easily and safely. We recommend the Rotilabo®-dispenser (Art. No. Y837.1 - Y842.1). In order to completely remove all the liquid, the inner withdrawal tube may be replaced with a longer Teflon® or polyethylene tube (6 mm inner Ø), or by the telescope suction tube (Art. No. AA92.1).

Protein Quantitation

ready-to-use

Roti®-Quant

5x conc.

For protein quantitation acc. to Bradford.

Storage temp.: +4 °C

Danger H226-H314

- Reproducible
- Fast
- Low price

Further characteristics:
- 1 measurement per sample (OD_{595})
- Linearity of measuring results to a great extent
- Sensitivity to 2 µg
- Functional range: 2-100 µg

50 ml Roti®-Quant is sufficient for more than 200 microassays (1 ml-cuvette) or more than 900 assays when using microtiter plates.

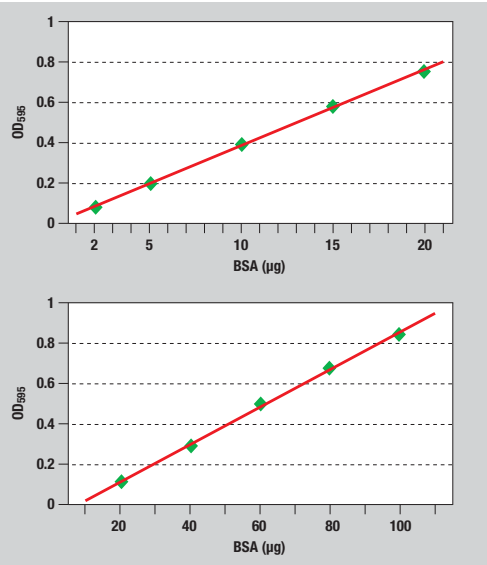


Fig.: Typical standard curve with Roti®-Quant and BSA (Art. No. 8076.1) as calibrating protein.

K015.2	50 ml	plastic	13,90 €
K015.3	200 ml	plastic	44,65 €
K015.1	500 ml	plastic	89,15 €

ready-to-use

Roti®-Nanoquant

5x conc.

For protein quantitation acc. to Bradford, for extremely small protein amounts.

Storage temp.: +4 °C

Danger H226-H314

- Reproducible
- Low-priced
- For very low protein amounts

Further characteristics:
- Double measurement per sample (OD_{450}/OD_{590})
- Perfect linearity of measuring results
- Sensitivity: up to 200 ng
- Broad functional range of 200 ng to 25 µg

50 ml Roti®-Nanoquant is sufficient for more than 200 microassays (1 ml-cuvette) or more than 900 assays when using micro-titer plates.

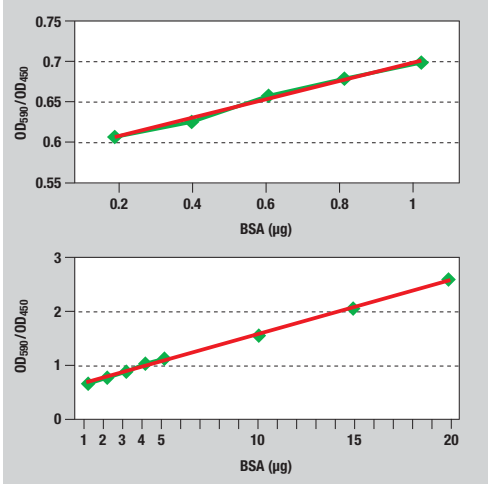
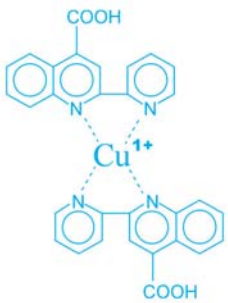


Fig.: Typical calibration line with Roti®-Nanoquant and BSA (Art. No. 8076.1) as calibrating protein.

K880.2	50 ml	plastic	14,20 €
K880.3	200 ml	plastic	42,90 €
K880.1	500 ml	plastic	85,50 €



Roti®-Quant universal

For protein quantitation (PCA enhanced Biuret reaction).
High tolerance against detergents, salts and alcohols.
Storage temp.: +20 °C

Danger H315-H318-H411

- **Equals the well-known BCA assay**
- Very easy to handle
- Highly sensitive measurement up to 0.5 µg protein
- Linear measuring range from 0.5 to 200 µg protein
- Can be used in 1-ml-scales and in microtiter plates (can be automated)
- Measurement with standard filters (492 nm wave length) or at 503 nm wave length
- Accelerated reaction and increased sensitivity in mild heat

Colorimetric test for detecting and quantifying soluble proteins. The special reagent formula effects a high tolerance against interfering factors such as detergents, alcohol and buffer salts, thus making the kit a universal tool for measuring proteins in almost every solution.
The basic mechanism, a PCA enhanced Biuret reaction, is identical with the one used for the well known BCA protein assay. Its result, however, is a bright blue colour which may be measured with standard filters of approx. 500 nm wave length.

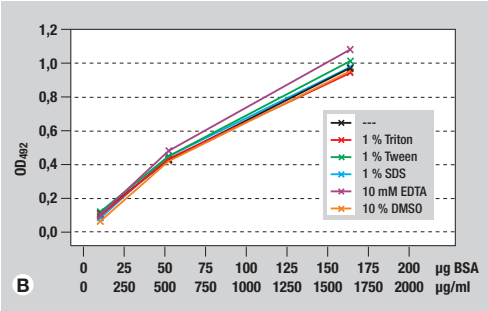


Fig. B: Independence of Roti®-Quant-universal-assay of detergents and other additives, examples. Blank-value corrected. Measurement of 100 µl each protein solution.

(With kind permission of Dr. Angelika Böttger, Zoological Institute, Ludwig-Maximilians-University Munich)

The kit 0120.1 contains
500/200 ml Roti®-Quant universal reagent 1 (Art. No. 0118) and
40/16 ml Roti®-Quant universal reagent 2 (Art. No. 0119), adequate for 500/200 preparations in photometer cuvettes or 5000/2000 preparations in microtiter plates.
Contents of this Kit may not be bought separately.

0120.2	1 kit (200 assays)	79,45 €
0120.1	1 kit (500 assays)	170,95 €

Instructions for use
can be found on the Internet next to the product description.

Rotilabo®-single-use cuvettes

Made of **PS**, **PPMA** or special plastic.
- Extremely low deviation in absorbance values
- Outstanding optical transmission values
- Cavity-sorted production

Layer thickness 10 mm. Dimensions: L 12.5 x W 12.5 x H 45 mm.

Polystyrene (PS)
Range of application: 340 to 900 nm.

Type	Volume (ml)	Packaging	Art. No.	Pack Qty.	€
① Semi-micro	1,6	10 x 100	**XK20.1**	1000	73,05
② Macro	4,0	10 x 100	**XK21.1**	1000	74,15

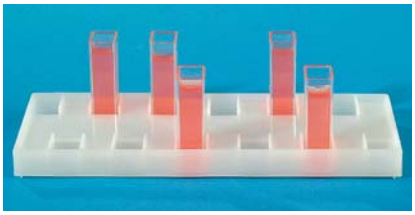
Disposable cuvettes

Made of **PS** or **PMMA**.
- Optically perfect transparency
- Sorted according to nest numbers to minimize extinction deviation
- Recessed windows to protect against scratching
- Arrow marks direction of irradiation

Standard-layer thickness 10 mm. Dimensions: 12.5 x 12.5 x 45 mm.
Passband: PS: 340-900 nm. PMMA: 300-900 nm.
Standard deviation:
- PS at 360 nm ≤0.005 extinction units.
- PMMA at 320 nm ≤0.004 extinction units.

Polystyrol (PS)

Type	Volume (ml)	Art. No.	Pack Qty.	€
Macro	2,5 - 4,5	**Y194.1**	100	11,30
Semi-micro	1,5 - 3,0	**Y195.1**	100	11,80



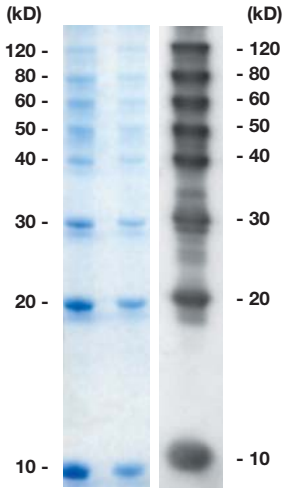
Rotilabo®-cuvette stand

Made of **PE**. For 12 cuvettes 10 mm thick. With staggered arrangement of holders. Low stand-depth for better observation of cuvette contents.
Dimensions: L 170 x W 50 x H 15 mm.

Art. No.	Pack Qty.	€
9663.1	1	6,80

Western-Blot & ELISA

Western-Blot Marker



TIP

ready-to-use

Roti®-Mark WESTERN Set

Set of protein marker and antibody for gel and Western-Blot
Size range: 10-120 kD
Number of protein bands: 8
Number of lanes: approx. 100 or 10 (mini gels)

Storage temp.: -20 °C • Transport temp.: room temp.

Warning H319

Finely graded protein marker for medium size range and for detection in gel and on the Western-Blot membrane. The marker itself consists of unstained proteins and therefore enables correct size evaluation in gel (left figure). The marker-specific antibody Roti®-Mark WESTERN HRP- conjugate (rabbit) enables the marker to be detected directly in Western- Blot and stained through chemoluminescence or colour reaction.
Antibody incubation is performed in parallel with the incubation of your protein- specific antibodies and therefore saves any additional work and expense. The marker bands are also automatically stained (right figure) during subsequent detection by horseradish-peroxidase.
Consequently you will obtain the correct ladder size directly on your printout, X-ray film or membrane, ruling out the possibility of any errors through inaccurate transfer of the bands.
Marker proteins are solubilised in a non-reducing buffer acc. to Lämmli.
Roti®-Mark WESTERN Marker can be bought seperately under Art. No. 0948.1 and Roti®-Mark WESTERN HRP conjugate under Art. No. 0949.1.

Left hand fig.: 12 % minigel, 10 µl and 5 µl marker solution, respectively.
Right hand fig.: Chemoluminescence detection via Roti-Lumin, Art. No. P078.1. Proteins were run in a 12 % minigel and transferred onto a Roti®-PVDF-Membran. 5 µl Roti®-Mark WESTERN Marker and Roti®-Mark WESTERN HRP conjugate diluted by 1:2.500.

0947.2	1 mini kit	plastic	37,55 €
0947.1	1 kit	plastic	299,95 €

▶ Roti®-Mark WESTERN Marker, see page 1129

Roti®-Mark WESTERN HRP Conjugate

0,2 mg/ml

For HRP mediated detection of Roti®-Mark WESTERN Marker.

Storage temp.: -20 °C • Transport temp.: room temp.

Anti-Roti®-Mark WESTERN marker protein/HRP conjugate made from rabbit serum. The antibody is aimed specifically at the marker proteins of the Roti®-Mark WESTERN marker (Art. No. 0948.1) and is used mixed together with your protein-specific antibody. The marker bands are then also automatically stained during subsequent detection by horseradish-peroxidase. The figure shows chemoluminescence detection of the Roti®-Mark WESTERN marker (5 µl) with Roti®-Mark WESTERN HRP-conjugate (diluted 1:2.500) using Roti®-Lumin (Art. No. P078.1) after separation on a 12 % minigel and transfer onto a Roti®-PVDF-membrane. The solution has been stabilised with PBS and BSA. The antibody can be used in dilutions of 1:500 to 1:5.000 and is adequate at a volume of 5 ml buffer for up to 250 assays. Short-term storage for a few weeks is possible at +4 °C. We recommend you aliquot and preserve the antibody at -20 °C or -80 °C for longer-term storage.

0949.1	500 µl	glass	180,60 €

Blocking Reagents

Sodium-Casein

≥89 % lactoprotein

Casein-sodium

Blocking reagent from milk protein, suitable for Western and ELISA. High blocking efficiency based on the amount of small protein and peptide species (<10 kD). Can be used with PBS/PBST and TBS/TBST as well as all standard colorimetric and fluorescent detection systems. Not suitable for PVDF-membranes, biotin/streptavidin mediated labelling (milk contains biotin), and detection of phospho-proteins.
Tip: Prepare stock solution in 0.3 M NaOH (37 °C), titrate to pH 7.4 (HCl).

8569.2	500 g	plastic	25,30 €
Original pack 6 x 500 g			24,04/500 g
8569.1	1 kg	plastic	38,60 €
Original pack 6 x 1 kg			36,67/1 kg
8569.3	2,5 kg	plastic	84,85 €

Powdered milk

blotting grade, powdered, low fat

BLOTTO reagent

Lowfat powdered milk, especially suited for use as blocking reagent in immunological assays like Western-Blot analyses or ELISA. Fine powdered for easy application.
Not suitable for biotin/streptavidine mediated detection systems. Milk contains biotin.

T145.1	250 g	plastic	13,15 €
T145.2	500 g	plastic	20,35 €
Original pack 6 x 500 g			19,33/500 g
T145.3	1 kg	plastic	33,25 €
Original pack 6 x 1 kg			31,59/1 kg
T145.5	2,5 kg	plastic	new size 69,80 €
T145.4	5 kg	plastic	130,65 €

▶ BSA / Albumine, see page 1238

▶ Ready-to-use solutions PBS and TBS, see page 1260

ready-to-use

Roti®-Block

ready-to-use, 10x conc.

Protein free blocking solution.

Suitable for
- Western- and Far Western Analysis
- Southern- and Northern-Blots
- Dot-Blots
- ELISA- and Sandwich-Assays
- Precoating of ELISA-plates (incl. drying)
- *in situ* hybridisation
- Microarray hybridisation

In order to obtain high signal intensity, nonspecific antibody binding sites must be blocked. Whilst detergents are not effective as blocking agents, the addition of proteins such as BSA may mask specific binding sites.
Roti®-Block is an innovative, polymer-based blocking reagent which solves such problems. With Roti®-Block, the specific binding sites remain accessible while nonspecific reactions are suppressed, thus leading to an increase in signal intensity.

Included you will find a detailed instruction manual with protocols, e.g. for stripping PVDF-membranes from bound probes without destabilising the blocking, which enables fast rescreening of the filter.
Roti®-Block also enables the blot to be Ponceau stained even after blocking.
For detection systems using antibodies specifically directed against protein-phosphorylations we recommend to test and optimise the blocking efficiency prior to assaying your samples.

A151.1	250 ml	glass	46,15 €
A151.4	500 ml	glass	78,40 €
A151.2	1 l	glass	143,55 €
Original pack 6 x 1 l			136,37/1 l
A151.3	2,5 l	glass	271,45 €
Original pack 4 x 2,5 l			257,88/2,5 l

▶ Membrans, papers and reagents for blotting/transfer see Chapter Electrophoresis

Instructions for use
can be found on the Internet next to the product description.

ready-to-use

Roti®-ImmunoBlock

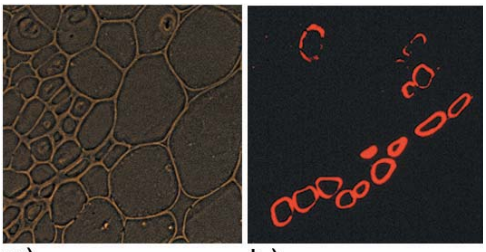
ready-to-use, 10x conc.

Protein free blocking reagent for immunocytological assays.

Suitable for
- Immunocytological assays
- Immunohistological assays
- Paraffin- and cryosections
- *in situ* hybridisation
- Cell culture samples
- Whole mount samples

Roti®-ImmunoBlock is an innovative blocking reagent on a polymer base without detergents and proteins.

This particular composition provides the following advantages:
- No contamination of your detection system through foreign proteins, reducing background and false-positive signals
- Specific binding signals are preserved whilst non-specific interaction is impeded, increasing the signal-to-noise ratio
- Ready-to-use solution for fast and easy applications



a.) b.)

Figure:
Scilla siberica: Cross section of a conducting bundle from the leaf.
Immunofluorescent detection of a protein in sieve cells:
a) Phase contrast
b) Immunofluorescence, blocking with Roti®-ImmunoBlock

With kind permission of Dr. Deumling, MPI for Culture Research, Cologne.

T144.1	250 ml	glass	42,90 €

▶ For many further products for immunohistochemistry and cell analysis, see Chapter Histology and Cell Biology

Antibodies

Primary Antibodies

Polyclonal sera and pABs for detection of labelled proteins

Raised in: Rabbit
Conjugation: None or Horse Radish Peroxidase (HRP)
Application: Immuno blotting (Western-, dot blotting), ELISA, protein isolation and -purification
Purification and specificity sera: None. Tested for Western Blot and ELISA.
Purification and specificity pAB and Anti His-HRP: Purified from monospecific antiserum by affinity chromatography on immobilised tag/anchor sequence. Tested for Western Blot and ELISA.
Storage temperature: -20 °C
Transport temperature: cooled (freezer packs)

Anti His Serum

polyclonal
Polyclonal serum for detection and isolation of His-tagged proteins
Primary anti His antibody
Target: C-terminal or N-terminal His-tagged proteins
Conjugation: none
Storage Buffer: none
Stabiliser: none

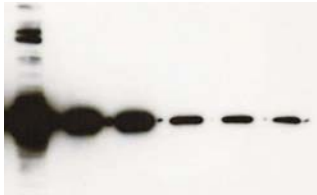


Figure: Western blotting of decreasing amounts (50 ng - 17 pg) of a bacterial extract including a 40 kDa protein. Probed by Anti His Serum (1:1.000) and Roth Anti Rabbit-HRP. Detection via chemoluminescence.

Recommended dilution: 1:1.000

3735.1	100 µl	plastic	186,00 €

Anti His pAB

1 mg/ml, polyclonal, affinity purified
Polyclonal antibody for detection and isolation of His-tagged proteins
Primary anti His antibody
Target: C-terminal or N-terminal His-tagged proteins
Conjugation: none
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Recommended dilution: 1:1.000 - 1:10.000

3742.1	100 µl	plastic	224,70 €

Instructions for use
can be found on the Internet next to the product description.

Anti His-HRP

1 mg/ml, polyclonal, affinity purified
Polyclonal antibody for detection of His-tagged proteins in Western Blot and ELISA
Primary Anti His antibody, HRP-conjugated
Target: C-terminal or N-terminal His-tagged proteins
Conjugation: Horse Radish Peroxidase (HRP)
Storage Buffer: 150 mM NaCl, 100 mM Sodium / Potassium phosphate buffer, pH 6.5
Stabiliser: 27 % glycerol, 4.5 % BSA, 0.09 % thimerosal

Recommended dilution: 1:1.000 - 1:10.000

3894.1	100 µl	plastic	274,15 €

Anti GST Serum

polyclonal
Polyclonal serum for detection and isolation of GST-tagged proteins
Primary anti GST antibody
Target: Proteins with 26 kDa GST fusion tag
Conjugation: none
Storage Buffer: none
Stabiliser: none

Recommended dilution: 1:2.000

3994.1	100 µl	plastic	186,00 €

Anti GST pAB

1 mg/ml, polyclonal, affinity purified
Polyclonal antibody for detection and isolation of GST-tagged proteins
Primary anti GST antibody
Target: Proteins with 26 kDa GST fusion tag
Conjugation: none
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Figure: Western blotting of decreasing amounts (300 ng - 300 pg) of a recombinant protein with GST tag. Probed by Anti-GST pAB (1:1.000) and Roth Anti Rabbit-HRP. Detection via chemoluminescence.

Recommended dilution: 1:1.000

3998.1	100 µl	plastic	224,70 €

Anti DYKDDDDK Serum

polyclonal

Polyclonal serum for detection and isolation of DYKDDDDK-tagged proteins

Primary anti DYKDDDDK antibody

Target: Proteins with DYKDDDDK anchor sequence (sequence identical with FLAG® of Sigma-Aldrich)
Conjugation: none
Storage Buffer: none
Stabiliser: none

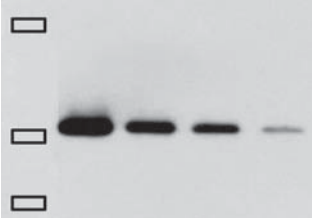


Figure: Western blotting of decreasing amounts of a recombinant protein (31.6 kDa) with DYKDDDDK anchor sequence.
Probed by Anti-DYKDDDDK Serum (1:1.000) and Roth Anti Rabbit-HRP. Detection via chemoluminescence.
Blank box: Protein marker in the gel.

Recommended dilution: 1:1.000

4664.1	100 µl	plastic	186,00 €

Anti DYKDDDDK pAB

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection and isolation of DYKDDDDK-tagged proteins

Primary anti DYKDDDDK antibody

Target: Proteins with DYKDDDDK anchor sequence (sequence identical with FLAG® of Sigma-Aldrich)
Conjugation: none
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Recommended dilution: 1:1.000

4665.1	100 µl	plastic	224,70 €

Anti Myc Serum

polyclonal

Polyclonal serum for detection and isolation of Myc-tagged proteins

Primary anti Myc antibody

Target: Proteins with Myc anchor sequence
Conjugation: none
Storage Buffer: none
Stabiliser: none

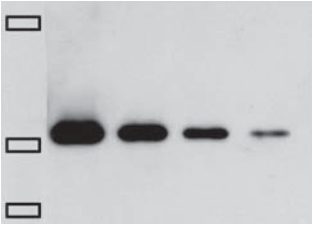


Figure: Western blotting of decreasing amounts of a recombinant protein (31.6 kDa) with Myc anchor sequence. Probed by Anti-Myc serum (1:1.000) and Roth Anti Rabbit-HRP. Detection via chemoluminescence.
Blank box: Protein marker in the gel.

Recommended dilution: 1:1.000

4666.1	100 µl	plastic	186,00 €

Anti Myc pAB

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection and isolation of Myc-tagged proteins

Primary anti Myc antibody

Target: Proteins with Myc anchor sequence
Conjugation: none
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Recommended dilution: 1:1.000

4667.1	100 µl	plastic	224,70 €

Control Protein

ready-to-use

MultiTag-Protein

0,1 mg/ml, affinity purified

Recombinant protein with His-tag, GST-tag, Myc- and DYKDDDDK anchor sequence.

M 31,6 g/mol

Storage temp.: -20 °C • Transport temp.: cooled

Labelling: His-tag, GST-tag, DYKDDDDK anchor sequence*, Myc anchor sequence
Application:
Immuno blotting (Western-, dot blotting), ELISA, protein isolation
Purification and specificity: Affinity purified, recombinant protein. Tested for affinity chromatography, Western blot and ELISA.
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: 0.1 % SDS

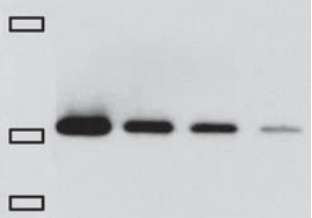


Figure: Western blotting of decreasing amounts of the MultiTag protein (300 ng - 10 ng). Probed by Anti-DYKDDDDK Serum (1:1.000) and Roth Anti Rabbit-HRP. Detection via chemoluminescence.
Blank box: Protein marker in the gel.

*The DYKDDDDK anchor is sequence identical with FLAG® of Sigma-Aldrich.

Recommended application:
100 ng / lane (Western blotting), dilution 1:100 (ELISA)

Type analysis:

Concentration	0,09-0,11 mg/ml
Appearance	clear, colourless liquid
Host	E. coli BL21 (DE3)
PAGE (12 % PAA)	complies
Western Blot	complies

3999.1	100 µl	plastic	224,70 €

Secondary Antibodies

Polyclonal antibodies for detection of primary IgG in immuno assays

ready-to-use

Concentration: 1 mg / ml
Raised in: Goat
Conjugation: Horse Radish Peroxidase (HRP), Alkalic Phosphatase (AP) or Fluorescein isothiocyanate, Isomer I (FITC)
Application: Immuno blotting (Western-, dot blotting), ELISA, immuno-histochemistry and -cytology, immonofluorescence, FACS analysis
Purification and specificity: Purified from monospecific antiserum by affinity chromatography on immobilised, species specific IgG. Tested for Western Blot and ELISA.
Storage temperature: -20 °C • **Transport temperature:** cooled (freezer packs)

Biochemistry

Anti Rabbit-AP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of rabbit IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti rabbit antibody, AP-conjugated

Conjugation: Alkalic Phosphatase (AP)
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: 40 % glycerol, 0.8 mM $MgCl_2$, 0.8 mM $ZnCl_2$

Recommended dilution: 1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4751.1	1 ml	plastic	174,15 €

Anti Rabbit-HRP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of rabbit IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti rabbit antibody, HRP-conjugated

Conjugation: Horse Radish Peroxidase (HRP)
Storage Buffer: 150 mM NaCl, 100 mM Sodium / Potassium phosphate buffer, pH 6.5
Stabiliser: 27 % glycerol, 4.5 % BSA, 0.09 % thimerosal

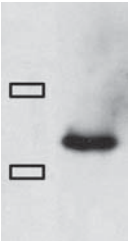


Figure: Western blotting of a 26 kDa protein, probed by protein-specific primary antibody (rabbit) and Anti Rabbit-HRP (1:1.000). Detection via chemoluminescence. Blank box: Protein marker in the gel.

Recommended dilution:
1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4750.1	2 ml	plastic	143,55 €

Anti Rabbit-FITC

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of rabbit IgG in immunofluorescence, FACS analyses, and immunohistochemistry.

Secondary anti rabbit antibody, FITC-conjugated

Conjugation: Fluorescein isothiocyanate, Isomer I (FITC)
Purification and specificity: Photometrical determination of conjugation efficiency.
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Recommended dilution: 1:1000 - 1:20.000

4752.1	2 ml	plastic	127,95 €

Anti Human-AP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of human IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti human antibody, AP-conjugated

Conjugation: Alkalic Phosphatase (AP)
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: 40 % glycerol, 0.8 mM $MgCl_2$, 0.8 mM $ZnCl_2$

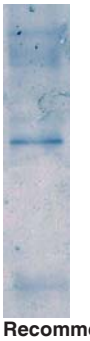


Figure: Western blotting of a human 71 kDa protein, probed by human serum and Anti Human-AP (1:1.000). Colorimetric detection.

Recommended dilution:
1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4754.1	1 ml	plastic	174,15 €

Anti Human-HRP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of human IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti human antibody, HRP-conjugated

Conjugation: Horse Radish Peroxidase (HRP)
Storage Buffer: 150 mM NaCl, 100 mM Sodium / Potassium phosphate buffer, pH 6.5
Stabiliser: 27 % glycerol, 4.5 % BSA, 0.09 % thimerosal

Recommended dilution: 1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4753.1	2 ml	plastic	143,55 €

Anti Human-FITC

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of human IgG in immunofluorescence, FACS analyses, and immunohistochemistry.

Secondary anti human antibody, FITC-conjugated

Conjugation: Fluorescein isothiocyanate, Isomer I (FITC)
Purification and specificity: Photometrical determination of conjugation efficiency.
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Recommended dilution: 1:1000 - 1:20.000

4755.1	2 ml	plastic	127,95 €

Anti Mouse-AP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of mouse IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti mouse antibody, AP-conjugated

Conjugation: Alkalic Phosphatase (AP)
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: 40 % glycerol, 0.8 mM $MgCl_2$, 0.8 mM $ZnCl_2$

Recommended dilution:
1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4760.1	1 ml	plastic	174,15 €

Anti Rat-AP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of rat IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti rat antibody, AP-conjugated

Conjugation: Alkalic Phosphatase (AP)
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: 40 % glycerol, 0.8 mM $MgCl_2$, 0.8 mM $ZnCl_2$

Recommended dilution:
1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4763.1	1 ml	plastic	174,15 €

Anti Mouse-HRP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of mouse IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti mouse antibody, HRP-conjugated

Conjugation: Horse Radish Peroxidase (HRP)
Storage Buffer: 150 mM NaCl, 100 mM Sodium / Potassium phosphate buffer, pH 6.5
Stabiliser: 27 % glycerol, 4.5 % BSA, 0.09 % thimerosal

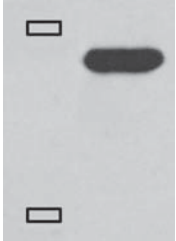


Figure: Western blotting of a HEK293 cell extrakt. Probing of Actin (42 kDa) by protein-specific primary antibody (mouse) and Anti Mouse-HRP (1:5.000). Detection via chemoluminescence. Blank box: Protein marker in the gel.

Recommended dilution:
1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4759.1	2 ml	plastic	143,55 €

Anti Rat-HRP

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of rat IgG in western blotting, ELISA, and immunohistochemistry.

Secondary anti rat antibody, HRP-conjugated

Conjugation: Horse Radish Peroxidase (HRP)
Storage Buffer: 150 mM NaCl, 100 mM Sodium / Potassium phosphate buffer, pH 6.5
Stabiliser: 27 % glycerol, 4.5 % BSA, 0.09 % thimerosal

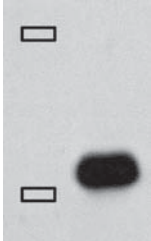


Figure: Western blotting of a 31.6 kDa protein, probed by protein-specific primary antibody (rat) and Anti rat-HRP (1:1.000). Detection via chemoluminescence. Blank box: Protein marker in the gel.

Recommended dilution:
1:1.000 - 1:10.000 (Western), 1:1.000 - 1:20.000 (ELISA)

4762.1	2 ml	plastic	143,55 €

Anti Mouse-FITC

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of mouse IgG in immunofluorescence, FACS analyses, and immunohistochemistry.

Secondary anti mouse antibody, FITC-conjugated

Conjugation: Fluorescein isothiocyanate, Isomer I (FITC)
Purification and specificity: Photometrical determination of conjugation efficiency.
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Recommended dilution: 1:1000 - 1:20.000

4761.1	2 ml	plastic	127,95 €

Anti Rat-FITC

1 mg/ml, polyclonal, affinity purified

Polyclonal antibody for detection of rat IgG in immunofluorescence, FACS analyses, and immunohistochemistry

Secondary anti rat antibody, FITC-conjugated

Conjugation: Fluorescein isothiocyanate, Isomer I (FITC)
Purification and specificity: Photometrical determination of conjugation efficiency.
Storage Buffer: 1x PBS, pH 7.4
Stabiliser: none

Recommended dilution: 1:1000 - 1:20.000

4764.1	2 ml	plastic	127,95 €

Important information on refrigerated transports

All products identified as being particularly temperature-sensitive are shipped in **special ice boxes with freezer packs or in dry ice.**
Additional costs resulting from such, **will be invoiced** (further information on request).

Please note:
In order to guarantee optimum product quality, the dispatch of refrigerated transport products will be carried out **on Mon and Tue only outside Germany!**
Slight delays in delivery are therefore possible.

Ready-Made Solutions

Roti®-Stock 10x PBS

BioScience-Grade, ready-to-use, filtered and steam sterilised

For protein biochemistry, cytology, and molecular biology.

PBS 10x ready-to-use solution

10fold stock solution phosphate buffered saline. Very versatile standard solution for detection systems in protein biochemistry, cytological stainings and molecular biological assays. Thus, 1 x PBS is used as basic solution for Western-Blot analyses, ELISAs and other enzymatic assays, for solving and dilution of proteins, for immunocytological and immunohistological assays, as well as for *in situ* hybridisations, apoptosis detection systems and staining of nuclei.
Recommended for HRP-mediated detection systems.
With original seal.

Composition:
1.37 M NaCl, 27 mM KCl, 100 mM Na_2HPO_4, 20 mM KH_2PO_4 in deionised water, pH-value 7.4, 0.2 µm filtered and steam sterilised

1058.1	1 l	glass	106,45 €
Original pack 6 x 1 l			101,13/1 l

Roti®-Stock 10x PBST

BioScience-Grade, ready-to-use, filtered and steam sterilised

For protein biochemistry, cytology, and molecular biology.

PBST 10x ready-to-use solution

10fold stock solution phosphate buffered saline with Tween 20. Extremely versatile standard solution for protein biochemical detection systems, cytological staining and molecular-biological assays with similar fields of application as Roti®-Stock PBS. Roti®-Stock PBST can be used directly instead of PBS when the presence of Tween 20 is required in the detection system.
Recommended for HRP-mediated detection systems.
With original seal.

Composition:
1,37 M NaCl, 27 mM KCl, 100 mM Na_2HPO_4, 20 mM KH_2PO_4, 0,5 % Tween 20 in deionised water, pH value 7,4, 0,2 µm filtered and steam sterilised

1059.1	1 l	glass	113,95 €
Original pack 6 x 1 l			108,25/1 l

Roti®-Stock 10x TBS

BioScience-Grade, ready-to-use, filtered and steam sterilised

For protein biochemistry, cytology, and molecular biology.

TBS 10x ready-to-use solution

10fold stock solution tris buffered saline. Very versatile standard solution for detection systems in protein biochemistry, cytological stainings and molecular biological assays. Thus, 1 x TBS is used as basic solution for protein detection systems like Western-Blot analyses and Far-Western assays, for immunocytological and immunohistological assays, as well as for whole mount *in situ* hybridisations, apoptosis detection systems and staining of nuclei.
Recommended for AP-mediated detection systems.
With original seal.

Composition:
1.5 M NaCl, 30 mM KCl, 250 mM Tris in deionised water, pH value 7.4, 0.2 µm filtered and steam sterilised

1060.1	1 l	glass	111,70 €
Original pack 6 x 1 l			106,12/1 l

Roti®-Stock 10x TBST

BioScience-Grade, ready-to-use, filtered and steam sterilised

For protein biochemistry, cytology, and molecular biology.

TBST 10x ready-to-use solution

10fold stock solution tris buffered saline with Tween 20. Extremely versatile standard solution for protein biochemical detection systems, cytological staining and molecular-biological assays with similar fields of application as Roti®-Stock TBS. Roti®-Stock TBST can be used directly instead of TBS when the presence of Tween 20 is required in the detection system.
Recommended for AP-mediated detection systems.
With original seal.

Composition:
1.5 M NaCl, 30 mM KCl, 250 mM Tris, 0.5 % Tween 20 in deionised water, pH value 7.4, 0.2 µm filtered and steam sterilised

1061.1	1 l	glass	115,60 €
Original pack 6 x 1 l			109,82/1 l

▶ Complete range of Roti®-Stock solutions see Chapter Chemicals A-Z

Roti®-Free Stripping Buffer

ready-to-use

Premixed buffer for stripping of Western-Blot membranes.

Storage temp.: +20 °C

Warning H319-H412

- Efficient
- Well-tried formulation
- Low-priced

The buffer offers a simple tool for removing antibodies and chemo-luminescence staining from Western blot membranes, allowing the valuable membranes to be analysed several times. Excellent when several proteins are to be detected in the same extract, or e.g. when in addition to a specific analysis, proteins in the respective lanes have to be semi-quantified (Kaufmann *et. al.* (1987) *Anal. Biochem.* 161:89-95).
Suitable for nitrocellulose and PVDF-membranes.

Application: Wash the membrane in TBST-buffer (Art. No. 1061.1), incubate in Roti®-Free Stripping-buffer in closed hood for 30 min at 56 °C (e.g. in shaking water bath). To strip AP-conjugates, we recommend incubation at 70 °C for 30-60 min. After washing the membrane twice in TBST for 20 min each time, it should first be blocked, before the first antibody is added. The stripping process can be checked by brief chemiluminescence staining after washing in TBST.
A slight reduction of the membrane-bound proteins and increase of the background may appear after repeated stripping.
Store membranes after stripping wetpacked at +2 to +8 °C.

0083.2	250 ml	glass	18,20 €
0083.1	1 l	glass	54,75 €
Original pack 6 x 1 l			52,01/1 l
0083.3	2,5 l	glass	98,40 €
Original pack 4 x 2,5 l			93,48/2,5 l

Roti®-Free Stripping Buffer 2.2 plus

ready-to-use

Premixed buffer for efficient stripping of Western-Blot membranes after Chemoluminescence detection, even with hard-to-remove antibodies.
Storage temp.: +20 °C

- Very effective
- Gentle
- Odour-free
- Simple application
- Also suitable for high-affinity antibodies

Stripping buffer for removal of high-affinity antibodies, as well as chemo-luminescence staining, from Western blot membranes. Due to the low pH of the buffer, the antibody conformation is altered, therefore gently removing all molecules bound to the epitopes (Legocki *et. al.* (1981) *Analyt. Biochem.* 111:385-92). Specially designed additives enhance the efficiency in removing those antibodies requiring long stripping times or high incubation temperatures with standard stripping buffer systems. Advanced formulation without β-mercapto ethanol or DTT for use at room temperature or heated. Suitable for nitrocellulose and PVDF membranes.

Applications: Following rinsing steps in PBST- or TBST buffer, the membrane is incubated in Roti®-Free Stripping-Puffer 2.2 plus for 30-60 mins. at room temperature. In case of very persistent antibodies incubation in heated buffer is allowed. After washing it again, the membrane may be blocked and probed anew. The particular time needed for complete stripping depends on the respective antibody/epitope pairing.

3337.1	250 ml	glass	46,15 €
3337.2	1 l	glass	116,00 €
Original pack 6 x 1 l			110,20/1 l

Roti®-Free Stripping Buffer 2.0

ready-to-use

Premixed buffer for gentle stripping of Western-Blot membranes after Chemoluminescence detection.
Storage temp.: +20 °C

Warning H319

- Effective
- Gentle
- Odour-free
- Simple application w/o heating
- Cost-efficient

Stripping buffer for efficient removal of primary and secondary antibodies, as well as chemoluminescence staining, from Western blot membranes. Due to the low pH of the buffer, the antibody conformation is altered, therefore gently removing all molecules bound to the epitopes (Legocki *et. al.* (1981) *Analyt. Biochem.* 111:385-92). Robust formulation without β-mercapto ethanol or DTT for use at room temperature.
Suitable for nitrocellulose and PVDF membranes.

Applications: Following rinsing steps in PBST- or TBST buffer, the membrane is incubated in Roti®-Free Stripping-Puffer 2.0 for 15-60 mins. at room temperature. After washing it again, the membrane may be blocked and probed anew. The particular time needed for complete stripping depends on the respective antibody/epitope pairing.

3319.1	250 ml	glass	40,35 €
3319.2	1 l	glass	104,85 €
Original pack 6 x 1 l			99,61/1 l

Substrates

Carl Roth offers you a wide range of substrates for biochemistry, cellular biology and microbiology. The key substrates for Western Blot and ELISA are summarised here.

For detailed information regarding usage, chemical details, safety instructions and further package sizes for these and many other substrates, refer to **"Substrates"** earlier in this chapter on biochemistry or to Chemicals A-Z.

For Alkalic Phosphatase (AP)

Substrate	Application	Detection	Art. No.	Pack Qty.	€
BCIP-sodium salt	western, *in situ*, histochemistry	colour (brown-violet)	**A155.1** *	100 mg	25,70
			A155.2	500 mg	107,40
			A155.3	1 g	188,15
			A155.4	5 g	633,20
BCIP-toluidin salt*	western, *in situ*, histochemistry	colour (brown)	**6368.1**	500 mg	33,25
			6368.2	1 g	63,45
			6368.3	5 g	241,90
NBT*	western, *in situ*, histochemistry	colour (brown-violet)	**4421.1**	100 mg	15,95
			4421.2	500 mg	40,75
			4421.3	1 g	77,30
			4421.4	5 g	274,15
pNPP	ELISA	colour (yellow)	**4165.1**	2,5 g	14,55
Rose-phos-toluidin salt	western, *in situ*, histochemistry	colour (pink)	**4247.1**	50 mg	43,55
			4247.2	100 mg	79,05

***combined**

For additional product data and safety information, see chapter Chemicals A-Z.

For Horse Raddish Peroxidase (HRP)

Substrate	Application	Detection	Art. No.	Pack Qty.	€
Chlornaphtol	western	colour (blue)	**4104.1** *	5 g	26,35
			4104.2	10 g	43,55
			4104.3	25 g	84,85
DAB	western, *in situ*, histochemistry	colour (brown)	**CN75.1**	1 g	21,40
			CN75.2	5 g	67,65
			CN75.3	10 g	115,60
Roti®-Lumin ultra	western	chemo-luminescence	**3734.1**	1 mini kit (spray)	213,95
			3734.2	1 kit (spray)	869,70
Roti®-Lumin plus	western	chemo-luminescence	**3692.1**	1 mini kit (spray)	121,40
			3692.2	1 kit (spray)	251,55
			3692.3	1 kit (bott-les)	407,45
Roti®-Lumin	western	chemo-luminescence	**P078.2**	1 mini kit	53,65
			P078.1	1 kit	198,80
TMB	ELISA	colour (blue)	**6350.1**	1 g	48,30
			6350.2	5 g	149,45
			6350.3	25 g	697,70
TMB dihydro-chloride	ELISA	colour (blue)	**4107.1**	500 mg	35,40
			4107.2	1 g	57,55

For additional product data and safety information, see chapter Chemicals A-Z.

Please note our **Technical Information Brochure** on the Internet next to the products:

Immunostaining by HRP and AP
Protocols

Accessories

121°C

Wiederverwendbar
Reusable

Blot incubation trays

Compatible with Western- and Southern blotting methods

Developed for incubation of filter membranes during signal detection after Western- and Southern blotting. The incubation trays can safely be stacked, and, due to the tightly sealing lids, evaporation of solution is prevented even during long incubation periods. The size, adapted to typical membrane sheets, reduces the amount of buffer needed during incubation. In case of version MINI, the 5 trays may be used separately as well as in uniform. Stabile, autoclavable, and reusable.

Made from polypropylene.

Model	Material	Dimensions W x L (mm)	Art. No.	Pack Qty.	€
MINI	PP	16 x 115	**4810.1**	5	45,70
MIDI	PP	90 x 90	**4811.1**	5	68,30
MAXI	PP	165 x 165	**4812.1**	5	148,35

S

Wiederverwendbar
Reusable

Rotilabo®-liquid reservoirs

Sterile (individually wrapped) or unsterile. With special design for 4, 8 and 12 channel pipettors. The bevelled sides and V-shaped base enable almost total withdrawal of liquid. Sterile vessels are individually wrapped.
Sterile designs are DNAse/RNase-free and non-pyrogenic.

Volume (ml)	Material	Type	Length (mm)	Width (mm)	Height (mm)	Art. No.	Pack Qty.	€
55	PVC	unsteri-le	143	70	25	**E830.2**	100	92,45
55	PS	**sterile**	143	70	25	**E831.2**	80	165,55

Accessories for Rotilabo®-liquid reservoirs

Lid made of PET. **Sterile** (individually wrapped).

Type	Art. No.	Pack Qty.	€
Lid, **sterile**	**EL53.1**	20	40,75

NEW

Wiederverwendbar
Reusable

Western Incubation Trays

Compatible with all standard Western-staining methods.

Western incubation trays have been specially developed for staining Western-blots. The sizes adapted to suit typical Western-blots, reduce the required quantity of antibodies and staining reagents. The trays are compatible with all standard staining methods and can easily be stacked. The airtight lids effectively prevent the solution from evaporating even during longer incubation periods.

Type	Dimensions L x W (mm)	Typical incubation vol. (ml)	Material	Max. Temp. (°C)
MINI	91 x 66	5 - 10	PS	80
MIDI	117 x 89	10 - 20	PS	80
MIDI-XL	120 x 120	20 - 30	Acrylic glass	60
MAXI	200 x 165	30 - 60	Acrylic glass	60

Four different sizes for perfect fit to your respective blot membrane. Stabile and frequently reusable.

Type	Dimensions L x W (mm)	Art. No.	Pack Qty.	€
MINI	91 x 66	**8862.1**	10 pieces	152,65
MIDI	117 x 89	**8870.1**	10 pieces	170,95
MIDI-XL	120 x 120	**8874.1**	1 pieces	170,95
MAXI	200 x 165	**8876.1**	1 pieces	213,95

Wiederverwendbar
Reusable

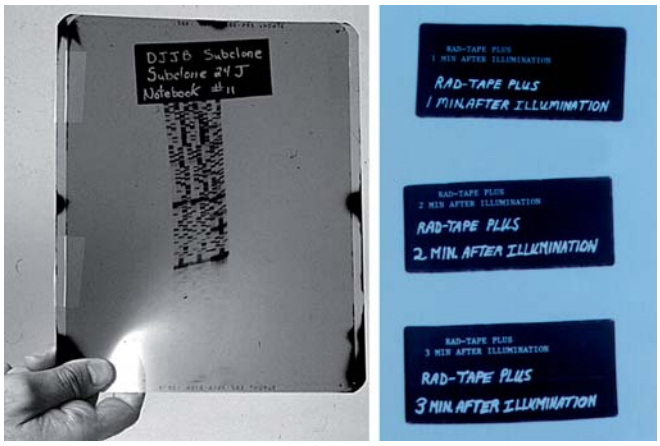
Western-blot immuno trays

Immuno trays are ideal for incubating membrane strips after blotting or for preparing incubation solutions, e.g. during Western-Blot or Immuno-Assay. Trays made of white **PP**, autoclavable. Lids made of PS, not autoclavable.

Type	Length (mm)	Width (mm)	Art. No.	Pack Qty.	€
Western-blot immuno tray for 10 cm strips	128	85	**X990.1**	10	30,00
Lid for immuno tray, 10 cm	128	85	**X991.1**	10	26,70
Western-blot immuno tray for 17 cm strips	200	110	**X992.1**	10	30,00
Lid for immuno tray, 17 cm	200	110	**X993.1**	10	26,70

▶ Transfer membranes and blotting accessories see Chapter Electrophoresis

▶ Rotilabo®-exposition cassettes see Chapter Optical Instruments & Lamps



Radtape®

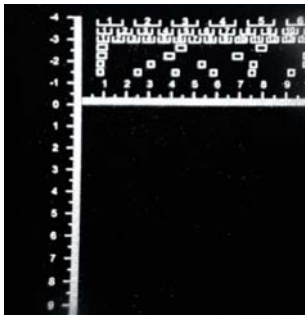
Phosphorescent labels for permanent labelling of autorads through exposure.

Radtape® and *Radtape® Plus* are rectangular adhesive sheets made from phosphorescent material. The sheets may be cut easily to labels of needed size and shape and may be marked with an ordinary pen. The custom label may be peeled from its backing and affixed to membrane or gel, or directly to the cassette foil. Before exposure of an x-ray film, the label has to be activated with bright light for 10 seconds. The markings on the label appear as negative image on the autorad. Suitable for use with enhancer foils.

- No overexposure, even after long exposure times
- Sharp and clear images, cannot be smeared

Additional properties of Radtape® **Plus:**
- Waterproof, can be submerged repeatedly without loss of quality
- Intensive phosphorescence for several minutes after activation
- Recommended for short and very short exposure times
- Multilaminate surface structure providing highly reproducible, non-granular images

Type	Dimensions L x W (cm)	Art. No.	Pack Qty.	€
Radtape®	10 x 15	**3900.1**	10	70,55
Radtape® Plus	10 x 15	**3901.1**	10	127,95



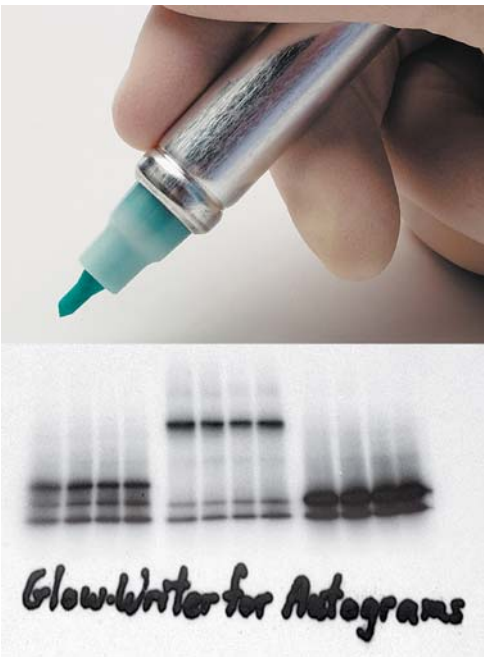
Wiederverwendbar
Reusable

Luminous stencil

Orienting and measuring aid for detection of blot membranes.

Stencil with phosphorescent ordinate system and a pattern of different sized electrophoresis comb wells. When activated, stencils fluoresce for approx. 15 minutes. Are ideal for controlling and measuring during chemoluminescence detection of blots. Stencil can be activated by exposure to daylight or to artificial light.

Art. No.	Pack Qty.	€
X981.1	1	26,55



Autoradiography Pen

For marking of chemoluminescent or isotope labelled sheets prior to autoradiographic detection.

Danger H225-H304-H372-EUH031

Pen with phosphorous ink for easy marking of those membranes ready for exposure. The fine tip of the pen also allows individual bands and gel tracks to be marked simply and easily. The marking is activated by the light in the room prior to exposure. The ink illuminates the X-ray film during exposure and the letters are visible in black ink. The letters are easy to read even after short exposure time. In the event of long exposure, the short half-life value of 2-3 minutes effectively prevents overexposure. The writing is therefore easy to make out after virtually all exposure times. Through the replacement nibs the pen can be reused even after a number of months or after drying out.

Suitable for chemoluminescence and isotope-radiography.
Ideal for marking paper, plastic foil and dried polyacrylamide gels.

Delivery incl. 1 pen + 4 replacement nibs

CL10.1	1 piece	112,90 €

Accessories:

Replacement nibs for Autoradiography Pen CL10.1	**CL11.1**	4 pieces	21,30 €

Cell Biology

Cell Culture Media
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- EMEM 1267
- RPMI 1267
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Cell Culture Media Additives 1269

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Cell Analysis
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- Blocking 1285
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Roti®-CELL - Media and Solutions for Cell Culture

The new product line for your cell culture.
Media and solutions of highest purity, the perfect base line for all standard cell culture applications.

- Sterile
- Ready-to-use
- CELLPURE® - with particularly low endotoxin content
- Storage at 2-8 °C
- Shipped at ambient temperature
- Expiry 12-24 months

ready-to-use

S

Medium	Art. No.	Glucose g/l	Glutamine (mM)	HEPES (mM)	Sodium Pyruvate (mM)	$NaHCO_3$ (mM)	Phenol Red	Salts	Note	page
Dulbeccos Minimum Essential Media										
Roti®-CELL DMEM High Glucose	**9005.1**	4,5	4	X	1	44	yes	X		1266
Roti®-CELL DMEM High Glucose	**9006.1**	4,5	4	X	X	44	yes	X		1266
Roti®-CELL DMEM High Glucose	**9007.1**	4,5	4 stab.	X	1	44	yes	X	With temperature stabile glutamine.	1266
Roti®-CELL DMEM High Glucose	**9010.1**	4,5	X	X	1	44	yes	X		1266
Roti®-CELL DMEM High Glucose	**9011.1**	4,5	X	25	1	44	yes	X		1266
Roti®-CELL DMEM High Glucose	**9019.1**	4,5	X	X	X	44	yes	X		1266
Roti®-CELL DMEM High Glucose	**9023.1**	4,5	X	X	1	44	X	X		1266
Roti®-CELL DMEM Low Glucose	**9027.1**	1,0	X	X	1	44	yes	X		1266
Roti®-CELL DMEM Low Glucose	**9030.1**	1,0	X	25	1	44	yes	X		1266
DMEM : F12										
Roti®-CELL DMEM : F12	**9031.1**	3,151	2,5	15	1	14,3	yes	X		1266
Iscove's Modfied Dulbecco Media										
Roti®-CELL Iscove's MDM	**9033.1**	4,5	4	25	1	36	yes	X	Additional Amino Acids and selene.	1266
Roti®-CELL Iscove's MDM	**9035.1**	4,5	X	25	1	36	yes	X	Additional Amino Acids and selene.	1266
Minimum Essential Media										
Roti®-CELL Eagle's MEM / Earle's	**9044.1**	1	2	X	X	26,2	yes	Earle's		1267
Roti®-CELL Eagle's MEM / Earle's	**9047.1**	1	X	X	X	26,2	yes	Earle's		1267
Roti®-CELL Eagle's MEM / Earle's	**9048.1**	1	X	25	X	26,2	yes	Earle's		1267
Roti®-CELL Eagle's MEM / Earle's	**9049.1**	1	X	X	1	26,2	yes	Earle's	Plus NEEA*	1267
Roti®-CELL Eagle's MEM / Hanks'	**9056.1**	1	X	X	X	4,2	yes	Hanks'		1267
Roti®-CELL Eagle's MEM-Alpha	**9058.1**	1	X	X	1	26,2	yes	Earle's	Plus cobalamine, ascorbic acid, NEAA*, lipoic acid, biotine.	1267
Roti®-CELL Eagle's MEM-Alpha	**9082.1**	5,5	2 stab.	X	1	26,2	yes	Earle's	Plus cobalamine, ascorbic acid, NEAA*, lipoic acid, biotine. Plus ribonucleosides and desoxyribonucleosides. With temperature stabile glutamine.	1267
RPMI Media										
Roti®-CELL RPMI 1640	**9085.1**	2	2	X	X	23,8	yes	X		1267
Roti®-CELL RPMI 1640	**9086.1**	2	2	25	X	23,8	yes	X		1267
Roti®-CELL RPMI 1640	**9091.1**	2	2 stab.	X	X	23,8	yes	X	With temperature stabile glutamine.	1267
Roti®-CELL RPMI 1640	**9093.1**	2	2 stab.	25	X	23,8	yes	X	With temperature stabile glutamine.	1267
Roti®-CELL RPMI 1640	**9094.1**	X	2	X	X	23,8	yes	X		1267
Roti®-CELL RPMI 1640	**9099.1**	2	X	X	X	23,8	yes	X		1267
Roti®-CELL RPMI 1640	**9104.1**	2	X	X	X	23,8	X	X		1267
Special Media										
Roti®-CELL Ham's F12	**9108.1**	1,8	1	X	1	14	yes	X		1268
Roti®-CELL Leibovitz's L15	**9109.1**	0,9 galact.	X	X	5	14	yes	X		1268
Roti®-CELL McCoy's 5A	**9111.1**	3	1,5	X	X	26,2	yes	X		1268
Roti®-CELL Medium 199 / Earle's	**9112.1**	1	0,7	25	X	26,2	yes	Earle's		1268
Roti®-CELL TC100	**9114.1**	0,6	4,1	X	X	4,16	X	X		1268
Roti®-CELL William's E	**9116.1**	2	X	X	0,23	262	yes	X		1268

* NEAA: Non-essential amino acids

Media with stabile glutamine may be stored at room temperature!

DMEM

ready-to-use S

Roti®-CELL DMEM High Glucose

CELLPURE® ready-to-use, sterile

Medium for a wide range of mammalian cell culture applications

Dulbecco's Modified Eagle Medium

Storage temp.: +4 °C

Dulbecco's Modified Eagle Medium is the most commonly used modification of the Basal Medium acc. to Eagle. DMEM contains higher concentration of amino acids and vitamins, and additionally iron (ferric nitrate). The formulation with high glucose content is well suited for culturing of a wide range of mammalian cell lines and primary cells.

with glutamine, with pyruvate

9005.1	500 ml	plastic	12,05 €

with glutamine, w/o pyruvate

9006.1	500 ml	plastic	12,05 €

with stable glutamine, with pyruvate

9007.1	500 ml	plastic	12,80 €

w/o glutamine, with pyruvate

9010.1	500 ml	plastic	12,05 €

w/o glutamine, with pyruvate, with HEPES

9011.1	500 ml	plastic	14,95 €

w/o glutamine, w/o pyruvate

9019.1	500 ml	plastic	12,05 €

w/o glutamine, with pyruvate, w/o phenol red

9023.1	500 ml	plastic	17,75 €

Roti®-CELL DMEM Low Glucose

CELLPURE® ready-to-use, sterile

Medium for culturing of adherent mammalian cell lines.

Dulbecco's Modified Eagle Medium

Storage temp.: +4 °C

Dulbecco's Modified Eagle Medium is the most commonly used modification of the Basal Medium acc. to Eagle. DMEM contains higher concentration of amino acids and vitamins, and additionally iron (ferric nitrate). The formulation with low glucose content is well suited for culturing of a variety of mammalian adherent cell lines.

w/o glutamine, with pyruvate

9027.1	500 ml	plastic	12,05 €

w/o glutamine, with pyruvate, with HEPES

9030.1	500 ml	plastic	14,95 €

Roti®-CELL DMEM : F12

CELLPURE® ready-to-use, sterile

Medium for analysis of hormones and growth factors in cell culture.

Dulbecco's Modified Eagle Medium + Ham's F12 medium (1:1)

Storage temp.: +4 °C

Dulbecco's Modified Eagle Medium is the most commonly used modification of the Basal Medium acc. to Eagle. This mixture of DMEM High Glucose with Ham's F12 medium combines the high nutritional value of Ham's F12 medium with the high concentration of amino acids, vitamins, and glucose of DMEM.

with glutamine, with pyruvate, with HEPES

9031.1	500 ml	plastic	14,55 €

Roti®-CELL Iscove's MDM

CELLPURE® ready-to-use, sterile

Medium for a wide range of mammalian cell culture applications.

Iscove's Modified Dulbecco's Medium

Storage temp.: +4 °C

Iscove's Modified Dulbecco's Medium is based on DMEM High Glucose, containing selenium, HEPES, and, instead of iron, potassium (as potassium nitrate) besides additional amino acids and vitamins. It is well suited for culturing of a wide range of mammalian cell lines and primary cells, including B- and T lymphocytes as well as hybridoma cells.

with glutamine, with pyruvate, with HEPES

9033.1	500 ml	plastic	15,60 €

w/o glutamine, with pyruvate, with HEPES

9035.1	500 ml	plastic	15,60 €

EMEM

Roti®-CELL Eagle's MEM / Earle's

CELLPURE® ready-to-use, sterile

Medium for a wide range of mammalian cell culture applications.

Minimum Essential Medium acc. to Eagle with Earle's salts

Storage temp.: +4 °C

Minimum Essential Medium is a commonly used modification of the Basal Medium acc. to Eagle, having been developed in 1959 for culturing of HeLa cells. EMEM contains high concentration of amino acids, which conform closely to the protein composition of human cells. Concentration of vitamins, and other essential nutrients, is enhanced, allowing longer cultivation periods between feedings. EMEM is well suited for culturing of a wide range of mammalian cell lines and primary cells, also including transfected cells.

with glutamine

9044.1	500 ml	plastic	12,80 €

w/o glutamine

9047.1	500 ml	plastic	12,05 €

w/o glutamine, with HEPES

9048.1	500 ml	plastic	13,90 €

w/o glutamine, with pyruvate, with NEAA

9049.1	500 ml	plastic	13,45 €

Roti®-CELL Eagle's MEM / Hanks'

CELLPURE® ready-to-use, sterile

Medium for a wide range of mammalian cell culture applications.

Minimum Essential Medium acc. to Eagle with Hanks' salts

Storage temp.: +4 °C

EMEM is well suited for culturing of a wide range of mammalian cell lines and primary cells, also including transfected cells. Due to supplementation with Hanks' salts, cell cultivation in EMEM-Hanks' does not require CO_2 enriched atmosphere.

w/o glutamine

9056.1	500 ml	plastic	14,95 €

Roti®-CELL Eagle's MEM-Alpha

CELLPURE® ready-to-use, sterile

Medium for culturing of bone marrow and amniotic cells.

Minimum Essential Medium acc. to Eagle, Alpha modification

Storage temp.: +4 °C

Alpha-Eagle's Minimum Essential Medium is based on EMEM, containing the following unique components: Vitamin B_{12}, ascorbic acid, non-essential amino acids, sodium pyruvate, lipoic acid, and D-biotin. It has been optimised for culturing of bone marrow cells and amniotic cells for chromosome analysis.

w/o glutamine, w/o nucleosides

9058.1	500 ml	plastic	13,45 €

with stable glutamine, with nucleosides

9082.1	500 ml	plastic	26,35 €

RPMI

Roti®-CELL RPMI-1640

CELLPURE® ready-to-use, sterile

Medium for a wide range of mammalian cell culture applications, mainly of leucocytes

RPMI cell culture medium

Storage temp.: +4 °C

RPMI-1640 has been developed for culturing of normal and neoplastic human leucocytes. It is based on a bicarbonate buffering system with modified amounts of amino acids and vitamins. RPMI-1640 Medium is very well suited for culturing of a wide range of mammalian suspension cell lines and primary lymphocytes, all leucocytes, B- and T-lymphocytes, as well as myeloma- and hybridoma cells.

with glutamine

9085.1	500 ml	plastic	12,05 €

with glutamine, with HEPES

9086.1	500 ml	plastic	13,45 €

with stable glutamine

9091.1	500 ml	plastic	12,80 €

with stable glutamine, with HEPES

9093.1	500 ml	plastic	14,55 €

with glutamine, w/o glucose

9094.1	500 ml	plastic	48,95 €

w/o glutamine

9099.1	500 ml	plastic	11,30 €

w/o glutamine, w/o phenol red

9104.1	500 ml	plastic	14,95 €

Special Media

ready-to-use S

Roti®-CELL Ham's F12

CELLPURE® ready-to-use, sterile

Medium for culturing of a variety of mammalian- and hybridoma cells, especially CHO cells.

Ham's F12 cell culture medium

Storage temp.: +4 °C

Ham's F12 Medium was originally optimized for serum-free, clonal culturing of CHO cells (Chinese Hamster Ovary). Ham's F12 Medium is the medium of choice for culturing cells of rodent orgin, particularly from rabbit and rat. Additionally, it is increasingly used as general purpose medium for culturing mammalian and hybridoma cells, particularly when supplemented with sera, hormones, and transferrin.

with glutamine, with pyruvate

9108.1	500 ml	plastic	13,45 €

Roti®-CELL Leibovitz's L15

CELLPURE® ready-to-use, sterile

Medium for culture of mammalian cells without CO_2 atmosphere.

Leibovitz's cell culture medium

Storage temp.: +4 °C

Leibovitz's L15 Medium was developed for culturing of eukaryotic cells without CO_2 enriched atmosphere. Its unique components include the use of galactose instead of glucose, omittance of bicarbonate, addition of free base forms of arginine, cysteine, and histidine, as well as elevated levels of tyrosine. Leibovitz's L15 Medium is still used to grow cell lines in the absence of CO_2.

w/o glutamine, with galactose

9109.1	500 ml	plastic	21,00 €

Roti®-CELL McCoy's 5A

CELLPURE® ready-to-use, sterile

Medium for culturing of a variety of mammalian cell lines and primary cells.

McCoys 5A cell culture medium

Storage temp.: +4 °C

McCoy's 5A Medium was optimized for culturing of Walker 256 carcinoma cells. Its unique components include asparagine, amino acids (all L-isomers), and elevated levels of glucose and folic acid. Due to its richness, McCoy's 5A Medium is increasingly used as general purpose medium for primary cells and established cell lines.

with glutamine

9111.1	500 ml	plastic	19,90 €

Roti®-CELL Medium 199 / Earle's

CELLPURE® ready-to-use, sterile

Medium for cell culture in virology and vaccine production.

Medium 199 with Earle's salts

Storage temp.: +4 °C

Medium 199 was developed for nutritional studies on cultured chick embryo muscle fibroblasts. Its unique components include purines, pyrimidines, and fat soluble components. Medium 199 requires a CO_2 enriched atmosphere and is mainly used for virological studies and vaccine production.

with glutamine, with HEPES

9112.1	500 ml	plastic	17,75 €

Roti®-CELL TC100

CELLPURE® ready-to-use, sterile

Medium for culture of Sf9 cells.

TC100 cell culture medium; BML-TC/100

Storage temp.: +4 °C

TC100 is based on the Grace's Insect Medium, optimizing the expression of baculovirus grown in cultured cells derived from ovaries of the fall army worm, *Spodoptera frugiperda*.

with glutamine

9114.1	500 ml	plastic	24,65 €

Roti®-CELL William's E

CELLPURE® ready-to-use, sterile

Medium for long-term culturing of adult, primary liver epithelial cells.

William's E cell culture medium

Storage temp.: +4 °C

William's E Medium is based on the Minimal Essential Medium (MEM), containing besides pyruvate higher concentrations of glucose, amino acids and sodium bicarbonate. William's E Medium has been optimized for long-term culturing of polygonal, epithelia cells from adult liver of mammals.

w/o glutamine, with pyruvate

9116.1	500 ml	plastic	19,90 €

Cell Culture Media Additives

Roti®-CELL Bicarbonate solution

CELLPURE® sterile, 7,5 %

For cell culture

Sodium bicarbonate solution in water

Due to it being the main physiological buffer system, sodium bicarbonate still is the most commonly used buffer in cell culture media. For media with Hanks' Salts (HBSS) add a low concentration of Roti®-CELL Bicarbonate solution (350 mg/l = 0,035 % end concentration) and incubate in closed culture vessels. For media with Earle's Salts (EBSS) add a higher concentration of Roti®-CELL Bicarbonate solution (2.200 mg/l = 0,22 % end concentration) and incubate in an open vessel, in an atmosphere supplied with 5 % CO_2 in air.

9165.1	100 ml	plastic	12,05 €

Roti®-CELL Glucose solution

CELLPURE® sterile, 100 mg/ml

For cell culture

Glucose solution in water

In cell culture, glucose is used in order to provide an optimised amount of nutritional energy for the cells. Only in exceptional cases glucose is replaced by galactose, or is provided by dosing pumps. Generally, content of glucose in cell culture media is 1 to 6 mg/l.

9155.1	100 ml	plastic	26,80 €

Roti®-CELL Glutamine solution

CELLPURE® sterile, 200 mM

For cell culture

Alanyl-L-glutamine solution in 145 mM NaCl

L-glutamine is an essential amino acid required for cell culture growth and is normally present in media in a concentration of 29 mg/l or 2 mM. While standard L-glutamine is temperature-sensitive and thus not stable for longer periods, the L-Glutamine form used for this Roti®-CELL Glutamine solution extends by temperature stability and may be stored at room temperature for years, making it a highly valuable tool for cell culture media. Stable L-glutamine is used in the same concentration as standard, temperature-sensitive L-glutamine.

9183.1	100 ml	plastic	15,60 €

▶ Antibiotics for Cell Culture see page 1273

Roti®-CELL HEPES solution

CELLPURE® sterile, 1 M

For cell culture

HEPES solution in 145 mM NaCl

Roti®-CELL HEPES solution has been designed for use in open vessels incubated under atmospheric conditions. The sodium chloride concentration of Roti®-CELL HEPES solution has been adapted to the Osmolality found in standard cell culture media formulations, in order to maintain physiological Osmolality in culture.

9157.1	100 ml	plastic	21,00 €

Roti®-CELL MEM-NEAA solution

CELLPURE® sterile, 100x conc., 10 mM each

For cell culture

Non essential amino acids, solution in water

Storage temp.: +4 °C

Roti®-CELL MEM-NEAA solution consists of a mixture of 7 non-essential amino acids in water. Enrichment of Roti®-CELL Eagle's MEM Medium (with Earle's or Hanks' salts) with non-essential amino acids enables culturing of fastidious cells and cell lines, hereby broadening the utility of this medium. Dilution by 1:100 of Roti®-CELL MEM-NEAA solution yields a final concentration 0.1 mM of each component.

Type analysis:

L-Alanine. ..... 0,89 g/l
L-Asparagine. ..... 1,321 g/l
L-Aspartic acid. ..... 1,33 g/l
L-Glutamic acid. ..... 1,47 g/l
Glycine. ..... 0,75 g/l
L-Proline. ..... 1,15 g/l
L-Serine. ..... 1,05 g/l

9185.1	100 ml	plastic	15,60 €

Roti®-CELL Pyruvate solution

CELLPURE® sterile, 100 mM

For cell culture

Sodium pyruvate solution in water

Storage temp.: +4 °C

Sodium Pyruvate is a key intermediate in the ATP production within the cell and is sometimes added to cell culture media as an additional source of energy. Additional pyruvate may help cells deficient in one of the enzymes involved in glucose metabolism, and may kick-start cells in the citric acid cycle, thus supporting growth of low density cells. Concentration in standard media is 1 mM; special media like Leibovitz's medium are supplemented with up to 5 mM pyruvate.

9182.1	100 ml	plastic	9,60 €

Roti®-CELL Water

CELLPURE® sterile, USP

For cell culture

For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

9186.1	500 ml	plastic	8,85 €
9186.2	1 l	plastic	14,20 €
Original pack 6 x 1 l			13,49/1 l

Endotoxins ..... <1,0 EU/ml
Sterility ..... complies

Balanced Salt Solutions

Roti®-CELL Hanks' BSS

CELLPURE® ready-to-use, sterile

Balanced salt solution for cell culture

Hanks' salt solution, HBSS

Roti®-CELL Hanks' BSS is a balanced salt solution to be used in a wide variety of cell- and tissue culture applications; for instance stabilizing of a physiological pH for cell maintenance in CO_2-free atmosphere, diluting cell suspensions prior to counting, washing cells prior to dissociation or passaging, and transporting cells or tissues.

For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

w/o Ca/Mg, w/o phenol red

9117.1	500 ml	plastic	10,65 €

w/o Ca/Mg, with phenol red

9118.1	500 ml	plastic	10,65 €

with Ca/Mg, w/o phenol red

9119.1	500 ml	plastic	10,65 €

with Ca/Mg, with phenol red

9122.1	500 ml	plastic	13,90 €

Roti®-CELL DPBS

CELLPURE® ready-to-use, sterile

Balanced salt solution for cell culture

Phosphate buffered saline acc. to Dulbecco, DPBS

Roti®-CELL Dulbecco's PBS is a balanced salt solution based on PBS to be used in a wide variety of cell- and tissue culture applications; for instance stabilizing of a physiological pH in cell culture media, washing cells prior to dissociation, transfection or passaging, and maintaining cell tonicity and viability during transport of cells or tissues.

For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

w/o Ca/Mg

9124.1	500 ml	plastic	12,40 €
9124.2	1 l	plastic	18,85 €
Original pack 6 x 1 l			17,91/1 l

10x conc., w/o Ca/Mg

9130.1	500 ml	plastic	16,70 €
9130.2	1 l	plastic	19,90 €
Original pack 6 x 1 l			18,91/1 l

with Ca/Mg

9131.1	500 ml	plastic	12,40 €
9131.2	1 l	plastic	18,85 €
Original pack 6 x 1 l			17,91/1 l

▶ Roti®-CELL PBS solutions see page 1272

Reagents for Cell Culture

Albumin Fraction V, endotoxin-tested

>98 %, low endotoxin, CELLPURE®

With low endotoxin content. Recommended for culturing of cell lines.

BSA

M ~66 000 g/mol

Storage temp.: +4 °C

Albumin Fraction V, low endotoxin is recommended for use during culturing of eukaryotic cells.
Bovine serum albumin is basically suitable for stabilisation of all enzymes and antibodies, as well as for blocking of hybridisations and immunoassays.
Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcohol solution.

Guarantee analysis:

Appearance. ..... flakes
Colour. ..... pale yellow
Assay. ..... >98 %
Protein. ..... >92 %
Water content. ..... <5,0 %
pH-value (10 % in H_2O). ..... 7,0 ±0,5
Endotoxin content. ..... <15 E.U./mg

CP84.1	10 g	plastic	32,15 €
CP84.2	50 g	plastic	98,80 €
CP84.3	500 g	plastic	794,45 €
Original pack 6 x 500 g			754,73/500 g

Albumin Fraction V, very low endotoxin

>98 %, very low endotoxin, CELLPURE®

With extremely low endotoxin content. Recommended for the culture of primary cells and cell lines, as well as for sensitive cell culture assays.

BSA

M ~66 000 g/mol

Storage temp.: +4 °C

Albumin Fraction V, very low endotoxin is particularly recommended for use during culturing of eukaryotic cells and in cell culture assays. This albumin of superior quality is thoroughly tested for its very low endotoxin content, therefore providing trouble-free cell culture assays and reliable results even when handling primary cells or stem cells.
Bovine serum albumin is basically suitable for stabilisation of all enzymes and antibodies, as well as for blocking of hybridisations and immunoassays.
Manufactured from fresh beef plasma by fractionating in accordance with Cohn and subsequent crystallisation at low temperatures from the alcohol solution.

Guarantee analysis:

Appearance. ..... light flakes
Colour. ..... pale yellow
Assay. ..... >98 %
Protein. ..... >920 mg/g
Water content. ..... <5,0 %
pH-value (10 % in H_2O). 6,5-7,4
Endotoxin content. ..... <2.0 E.U./mg

CP77.1	10 g	plastic	131,05 €
CP77.2	50 g	plastic	514,95 €

Dimethyl sulphoxide

≥99,5 %, BioScience-Grade, for molecular biology

Recommended for PCR, sequencing, hybridisation and cell culture.

DMSO

C_2H_6OS

M 78,13 g/mol

A994.1	100 ml	glass	21,00 €
A994.2	250 ml	glass	32,15 €

Flavine-adenine-dinucleotide disodium salt

≥95 %, CELLPURE®

FAD-Disodium salt, Riboflavin-5'-adenosine diphosphate disodium salt

$C_{27}H_{31}O_{15}N_9Na_2P_2$

M 865,55 g/mol

Storage temp.: +4 °C

Type analysis:

Appearance. ..... orange yellow to pale yellowish brown powder
Assay (dry substance). ..... ≥95 %
Endotoxins. ..... ≤100 E.U./g
Heavy metals (as Pb). ..... ≤0,001 %
Arsenic (As_2O_3). ..... ≤0,0001 %
Moisture. ..... ≤10 %

6833.1	10 mg	glass	23,15 €
6833.2	50 mg	glass	34,95 €
6833.3	100 mg	glass	46,15 €

HEPES

PUFFERAN® ≥99,5 %, CELLPURE®

DNAse-free
Protease-free
RNAse-free

For cell culture, tissue culture and biotechnology.

N-2-Hydroxyethyl piperazine-N'-2-ethane sulphonic acid, Good's buffer

$C_8H_{18}N_2O_4S$

M 238,31 g/mol

Extremely versatile buffer. Excellent for cell and tissue cultures and for analysis of biological systems.

Endotoxins: approx. 0.025 E.U./mg

Applications:

- Combined with bicarbonate, HEPES is an excellent medium for human lymphocytoidal cell lines
- HEPES is more effective than $NaHCO_3$ when controlling the pH value in tissue and organ culture
- HEPES-buffered media for chicken and human lung fibroblasts
- Can be used to replace a bicarbonate buffered medium containing serum with a serum-free HEPES-buffered medium for mouse fibroblasts

HN77.1	50 g	plastic	26,80 €
HN77.2	100 g	plastic	39,25 €
HN77.3	250 g	plastic	74,10 €
HN77.4	500 g	plastic	131,70 €
Original pack 6 x 500 g			125,12/500 g
HN77.5	1 kg	plastic	231,05 €
Original pack 6 x 1 kg			219,50/1 kg

Recommended Application of Albumins

Albumin	Art. No.	Recommended Application
Fraction V, endotoxin-tested	CP84	Cell culture, standard cell lineages, cell sorting, short-term assays.
Fraction V, very low endotoxin	CP77	Cell culture. Superior quality and purity, suitable for sensitive cells like primary cells, stem cells, cloning and 3D-cultures. Also recommended for cell stressing assays like transfections, *in vitro* infections, or cell fusion.
Lactalbumin	7597	Cell culture, fermentation procedures, tissue culture.

Lactalbumin
for microbiology

Storage temp.: +20 °C

Lactalbumin is produced by enzymatic hydrolysis of milk whey. It consists of peptides, amino acids and carbohydrates, simple and complex.
It is used in media for culturing of bacterial cells (e.g. lactobacilli), for tissue culture, production of vaccines and in fermentation procedures.

Type analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥4,8 %
Loss on drying. .....≤6 %
Ash. .....≤15 %
pH (2 % solution). 6,5-7,5

7597.1	250 g	plastic	68,30 €
7597.2	500 g	plastic	117,75 €
Original pack 6 x 500 g			111,86/500 g

Roti®-CELL 10x PBS
CELLPURE® sterile

Balanced salt solution for cell culture
Phosphate buffered saline, PBS
Roti®-CELL PBS is a balanced salt solution to be used in a wide variety of cell- and tissue culture applications; for instance diluting cell suspensions prior to counting, washing cells prior to dissociation, transfection or passaging, and transporting cells or tissues.
10x ready-made solution

For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

9150.1	1 l	plastic	17,75 €
Original pack 6 x 1 l			16,86/1 l

Roti®-CELL PBS
CELLPURE® ready-to-use, sterile

Balanced salt solution for cell culture
Phosphate buffered saline, PBS
Roti®-CELL PBS is a balanced salt solution to be used in a wide variety of cell- and tissue culture applications; for instance diluting cell suspensions prior to counting, washing cells prior to dissociation, transfection or passaging, and transporting cells or tissues.

For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

9143.1	500 ml	plastic	11,75 €
9143.2	1 l	plastic	14,20 €
Original pack 6 x 1 l			13,49/1 l

Roti®-CELL Water
CELLPURE® sterile, USP

For cell culture

Type analysis:

Particulate matter.....complies
Conductivity.....complies
Oxidizable substances.....complies
Endotoxins..... <0,25 EU/ml
Sterility.....complies
For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

9186.1	500 ml	plastic	8,85 €
9186.2	1 l	plastic	14,20 €
Original pack 6 x 1 l			13,49/1 l

Roti®-Fect RNAi Buffer
sterile, for transfection, CELLPURE®

RNAse-free buffer for RNA transfection, 10x conc.
Storage temp.: -20 °C • Transport temp.: room temp.
Special10x buffer for preparation of RNA/liposome complexes during RNA transfection. RNA and liposoma formulation are mixed and incubated in Roti®-Fect RNAi buffer under RNAse-free conditions, before adding the cells.
Required amount of 1x buffer is approx. 30 µl / cm^2 (96well: 15 µl, 48well: 30 µl, 24well: 60 µl, 12well: 120 µl, 6well: 180 µl).

2913.1	0,4 ml	plastic	14,95 €
2913.2	2 ml	plastic	61,85 €

TRIS
CELLPURE® ≥99,9 %

For cell culture, tissue culture and biotechnology.
Tris(hydroxymethyl)-aminomethane
$C_4H_{11}NO_3$
M 121,14 g/mol

Warning H315-H319-H335

Buffer with low endotoxin content and especially designed for life science applications.

Endotoxins: ≤0.03 E.U./mg

3170.1	100 g	plastic	23,90 €
3170.2	500 g	plastic	71,95 €
Original pack 6 x 500 g			68,35/500 g

Water
hypotonic, sterile, free from pyrogen

H_2O
M 18,02 g/mol
Sterile and pyrogen-free - the best choice for preparation of reaction buffers.

Pyrogenity (endotoxins): <0.25 E.U./ml

Meets in all aspects the demands of Ph.Eur. for *Aqua purificata* (purified water).

Guarantee analysis:

Pyrogenity (LAL-Test).....complies
pH value. 4,0-7,0
Heavy metals.....≤0,1 ppm
Evaporation residue.....≤0,001 %

3255.1	1 l	plastic	8,40 €
Original pack 6 x 1 l			7,98/1 l

Antibiotics for Cell Culture

Contamination of a cell culture by bacteria or yeasts almost always results in loss of the cell lines and assays, which means that the use of antibiotics has an important role to play in addition to working in sterile conditions. Antibiotics which are predominantly used for prophylactic purposes are ampicillin, streptomycin and penicillin, while ciprofloxacin and nystatin are used for the eradication of mycoplasma and mould/yeasts.
In molecular biology, antibiotics - particularly G418, hygromycin and neomycin - were established in combination with appropriate resistance genes as selection markers for successfully transfected cells.
Reaction mechanisms of antibiotics used in cell culture mainly involve interference with membrane biosynthesis, membrane integrity or the ribosomal processes in protein biosynthesis.

Antibiotic	Purity	Endotoxin content	Art. No.	Pack Qty.	€
Ampicillin sodium salt	≥91 %, CELLPURE®	≤0.15 I.E./mg	**HP62.1**	10 g	41,85
			HP62.2	50 g	155,35
Geneticin disulphate (G418)-solution	50 mg/ml, CELLPURE®	<10 E.U./ml	**CP11.1**	10 ml	63,35
			CP11.2	20 ml	82,25
			CP11.3	100 ml	302,10
Geneticin disulphate (G418)-solution, sterile	50 mg/ml, BioScience-Grade, sterile	n.d.	**2039.1**	10 ml	57,20
			2039.2	20 ml	74,75
			2039.3	100 ml	281,15
Gentamycin sulphate solution	50 mg/ml, CELLPURE®	<10 E.U./ml	**HN09.1**	20 ml	81,20
			HN09.2	100 ml	306,40
Gentamycin sulphate solution, sterile	50 mg/ml, BioScience-Grade, sterile	n.d.	**2475.1**	20 ml	80,55
			2475.2	100 ml	289,20
Hygromycin B solution	50 mg/ml, CELLPURE®	<10 E.U./ml	**CP12.1**	10 ml	107,40
			CP12.2	20 ml	184,90
Hygromycin B solution, sterile	50 mg/ml, BioScience-Grade, sterile	n.d.	**1287.1**	10 ml	92,35
			1287.2	20 ml	139,65
Penicillin G potassium salt	≥1550 U/mg, CELLPURE®	<0.25 I.U./mg	**HP49.1**	1 g	18,10
			HP49.2	10 g	34,30
			HP49.3	25 g	67,20
Penicillin G sodium salt	≥1550 U/mg, CELLPURE®	<0.25 I.U./mg	**HP48.1**	1 g	14,95
			HP48.2	10 g	30,65
			HP48.3	25 g	60,75
Streptomycin sulphate	≥720 I.U./mg, CELLPURE®	≤0.25 I.E./mg	**HP66.1**	10 g	25,70
			HP66.2	25 g	37,55
			HP66.3	50 g	60,75
Tetracyclin hydrochloride	≥900 µg/mg, CELLPURE®	≤0.5 I.E./mg	**HP63.1**	10 g	22,05
			HP63.2	50 g	77,95
Vancomycin hydrochloride	≥900 U./mg, CELLPURE®	≤0.33 E.U./mg	**0242.1**	250 mg	30,65
			0242.2	500 mg	50,00
			0242.3	1 g	89,80

For additional product data and safety information, see chapter Chemicals A-Z.

Pen/Strep-PreMix

CELLPURE®

For elimination and prevention of bacterial contamination in cell culture.

Danger H334-H302+H332-H317

Antibiotic compound of penicillin, streptomycin and stabilising sodium chloride for application in cell culture. The premixed powder is extremely stable during storage at room temperature and, due to the excellent solubility of the reagents in pyrogen-free water (e.g. Art. No. 3255.1), it can be mixed quickly to a 100x stock solution.

Penicillin inhibits cell wall biosynthesis in Gram-positive bacteria. Streptomycin produces the antibiotic effect in Gram-negative bacteria through inhibition of the translation.
The dissolved antibiotics are stable for approx. 3 days at 37 °C.
The final concentration of the 100x stock solution is:
Penicillin: 10.000 I.U. / ml
Streptomycin: 10 mg / ml
Sodium chloride: 0.9 %

Endotoxin content per vial: ≤210 I.U. complies ≤4.2 I.U. / ml

Application: The pack contains 2 vials with premixed powder for 2 times 50 ml 100x stock solution. 50 ml of the 100x stock solution can be obtained directly by adding 49.2 ml pyrogen-free water (Art. No. 3255).
We recommend application in a 1:100 dilution.
The stock solution mix (100 ml) is sufficient for 10 l medium.
Storage of stock solution: in 1-10 ml aliquots at -20 °C.
Comes with original seal.

Guarantee analysis:

Penicillin G sodium salt. ..... 312,5 mg/vial
Streptomycin. ..... 0,5 g/vial
Sodium chloride. ..... 0,45 g/vial
Endotoxins. ..... ≤210 I.U./vial
pH-value (stock solution in water). ..... 5,5 ±0,2

HP10.1	powder mix for 100 ml	plastic	57,95 €

▶ Detailed information on these antibiotics and their application, see page 1363

Amino Acids for Cell Culture

In addition to containing a defined amount of L-glutamine and other essential amino acids, cells in culture media require a series of other amino acids, such as additives to Iscove's Modified Dulbecco Media or nonessential amino acid mixtures to Minimum Essential Media (MEM). Only highly pure reagents tested for the absence of pyrogens/endotoxins can be used for the cell culture.

ROTH offers CELLPURE® grade amino acids with high purity and a guaranteed low endotoxin content.

Product	Purity	Art. No.	Pack Qty.	€
L-Alanyl-L-glutamine	≥99 %, CELLPURE®	**6831.1**	5 g	30,00
		6831.2	10 g	41,85
		6831.3	25 g	84,85
		6831.4	100 g	289,20
L-Arginine	≥99 %, CELLPURE®	**1655.1**	25 g	9,15
		1655.2	100 g	23,55
		1655.3	500 g	76,90
L-Arginine monohydrochloride	≥98,5 %, CELLPURE®	**1689.1**	25 g	14,55
		1689.2	100 g	24,20
		1689.3	500 g	80,55
L-Asparagine monohydrate	≥99 %, CELLPURE®	**KK37.1**	50 g	24,20
		KK37.2	250 g	83,75
		KK37.3	500 g	156,45
L-Aspartic acid	≥99 %, CELLPURE®	**1690.1**	25 g	13,15
		1690.2	100 g	23,55
		1690.3	500 g	78,40
L-Cysteine	≥99 %, CELLPURE®	**1693.1**	25 g	24,20
		1693.2	100 g	60,10
		1693.3	500 g	256,95
L-Cysteine hydrochloride monohydrate	≥99 %, CELLPURE®	**1694.1**	25 g	17,45
		1694.3	500 g	163,95
		1694.2	100 g	39,25
L-Cystine	≥98,5 %, CELLPURE®	**1695.1**	25 g	22,50
		1695.3	500 g	224,70
		1695.2	100 g	55,40
L-Glutamine	≥99 %, CELLPURE®	**HN08.1**	25 g	18,20
		HN08.2	100 g	34,30
		HN08.3	500 g	117,20
L-Glutamic acid	≥99 %, CELLPURE®	**1743.1**	25 g	13,45
		1743.2	100 g	21,40
		1743.3	500 g	67,20
L-Glutathione reduced	≥99 %, CELLPURE®	**6832.1**	2,5 g	23,35
		6832.2	5 g	33,25
		6832.3	10 g	51,10
		6832.4	25 g	103,10
Glycine	≥99 %, CELLPURE®	**HN07.1**	100 g	15,60
		HN07.2	500 g	42,50
		HN07.3	1 kg	77,30
L-Histidine	≥99 %, CELLPURE®	**1696.1**	25 g	24,20
		1696.2	100 g	52,60
		1696.3	500 g	220,95
L-Histidine hydrochloride monohydrate	≥99 %, CELLPURE®	**1697.1**	25 g	21,00
		1697.2	100 g	50,45
		1697.3	500 g	203,20
L-Isoleucine	≥99 %, CELLPURE®	**1698.1**	25 g	21,40
		1698.2	100 g	52,60
		1698.3	500 g	209,10
L-Leucine	≥99 %, CELLPURE®	**1699.1**	25 g	17,95
		1699.2	100 g	40,35
		1699.3	500 g	139,25
L-Lysine hydrochloride	≥99 %, CELLPURE®	**1700.1**	25 g	14,55
		1700.2	100 g	26,35
		1700.3	500 g	89,15
L-Lysine monohydrate	≥98,5 %, CELLPURE®	**6829.1**	25 g	46,15
		6829.2	100 g	84,40
		6829.3	250 g	360,15

Product	Purity	Art. No.	Pack Qty.	€
L-Methionine	≥99 %, CELLPURE®	**1702.1**	25 g	15,95
		1702.2	100 g	33,25
		1702.3	500 g	128,50
L-Ornithine monohydrochloride	≥99 %, CELLPURE®	**1703.1**	25 g	21,40
		1703.2	100 g	50,45
		1703.3	500 g	198,90
L-Phenylalanine	≥99 %, CELLPURE®	**1709.1**	25 g	18,20
		1709.2	100 g	40,75
		1709.3	500 g	161,15
L-Proline	≥98,5 %, CELLPURE®	**1713.1**	25 g	19,25
		1713.2	100 g	40,75
		1713.3	500 g	153,65
Roti®-CELL Glutamine solution	sterile, 200 mM, CELLPURE®	**9183.1**	100 ml	15,60
Roti®-CELL MEM-NEAA solution	sterile, 100x conc., 10 mM each, CELLPURE®	**9185.1**	100 ml	15,60
L-Serine	≥99 %, CELLPURE®	**1714.1**	25 g	23,15
		1714.2	100 g	56,45
		1714.3	500 g	231,15
L-Threonine	≥99 %, CELLPURE®	**1738.1**	25 g	17,95
		1738.2	100 g	36,05
		1738.3	500 g	142,90
L-Tryptophane	≥99 %, CELLPURE®	**1739.1**	25 g	26,80
		1739.2	100 g	79,05
		1739.3	500 g	327,90
L-Tyrosine	≥99 %, CELLPURE®	**1741.1**	25 g	21,75
		1741.2	100 g	56,90
		1741.3	500 g	239,20
L-Valine	≥99 %, CELLPURE®	**1742.1**	25 g	19,25
		1742.2	100 g	37,55
		1742.3	500 g	138,70

For additional product data and safety information, see chapter Chemicals A-Z.

Endotoxins (greek ἐndo [endo]=inner, within; τοξίνη [toxin]=poison, toxic substance).
Largest subgroup of **pyrogens** (greek πψροσ [pyros]=fire; γεννων [gennan]=to produce).
The terms **endotoxin** and **pyrogen** are often used synonymously.

Lipopoly saccharides from the outer cell membrane of gram-negative bacteria or blue-green algae. The pathological effects of **endotoxins** are microbial poisoning, septicaemia and lung disease. The lipid A contained in endotoxins is toxic to eukaryotic cells since it interacts with the cell membrane and affects the transcription of many proteins (e.g. tumour necrosis factor). It is, therefore, important to use reagents that are to a large degree free of endotoxins / pyrogens in the **cell culture.**

This can be verified by older test methods such as induction of fever in rabbits, the LAL test (the haemolymph of the horseshoe crab *limulus polyphemus* coagulates in the presence of endotoxins) or by using modern and animal-friendly methods such as monocyte activation or ELISA.

1 E.U. (Endotoxin Unit) = 1 I.U. (Internation Unit) = 1 USP.U. (United States Pharmocopeia Unit)

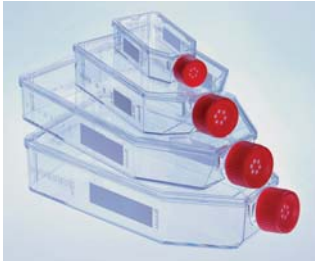
1 E.U. = approx. 0,1 ng endotoxin

Carbohydrates & Salts for Cell Culture

Product	Purity	Endotoxin content	Art. No.	Pack Qty.	€
Calcium chloride dihydrate	≥99 %, CELLPURE®	≤5.0 I.U./g	**HN04.1**	250 g	14,95
			HN04.2	500 g	24,20
			HN04.3	1 kg	36,45
D(+)-Glucose	≥99,5 %, CELLPURE®, anhydrous	≤1.25 I.U./g	**HN06.1**	250 g	12,70
			HN06.2	500 g	20,35
			HN06.3	1 kg	29,80
			HN06.4	5 kg	96,65
Magnesium acetate tetrahydrate	≥99 %, CELLPURE®	≤6.0 E.U./g	**HN11.1**	100 g	16,05
			HN11.2	500 g	42,90
			HN11.3	1 kg	67,65
Magnesium chloride hexahydrate	≥99 %, CELLPURE®	≤3.0 I.U./g	**HN03.1**	250 g	18,50
			HN03.2	500 g	27,10
			HN03.3	1 kg	41,40
Potassium acetate	≥99 %, CELLPURE®	≤6.0 E.U./g	**HN10.1**	250 g	21,00
			HN10.2	500 g	33,25
			HN10.3	1 kg	51,10
			HN10.4	2,5 kg	99,90
Potassium chloride	≥99 %, CELLPURE®	≤3.0 I.U./g	**HN02.1**	250 g	14,95
			HN02.2	500 g	19,90
			HN02.3	1 kg	31,40
			HN02.4	2,5 kg	59,05
Roti®-CELL Bicarbonate solution	sterile, 7,5 %, CELLPURE®	<1,0 E.U./ml	**9165.1**	100 ml	12,05
Roti®-CELL Glucose solution	sterile, 100 mg/ml, CELLPURE®	tested	**9155.1**	100 ml	26,80
Sodium acetate trihydrate	≥99,5 %, CELLPURE®	≤3.0 I.U./g	**HN05.1**	500 g	20,35
			HN05.2	1 kg	33,25
			HN05.3	2,5 kg	61,85
Sodium chloride	≥99,8 %, CELLPURE®	≤5.0 I.U./g	**HN00.1**	500 g	17,75
			HN00.2	1 kg	23,90
			HN00.3	5 kg	79,45
tri-Sodium citrate dihydrate	≥99 %, CELLPURE®	≤6.0 E.U./g	**HN12.1**	250 g	20,10
			HN12.2	500 g	35,40
			HN12.3	1 kg	56,45
			HN12.4	2,5 kg	110,20
Sodium hydrogen carbonate	≥99,5 %, CELLPURE®	≤6.0 I.U./g	**HN01.1**	500 g	14,20
			HN01.2	1 kg	21,20
			HN01.3	5 kg	66,15

For additional product data and safety information, see chapter Chemicals A-Z.

▶ Extensive labware for cell culture, see “Laboratory Requirements“ in the front part of this catalogue.



Programme extension!

S

Cell culture bottles with filter screw cap

By Greiner Bio-One. Made of **PS**. **Sterile**. Hydrophobic membrane (pore size 0.2 µm) for minimal risk of contamination and optimal gas exchange. Angled neck reduces the risk of media contact with the inside of thescrew cap and thus provides an additional layer of protection against contamination.

- Cell layers are easy to reach with the cell scraper
- Optimal access with pipette
- Graduations and labelling space on side
- Improved cell adherence through physical surface treatment
- Optimal gas exchange thanks to high air flow rate of membrane
- Additional standard screw caps (without filter) in every box
- **DNase, RNase and human DNA free**
- Endotoxin free, free of cytotoxic substances

Max. filling cap. (ml)	Working capacity (ml)	Growth surface (cm^2)	Art. No.	Pack Qty.	€
50	5-10	25	**CE48.1**	200 (20 x 10)	140,85
250	15-38	75	**CE49.1**	120 (24 x 5)	149,45
550	20-45	175	**CLY2.1**	50 (10 x 5)	107,40
650	20-85	175	**CE50.1**	40 (8 x 5)	90,30

S

Suspension culture bottles

By Greiner Bio-One. Made of **PS**. **Sterile.** With white screw cap. Ideal for suspension cultures through strongly hydrophobic surfaces. High, slanting bottle neck protects cap interior from contamination through medium. Bottles are graduated on the side and have a labeling area.
DNase-, RNase- and human DNA-free.
Endotoxin free, free of cytotoxic substances.

Max. filling cap. (ml)	Art. No.	Pack Qty.	€
50	**CE51.1**	200	130,10
250	**CE52.1**	120	131,15
650	**CE53.1**	40	88,80

Cell culture Multiwell plates

By Greiner Bio-One. Made of **PS**. **Sterile** (individually packed, cover plate for adherent cell cultures). TC-surface treated. Non-pyrogenic. **DNase-, RNase- and human DNA-free.** Alphanumeric well coding. F-bottom. Max. centrifuging: 4800 x g.

Wells	Growth surface per well (cm^2)	Working volume per well (ml)	Art. No.	Pack Qty.	€
6	9,6	2-5	**CE54.1**	100	177,40
12	3,9	2-4	**CE55.1**	100	224,70
24	1,9	0,5-1,5	**CE56.1**	100	198,90
48	1,0	0,5-1	**CE57.1**	100	263,40
96	0,34	0,025-0,34	**KL43.1**	100	213,95

Cell Passage

Roti®-CELL DPBS/EDTA

CELLPURE® sterile, 0,02 % EDTA (Versene®), w/o Ca/Mg

Balanced salt solution with EDTA for cell culture.

EDTA solution in DPBS

EDTA, a chelator of divalent cations, is used combined with trypsin prior to passaging in order to solubilize adherent cells from the culture vessel surface into suspension. EDTA binds calcium and magnesium which aid in cell-cell adhesion, additionally allowing trypsin to more efficiently hydrolyze specific peptide bonds.
Roti®-CELL DPBS/EDTA may also be used directly without addition of trypsine for very gentle cell dissociation. Versene® is a trade-marked name of EDTA.

For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

9135.1	100 ml	plastic	14,55 €

Roti®-CELL PBS/EDTA

CELLPURE® sterile, 0,046 % EDTA

Balanced salt solution with EDTA for cell culture.

EDTA solution in PBS

EDTA, a chelator of divalent cations, is used combined with trypsin prior to passaging in order to solubilize adherent cells from the culture vessel surface into suspension. EDTA binds calcium and magnesium which aid in cell-cell adhesion, additionally allowing trypsin to more efficiently hydrolyze specific peptide bonds.
Roti®-CELL PBS/EDTA may also be used directly without addition of trypsine for very gentle cell dissociation.

For research use only. Not approved for human or veterinary use, for application to humans or animals, or for use in clinical or *in vitro* diagnostics.

9152.1	500 ml	plastic	11,00 €

Trypsin

5000 USP-U/mg, free from salt

TSE-/BSE-free

Isolated from porcine pancreas, lyophilised.

M ~24,000 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334-H335-H315-H319

A pancreatic serine protease with a specificity for peptide bonds between basic amino acids arginine or lysine and another non-specific amino acid. Trypsin is frequently used to suspend cells which grow as monolayers on surfaces. Longer exposure to trypsin can damage cells, so that an inhibitor (serum or trypsin inhibitor from soya beans) should be added upon completion.
One USP Unit will cause an increase in absorption (253 nm) per minute of 0,003 at 25 °C and pH 7,6 using BAEE as substrate.
One (international) Unit (U, 255 nm, BAEE, pH 8) is approx. 90 USP U.
One TAME Unit is approx. 20 USP Units. One NF Unit is one USP Unit. Ten „BAEE Units“ are approx. 3,3 USP Units.

Application: pH optimum 7,2-8,5.

2193.1	100 mg	glass	26,35 €
2193.2	500 mg	glass	79,05 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Cell Passage and Use of Trypsin
Background and recommendations for cell passages plus protocol for trypsination

Trypsin

≥2500 USP-U/mg, cryst.

Isolated from porcine pancreas, lyophilised.

M ~24,000 g/mol

Storage temp.: +4 °C

Danger H334-H335-H315-H319

One USP Unit will cause an increase in absorption (253 nm) per minute of 0,003 at 25 °C and pH 7,6 using BAEE as substrate.
One (international) Unit (U, 255 nm, BAEE, pH 8) is approx. 90 USP U.
One TAME Unit is approx. 20 USP Units. One NF Unit is one USP Unit.
Ten „BAEE Units“ are approx. 3,3 USP Units.

5455.1	100 mg	glass	21,75 €
5455.2	1 g	glass	76,90 €

Trypsin inhibitor

≥10000 BAEE U/mg

Made from soy beans. High-activity inhibitor of trypsin, chymotrypsin, and other proteolytic enzymes.

Storage temp.: +4 °C

Trypsin inhibitor inhibits Trypsin with high effiency, and, to a lesser extent, chymotrypsin. Additionally, there is a light inhibiting effect on plasmin, kallikrein, thrombin and a few other proteolytic enzymes.
1 mg of lyophilisate inhibits at minimum 10.000 BAEE Units of trypsin.
Application in cell culture (stock solution 1 mg/ml): Following trypsination, add the same volume inhibitor solution as was used for trypsin. Zentrifuge cells (5 mins, 1000 rpm), and remove supernatant. Resuspend cells in medium and cultivate further.

Application:
Stock solution: 1-10 mg/ml in H_2O, PBS or other phosphate-buffers.
Solutions of higher concentration may be hazy and slightly yellow-coloured.
Storage of stock solution: in aliquots at -20 °C.
Recommended end concentration: 1-100 µg/ml.
pH optimum: pH 7.6 - 8.0.

2949.1	25 mg	plastic	28,70 €
2949.2	100 mg	plastic	71,50 €
2949.3	250 mg	plastic	149,45 €
2949.4	500 mg	plastic	252,65 €
2949.5	1 g	plastic	428,95 €

Trypsin inhibitor

salt free ≥7000 BAEE U/mg

Made from soy beans. Inhibition of trypsin, chymotrypsin, plasmin, kallikrein, thrombin and other proteolytic enzymes; free from salt.

Storage temp.: -20 °C • Transport temp.: room temp.

Application:
Stock solution: 10 mg/ml in H_2O or PBS.
Storage of stock solution: in aliquots at -20 °C.
Recommended end concentration: 2-100 µg/ml.

5279.1	100 mg		glass	17,10 €
5279.4	250 mg		glass	32,80 €
5279.5	500 mg		glass	54,75 €
5279.2	1 g		glass	92,35 €
5279.3	5 g	BIG PACK	glass	375,20 €

Cell Isolation

Ficoll® 400

for molecular biology and biochemistry

For density gradient centrifugation; ingredient of gel loading buffers. Non-ionic polymer of saccharose.

M ~400 000 g/mol

Ficoll® 400 is a hydrophilic copolymer of saccharose and epichlorohydrin, that readily solubilises in water and aqueous solutions. It may be solubilised at concentrations of up to 50 %, and is mainly used in the following applications:
A) In hybridisation buffer acc. to Denhardt, Ficoll® 400 reduces non specific binding of labelled DNA to the filter membrane.
B) In gel loading buffer it supports DNA application to agarose gels by increasing the density of the sample.
C) In continuous or discontinuous density gradients, Ficoll® 400 is used as matrix for fractioning of cells (e.g. lymphocytes) or sub-cellular particles, also taking advantage of its ability to stabilise membrane-coupled components and the functional as well as the morphological integrity of cells. Autoclavable at neutral pH.

CN90.1	10 g	plastic	36,55 €
CN90.2	25 g	plastic	76,95 €
CN90.3	100 g	plastic	246,05 €

Polysucrose 400

BioScience-Grade, for molecular biology and biochemistry

For density gradient centrifugation during cell separation and isolation of cell organelles.

Sucrose polymer, Sucrose-epichlorhydrin copolymer

$(C_{12}H_{22}O_{11})_n$ x $(C_3H_5ClO)_n$

M 450000 ±100000 g/mol

Storage temp.: +20 °C

Nonionic, synthetic copolymer from sucrose and epichlorohydrin. Ficoll® derivative. Solution of polysucrose 400 is used for separation of blood cells (mono nuclear cells, granulocytes, erythrocytes) via density gradient centrifugation, and for isolation of mononuclear cells from whole blood. Also well applicable for isolation of islets of Langerhans from pancreatic issue.

4668.1	10 g	plastic	26,35 €
4668.2	25 g	plastic	59,05 €
4668.3	100 g	plastic	198,90 €

Instructions for use
can be found on the Internet next to the product description.

ready-to-use

S

Roti®-Sep 1077

CELLPURE® for density gradient centrifugation

Polysucrose based medium for separation of lymphocytes from whole blood.

Polysucrose solution, lymphocyte separation medium

M ~400000 g/mol

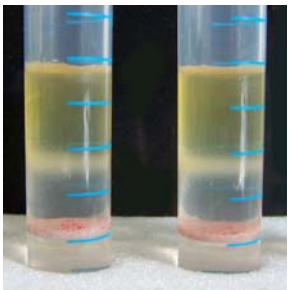
Storage temp.: +4 °C

Danger H317-H334

Ready-to-use and sterile. Separation medium based on polysucrose 400, for efficient isolation of lymphocytes by density gradient centrifugation. Density 1.077 g/ml. Best alternative to Ficoll®.

- Produces distinct, compact layers
- Results in high recovery rates of viable cells
- Maintains the representative ratio of B- to T lymphocytes
- May be directly applied to all protocols using Ficoll®

Roti®-Sep 1077 excels due to the superior separation power, forming very distinct, easy to pipet, lymphocyte layers during centrifugation. The ready to use solution is very easy in handling, resulting in high cell recovery rates, while cell viability and the representative ration of B- to T lymphocytes are maintained. Osmolality as well as pH value are strictly kept in the physiological range. Suitable for application with human peripheral blood. In all respective protocols originally using Ficoll® this reagent may be replaced by Roti®-Sep 1077 without any adjustment.



The **figure** depicts two specimens prepared with heparinic blood obtained from venous puncture. Density gradient centrifugation of 6 ml diluted whole blood (dilution in PBS 1:1.5), with 3 ml of Roti®-Sep 1077, 10 mins., 1000 g, no break.
Recommended long-term storage at approx. 4 °C. Short-term storage at ambient temperature possible. Store protected from light.

Type analysis:

Appearance of solution	clear, colourless
Density	1,077 ± 0,001 g/ml
pH value	7,15±0,35
Osmolality	315 ±25 mOsm/kg
Sterility	complies
Endotoxins	<0,1 E.U./ml
Suitability for cell cultur	complies

0642.1	100 ml	plastic	39,25 €
0642.2	500 ml	plastic	106,45 €

Transfection

ready-to-use

DOTAP

for transfection, CELLPURE®

$C_{43}H_{83}NO_8S$

M 774,21 g/mol

Storage temp.: +4 °C

Puritiy, QC: Controlled by TLC, NMR, standard transfection test with HeLa-, CV-1-cells. At least 99 %.
Stability: Minimum shelf-life 6 month at +4 °C.
Culture media: Suitable for whole and serum-free media.
Formulation: Transfection reagent DOTAP is an aqueous liposome formulation of N-[1-(2,3-**Di**o**l**eoyloxy)]-N,N,N-**t**rimethyl**a**mmonium **p**ropane methyl sulphate with a concentration of 1 mg/ml.

Successfully tested with the following cell types:
A375-C6, A549, B6.NOS, Balb/3T3, BalbSV, BHK, BNL CL.2, C2, C6, CaShi, CCRF-CEM/VLB, CHO, COS-1, COS-7, CV-1, D-17, DTM, EL-4, Fibroblasts, GSM06, H225, HEL, HeLa, Hepa 1-6, HepG2, HMEC-1, Hippocampal neurons, Huh7, I-3, I10, JEG-3, Jurkat, LH, Ltk, Lymphocytes, PBL, M17, MC57, MCF-7, MDA-MB-435, MEC-J, MH1C1, mhAT3F, mhAT3F, NG 108-15, NIH/3T3, PXF 1118, RASM, REF-1, Ret-1, ROS 17/2.8, SCC-13, SK-BR-3, Smooth muscle cells, ST33c, T2-Kb, U87, Vero, WI-38, Y1, *et al.*

Approx. 200 assays per ml in 24wells.

L787.1	0,5 ml	plastic	71,95 €
L787.2	1 ml	plastic	117,20 €
L787.3	5 x 1 ml	plastic	418,20 €

DEAE Dextran

for biochemistry

Transfection reagent

Diethylaminoethyldextran

M ~500000 g/mol

DEAE is the oldest transfection reagent known. The method of complexation of plasmid DNA with diethylaminoethyldextran has been published in 1968 by McCutchan. Positively charged DEAE binds negatively charged DNA to aggregates, which then bind to negtively charged surface structures of cell membranes. Uptake is done via endocytosis. This DEAE method needs only little amounts of DNA, while resulting in high transfection efficiency of up to 30 %. However, the cytotoxic effects caused by DEAE allow only transient transfections. The following cell lines are well transfectable: CV-1, BSC-1 and COS cells, and other stabile, insensitive cell lines.
Stock solution: 50 mg/ml in H_2O. Autoclave.
End concentration: 1 mg/ml (transfection for 30-90 min.) or 250 µg/ml (transfection for up to 8 h)

4198.1	25 g	plastic	51,50 €
4198.2	100 g	plastic	163,95 €

ready-to-use

Roti®-Fect RNAi Kit

for transfection, CELLPURE®

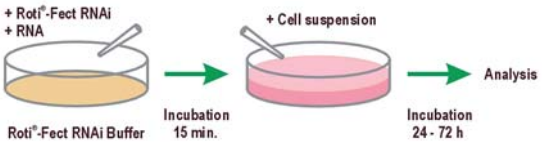
Reagent for transfection of mammalian cells with siRNA and miRNA, for efficient gene silencing.

Storage temp.: -20 °C • Transport temp.: room temp.

- Optimised RNA release into the cytosol
- High levels of gene silencing with low RNA concentration
- Efficient knockdown after 48 hours already
- No elaborate optimisation necessary
- Very low cell toxicity
- Suitable for cell lines and primary cells
- Straightforward, efficient protocol for whole medium included

New, powerful transfection reagent for liposoma mediated siRNA and miRNA transfection of all mammalian cells in culture. Liposoma formulation and enclosed buffer were specially established and designed for core parameters of RNAi: Most efficient quantitative endocytosis plus release of nucleic acids into the cytosol, without subsequent transport to the nucleus.
Roti®-Fect RNAi provides you with superior knockdown results, even using low amounts of RNA. Hereby, the Roti®-Fect technology guarantees minimisation of toxic effects during transfection, thus making these reagents suitable for very sensitive cell lines of primary cells.
The detailed instruction-for-use contains a standardised transfection protocol working via a definite RNA/liposoma ratio and providing good results starting with the very first assay - making elaborate optimisations of transfection obsolete. Evaluation of results is often possible after 48 hours, enabling two sequential assays per week.

Successfully tested with the following cell types:
Primary cells: MCS, M1
Cell lines: A549, 3T3-L1, B16F10, CHO-K1, H441, HT1080, HeLa, HeLa-KB, HepG2



The set contains:
0.2 and 1 ml, respectively, Roti®-Fect RNAi liposoma formulation (Art. No. 2911, may not be bought separately), and 0.4 and 2 ml, respectively, Roti®-Fect RNAi buffer (Art. No. 2913). Roti®-Fect RNAi buffer may be bought separately.

Approx. 250 assays per ml in 24wells. Dependend on the cell line used.

3129.1	1 mini set	plastic	97,30 €
3129.2	1 set	plastic	342,95 €

▶ Further details and figures on the Roti®-Fect transfection reagents online at www.carlroth.com / Life Science / Cell Biology / Transfection!

ready-to-use

Roti®-Fect Plus

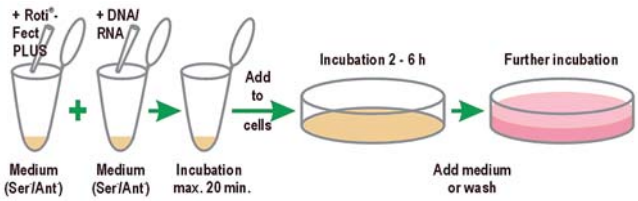
for transfection, CELLPURE®

Reagent for transfection of all eukaryotic cells in culture, particularly suited for hard-to-transfect cell lines.
Storage temp.: +4 °C

- Particularly low cell toxicity
- Superior transfection efficiency with all cell lines
- Especially recommended for hard-to-transfect cell lines
- Particularly suited for use with primary cells
- Excellent reproducibility
- No serum inhibition

Highly sophisticated transfection reagent for liposoma mediated transfection of eukaryotic cell lines and primary cells in culture. Roti®-Fect PLUS further reduces the toxic effects of transfection, making it a versatile tool for transfection of sensitive cell lines or primary cells.
Based on this, Roti®-Fect PLUS is also especially recommended for transfection prior to *in vivo* analyses (siRNA-Assays, *in vivo* life microscopy, etc.), since the transfection stress is minimized, reducing stress-dependent effects like the rate of apoptosis-induced cells. Additionally, the stability of nucleic acid/lipid complexes is diminished in comparison with Roti®-Fect, therefore improving the release of nucleic acids in the cell.
Thus, the newly established liposoma formulation of Roti®-Fect PLUS guarantees gentle and highly efficient transfections, even when hard-to-transfect or particularly sensitive cell lines are handled.

Successfully tested with the following cell types:
siRNA: 1BR3, HEK293, HeLa, LN-308, T98G. U87MG, UACC-257
Primary cells: 1BR3, 8VM, CGN, HMEC, HUVEC, PBMC, S15VM
Cell lines: 1BRneo, 143B, 293T, NSCLC, alphaTC1, B16-F10, BHK-21, C2C12, C6, CHO, CHO-K1, Colo205, COS-7, EVLC2, HaCaT, HAEC, HCT116, HEK293, HeLa, HepG2, Hep 3B, IMR32, Jurkat, Kelly, KG1, La1-5S, LN-308, M2-10B4, MDCK, MEF, MG-63, MIN6, MLEC32, mPAC, mpk-CCD, N18TG2, N2a, N-Tera2, NG NIH-3T3, Panc-1, PC 12, Phi-NX, Raji, RAW264.7, RD, RF24, RGE, S2, S91, SMA-560, SK-N-BE, SW480, T98G, U-2 OS, Vero, *et al.*



Approx. 500 assays per ml in 24wells. Dependent on the cell line used.

CL21.1	0,2 ml	plastic	85,90 €
CL21.2	1 ml	plastic	321,45 €

ready-to-use

Roti®-Fect

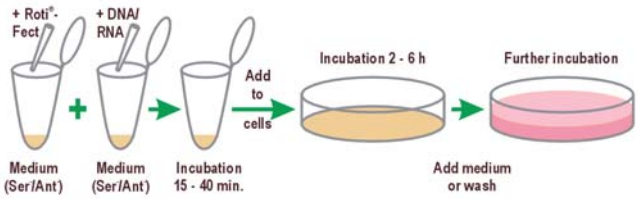
for transfection, CELLPURE®

Reagent for liposoma-mediated transfection of eukaryotic cells.
Storage temp.: +4 °C

- Highly efficient reproduction of DNA in mammal cells
- Excellent reproducibility
- High and wide operating plateau
- No inhibition through serum
- Low cell toxicity
- Successful with different cell lines
- Excellent transfection results

Roti®-Fect is a liposome formulation of a polycationic lipid in combination with a neutral colipid. Compared to monocationic lipid formulations, Roti®-Fect has a higher efficiency with lower levels being required. Its excellent reproducibility in combination with its high level of efficiency reduced optimisation work to a minimum. Because of its low toxicity, a wide range of cell lines can be transfected efficiently.
An efficient triple-cotransfection using Roti®-Fect is described in Ufartes, Schlüter, Kaulfuss and Seipp (2005) *Biospektrum* 4: 464-5.

Successfully tested with the following cell types:
siRNA: CEM, COS-7, ES-D3,HeLa, HL60, LNCaP, OVCAR3, PC3, SW620
Primary cells: pAML, pHDF, pMEF, pRHC, pSMC
Cell lines: 143B, 293-T, A-293, A-431, AM-C6SC8, BHK, BV-2, C2C12, C6, CHO, CHO-DHFR, COS-1, COS-7, CRFK, Colo-205, DU-145, ECV-304, EMC, F98 (glioma), GD25-ß1, HBL 100, HCT-116, HCT-15, HEK293, HeLa, HeLa-S3, Hep-3B, Hep-G2, HOSE, HSG, HT-22, HT-29, HUVEC, JURKAT, LLC-PK1, LS174T, LoVo, MCF-7, MDCK, MeWo, MV3, NIH-3T3, NS20Y, OK, P815, PC3, PT-11, Rcho-1, SAOS, SH-SY5Y, SK-MEL-28, SKOV-3, SM10, SW-480, THP-1, tsA201, U87 (glioma), Vero 76, *et al.*



Approx. 400 assays per ml in 24wells. Dependent on the cell line used.

P001.1	0,2 ml	plastic	64,40 €
P001.2	0,5 ml	plastic	143,55 €
P001.3	1 ml	plastic	224,70 €
P001.4	5 x 1 ml	plastic	977,20 €

Instructions for use
can be found on the Internet next to the product description.

ready-to-use

Roti®-Insectofect

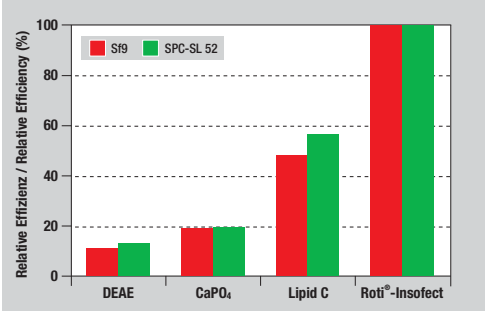
for transfection, CELLPURE®

For transfection of insect cells in culture.
Storage temp.: +4 °C

- No serum inhibition
- Superior transfection efficiency
- High and wide operating plateau
- Excellent reproducibility
- Very low cell toxicity
- Quick and easy handling

Recombinant proteins at a large scale can be manufactured under simple conditions in insect cell cultures with the non-human pathogenic baculovirus system and a simple scale-up procedure. Roti®-Insectofect enables best transfection results with a wide spectrum of activity and very low toxicity.
Roti®-Insectofect consists of an aqueous solution of polycationic lipids and was specially developed for liposome-mediated transfection of insect cells. Because of its special formulation, it has a much higher efficiency than standard transfectants, such as calcium-phosphate or DEAE.

Successfully tested with the following cell types:
Ag55, Anso, As43, Bm5, Cpp512, IPLB-SF21, LD652, Mos-20, S2, SF9, SL2.



Ideal for transfection of SF9, SL-3 and SPC-SL 52 cells. The **figure** shows evaluation of an X-Gal assay after transfection of β-Galactosidase-genes in SF9 and SPC-SL 52 cells.

Approx. 1000 assays per ml in 24wells.

AE29.1	0,5 ml	plastic	123,10 €
AE29.2	1 ml	plastic	188,15 €

Cell Analysis

Vitality Assay & Cell Counting

Neutral red (C.I. 50040)

p.a.
Indicator pH 6,8-8,0
Toluylene red
$C_{15}H_{17}ClN_4$
M 288,78 g/mol
Water-soluble vital staining dye.

T122.2	1 g	glass	19,90 €
T122.1	10 g	glass	50,45 €
T122.3	25 g	glass	100,55 €

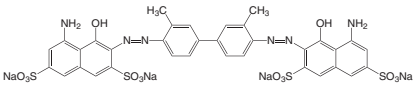
LOEFFLER's methylene blue solution

for microscopy and cell counting
Methylene blue solution 0,5 %

Warning H371

LÖFFLER'S methylene blue solution is used for staining bacteria, fungi and blood parasites in blood smears, e.g. together with carbolic fuchsine solution (Art. No. A130) for Ziehl-Neelsen staining (detection of TB bacteria). Furthermore, it is used as a vital staining agent for selective staining of nuclei during counting of eukaryotic cells.

AE64.1	500 ml	glass	22,80 €
AE64.2	1 l	glass	28,50 €
Original pack 6 x 1 l			27,08/1 l
AE64.3	2,5 l	plastic	59,05 €
Original pack 4 x 2,5 l			56,10/2,5 l



Trypan blue (C.I. 23850)

for microscopy and cell staining
For vital and histological staining.
Benzamine blue, Tolidin-diazo-bis-8-amino-1-naphthol-3,6-disulphonic acid tetrasodium salt
$C_{34}H_{24}N_6Na_4O_{14}S_4$
M 960,82 g/mol

Danger H350

Trypan blue is a protein staining azo dye used for vital staining (vitality test of cells), based on its selective ability to pass membranes of damaged cells. Used for polychromatic staining, e.g. to visualise collagen fibres in connective tissue.

Application:
Stock solution: 0.5 % in PBS or in NaCl solution (0.9 %).
Stabile for several months when sterile filtrated and stored at room temperature.
Working concentration: 0.1-0.2 % in PBS
Note:
Always keep bottles tightly closed.

CN76.1	10 g	glass	21,40 €
CN76.2	25 g	glass	38,60 €
CN76.3	50 g	glass	69,80 €

ready-to-use

S

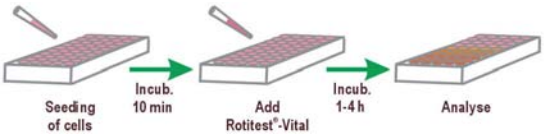
Rotitest® Vital

Rotitest® Bio Analysis

Colorimetric test solution for evaluation of cell proliferation and -viability.
Cell proliferation test solution
Storage temp.: +4 °C

- **Perfectly supersedes MTT**
- Most simple handling
- One-component-system without radioactivity
- For adherent and suspension cells
- Photometric result in 1 to 4 hours
- Strong correlation between absorbance and cell number
- Suitable for every culture media

Rapid and simple test system for non-radioactive quantitation of proliferating cells. Also well suitable for cytotoxicity assays.
The test solution is added directly to the cultivated cells in 96wells. During incubation for few hours, a water-soluble formazan dye is produced by viable cells, and is released into the surrounding medium. The resulting orange colour is measured photometrically (approx. 450 nm). Also suitable for culture media containing phenol red.



Sensitivity of the tetrazolium salt used is higher than that known for standard reagents such as MTT, XTT, MTS, or WST-1. Results were shown to be of highly stringent correlation with [^{3}H]-thymidine incorporation assays, therefore representing viability as well as proliferation status of the cells (Tominaga *et al.*, *Anal. Commun.* 1999 (36) 47-50).

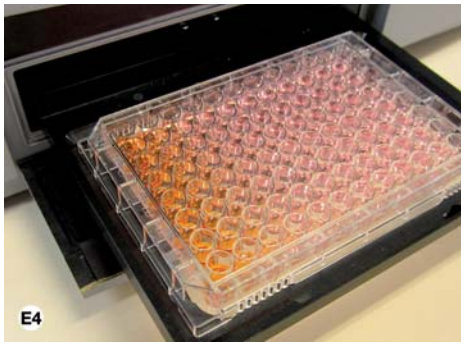


Fig. E: Example of use.

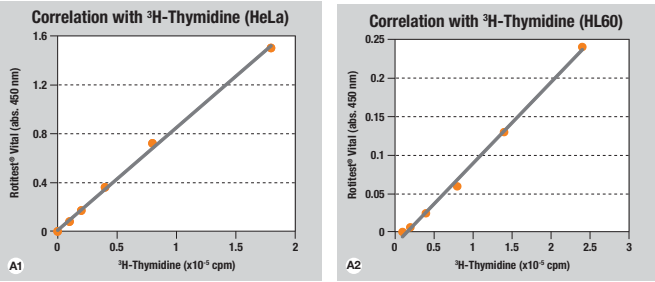


Fig. A: Correlation of cell counting results achieved with Rotitest® Vital (10 µl/well) and ^{3}H-Thymidine (37 KBq/well). HeLa (1, in DMEM) and HL60 cells (2, in MEM).

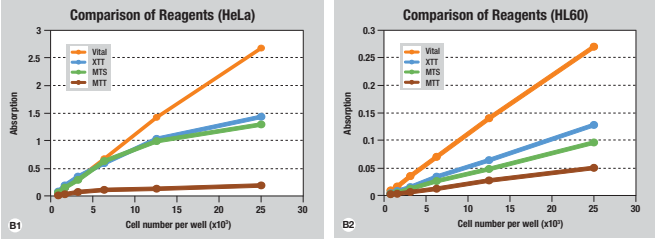


Fig. B: Comparison of cell counting results using Rotitest® Vital (10 µl/well) and other cell counting reagents. Photometrical measurement at 450 nm (Rotitest® Vital, XTT), 490 nm (MTS), and 570 nm (MTT). HeLa (1, in DMEM) and HL60 cells (2, in MEM).

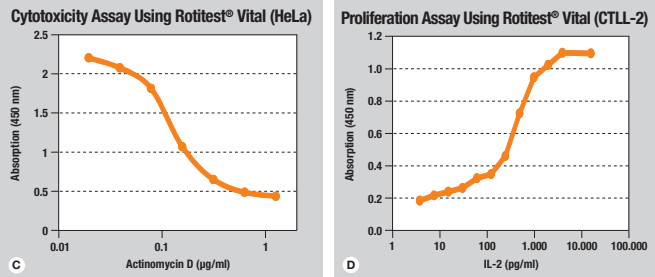


Fig. C: Measurement of cytotoxic effects of actinomycin D (exposition 24 h) on HeLa cells (in DMEM), assayed with Rotitest® Vital (10 µl/well).

Fig. D: Proliferation assay on CTLL-2 cells (in RPMI) under influence of humane IL-2 (exposition 72 h), using Rotitest® Vital (10 µl/well).

Each package contains simple-to-follow instructions-for-use.
Store at +4 °C protected from light. Do not freeze.
1 ml is sufficient for enumeration of 100 cell samples.

0069.3	1 ml	plastic	new size	55,80 €
0069.1	5 ml	plastic		160,20 €
0069.2	4 x 5 ml	plastic		482,70 €

Instructions for use
can be found on the Internet next to the product description.

Proliferation Assays

Our ROTI®Kits for EdU mediated detection of cell proliferation provide a superior alternative to time-consuming and less sensitive bromodeoxyuridine (BrdU) assays. Similar to BrdU assays, our assays utilise a uracil derivative (in this case ethynyldeoxyuridine, EdU) which is incorporated into the replicating DNA. EdU is not detected via antibodies; instead fluorescent dyes are coupled directly via click reaction.
This fast and elegant approach allows for direct labelling of replicating DNA with the desired fluorescent dye. Thus, the assay is perfectly adaptable to the present facilities and to the assay situation (e.g. for double or triple detection). Furthermore, the click reaction is highly selective and therefore prevents any unspecific labelling. The protocol includes only few steps and decreases the total amount of time.

- Highly reliable
- Easy to perform
- Fast detection procedure (only 30 min)
- Mild conditions (no DNA denaturation required)
- Modular system due to click chemistry
- Compatible with various dyes and readouts
- Compatible with multiplexing
- No cytotoxicity up to 1 mM EdU

ROTI®kit for Imaging

ready-to-use

For fast and simple detection of cell proliferation through fluorescence microscopy.
Storage temp.: see below, -20 °C/+4 °C • Transport temp.: cooled

Warning H315-H319-H400-H410

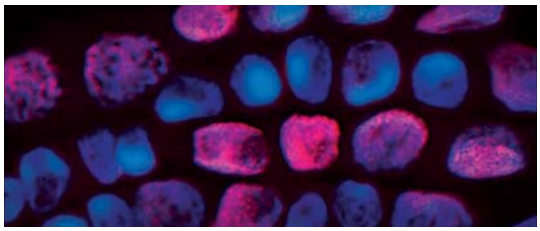


Figure: Proliferating tissue of barley meristem labelled via EdU Click-555 kit (Art. No. 7775.1). Dividing cells incorporated EdU and were labelled via click reaction with TAMRA (pink stained cells). Nuclei were counterstained with DAPI (blue). Magnification: 100x; Filterset: Sp. Aqua HC mFISH; Sp. Green HC mFISH.

The number at the end of the product name specifies the wavelength at which the included fluorescent marker is optimally excited.

For 100-500 Assays.

Components:

EdU. ..... 5 mg
Azide (10 mM in DMSO) Fluorescence labelled. ..... 130 µl
Buffer Additive. ..... 4 x 200 mg
DMSO. ..... 2 x 2 ml
Catalyst Solution. ..... 2 x 2 ml
Reaction Buffer. ..... 4 x 2 ml
Store at -20 °C (EdU, Azide, Buffer Additive); +4 °C (DMSO, Catalyst Solution, Reaction Buffer)

Product	Application	Art. No.	Pack Qty.	€
EdU Click-488	For 100-500 Assays.	**7773.1**	1 kit	335,40
EdU Click-555	For 100-500 Assays.	**7775.1**	1 kit	335,40
EdU Click-594	For 100-500 Assays.	**7776.1**	1 kit	331,10
EdU Click-647	For 100-500 assays.	**7777.1**	1 kit	331,10

ROTI®kit for Flow Cytometry

ready-to-use

Kit for detection of cell proliferation through Flow Cytometry.
Storage temp.: +4 °C • Transport temp.: cooled

H411-EUH208

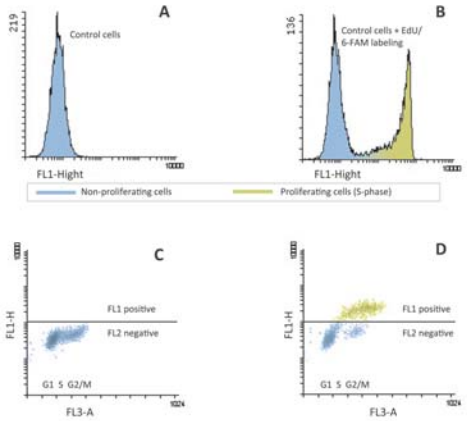


Figure: HeLa cells, treated without (A) and with (B) 10µM EdU for 2 h. Click reaction was performed using 6-FAM-Azide. A: negative control, cells without EdU incorporation. B: non-proliferating cells without EdU incorporation (blue coloured left peak) and proliferating cells (S-phase) having incorporated EdU and are labeled with 6-FAM Azide (green coloured right peak). Density blots of PI stained samples without (C) and with (D) EdU incubation and followed click reaction. The y-axis presents the FL1-Fluorescence intensity and the x-axis the content of DNA measured with FL3-area. Cell cycle phases are indicated as G1, S and G2/M phase.

The number at the end of the product name specifies the wavelength at which the included fluorescent marker is optimally excited.

For 50 assays.

Components:

EdU. ..... 10 mg
Azide (10 mM in DMSO) Fluorescence labelled. ..... 130 µl
DMSO. ..... 5 ml
Fixative Solution. ..... 5 ml
Saponin Reagent. ..... 50 ml
Catalyst Solution. ..... 2 ml
Buffer Additive. ..... 400 mg

Product	Application	Art. No.	Pack Qty.	€
EdU Click FC-488	For 50 assays.	**7779.1**	1 kit	342,40
EdU Click FC-555	For 50 assays.	**7780.1**	1 kit	342,40
EdU Click FC-594	For 50 assays.	**7781.1**	1 kit	342,40
EdU Click FC-647	For 50 assays.	**7783.1**	1 kit	342,40

ROTI®kit for High Throughput Screening

For fast and specific detection of cell proliferation in High Throughput Screening.
Storage temp.: see below, -20 °C/+4 °C
Transport temp.: cooled

Warning H315-H319-H411-EUH031

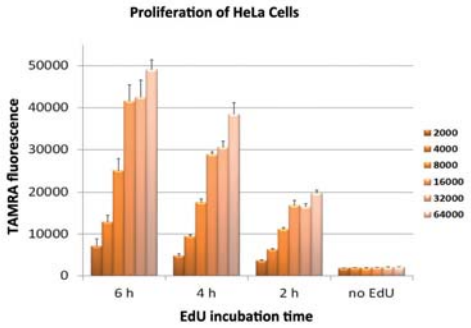


Figure: HeLa cells incubated without and with 10 µM EdU for 2, 4 or 6 h in 96 well plate. EdU incorporation was detected over time and for different cell numbers using a fluorescence plate reader.
Control: Without EdU no fluorescence was detected after 6 h incubation time.

The number at the end of the product name specifies the wavelength at which the included fluorescent marker is optimally excited.

For 200/400/2000 reactions or 2, 4, or 20 96well plates.

Components:

20x EdU ..... 2 ml
Azide (10 mM in DMSO) Fluorescence labelled. ..... 130 µl
Reaction Buffer ..... 10 ml
Catalyst Solution ..... 1 ml
Buffer Additive ..... 200 mg
Rinse Buffer ..... 6 ml
Store at +4 °C (Azide, Catalyst Solution); room temp. (Reaction Buffer, Buffer Additive, Rinse Buffer)

Product	Application	Art. No.	Pack Qty.	€
EdU Click HTS 2-488	For 200 reactions or 2x96 well plates.	**7786.1**	1 kit	192,45
EdU Click HTS 4-488	For 400 reactions or 4x96 well plates.	**7787.1**	1 kit	297,25
EdU Click HTS 20-488	For 2000 reactions or 20x96 well plates.	**7788.1**	1 kit	972,90
EdU Click HTS 2-555	For 200 reactions or 2x96 well plates.	**7789.1**	1 kit	190,85
EdU Click HTS 4-555	For 400 reactions or 4x96 well plates.	**7791.1**	1 kit	297,25
EdU Click HTS 20-555	For 2000 reactions or 20x96 well plates.	**7792.1**	1 kit	972,90
EdU Click HTS 2-594	For 200 reactions or 2x96 well plates.	**7793.1**	1 kit	190,85
EdU Click HTS 4-594	For 400 reactions or 4x96 well plates.	**7794.1**	1 kit	297,25
EdU Click HTS 20-594	For 2000 reactions or 20x96 well plates.	**7795.1**	1 kit	972,90
EdU Click HTS 2-647	For 200 reactions or 2x96 well plates.	**7796.1**	1 kit	190,85
EdU Click HTS 4-647	For 400 reactions or 4x96 well plates.	**7797.1**	1 kit	297,25
EdU Click HTS 20-647	For 2000 reactions or 20x96 well plates.	**7798.1**	1 kit	972,90

Instructions for use
can be found on the Internet next to the product description.

BrdU

5-Bromo-2'-deoxyuridine

≥99 %, for biochemistry
BrdU
$C_9H_{11}BrN_2O_5$
M 307,11 g/mol
Storage temp.: +4 °C

Warning H341-H351

3243.1	250 mg	glass	31,10 €

Roti®-Stock 10x PBST

BioScience-Grade, ready-to-use, filtered and steam sterilised

For protein biochemistry, cytology, and molecular biology.
PBST 10x ready-to-use solution
10fold stock solution phosphate buffered saline with Tween 20. Extremely versatile standard solution for protein biochemical detection systems, cytological staining and molecular-biological assays with similar fields of application as Roti®-Stock PBS.
With original seal.

Composition:
1,37 M NaCl, 27 mM KCl, 100 mM Na_2HPO_4, 20 mM KH_2PO_4, 0,5 % Tween 20 in deionised water, pH value 7,4, 0,2 µm filtered and steam sterilised

1059.1	1 l	glass	113,95 €
Original pack 6 x 1 l			108,25/1 l

Roti®-Histofix 4 %

acid free (pH 7), phosphate-buffered formaldehyde solution 4 %

Fixative for histology, stabilized with methanol.
Storage temp.: +15-25 °C

Danger H350-H341-H302-H317

For better sampling of liquid we offer suitable draincocks for the 10 l and 30 l standard canisters (Art. No. 5666.2).

P087.4	500 ml	plastic	9,60 €
P087.5	2,5 l	plastic	15,30 €
Original pack 4 x 2,5 l			14,54/2,5 l
P087.3	5 l	plastic	24,20 €
Original pack 2 x 5 l			22,99/5 l
P087.1	10 l	plastic	44,65 €
P087.2	30 l	plastic	117,20 €

Roti®-Mount FluorCare DAPI

for fluorescence microscopy

Aqueous mounting medium with antifading effect.
Contains DAPI for counterstaining.
Storage temp.: +4 °C

Roti®-Mount FluorCare DAPI is an aqueous mounting medium with antifading effect. Additional it contains ready-to-use DAPI allowing counterstaining of nuclei and mounting at the same time. DAPI has an excitation maximum at 359 nm and an emission maximum at 461 nm. Roti®-Mount FluorCare is also available with the dye propidiumiodide (HP21.1) and without dye (HP19.1).
Storage:
The solution should be stored at +4 °C in the dark.
Shelf life: minimum 1 year.

HP20.1	15 ml	dropp. bottle	62,90 €

Apoptosis Assay

ready-to-use

Rotitest®-Annexin V

Rotitest® Bio Analysis

For detection and enumeration of apoptotic cells and simultaneous differentiation from necrosis.

Annexin-FITC conjugate, Apoptosis detection Kit

Storage temp.: +4 °C

- Simple, rapid application
- For cultured and primary cells
- Discriminating between apoptotic and necrotic cells
- Result in approx. 30 minutes

Rapid and simple detection system of apoptotic cells, with simultaneous differentiation of necrotic cells.
During the first stages of apoptosis, phosphatidylserine (PS) is translocated from the inner membran layer to the outer surface of the cell. The Rotitest®-Annexin V Kit uses the Ca^{2+} dependent binding efficiency of Annexin V to PS in order to label cells with damaged cell membranes. Additionally, propidium iodide is used to counter stain nuclei of cells with opened membranes, hence those which undergo necrotic degradation. Thus, cells with yellow-green membrane staining only can be identified as apoptotic, while double stained cells (with yellow-green membranes plus orange-red nuclei) are classified as necrotic.
Analysis is performed via flow cytometry or fluorescence microscopy.
Each package contains simple-to-follow instructions-for-use.

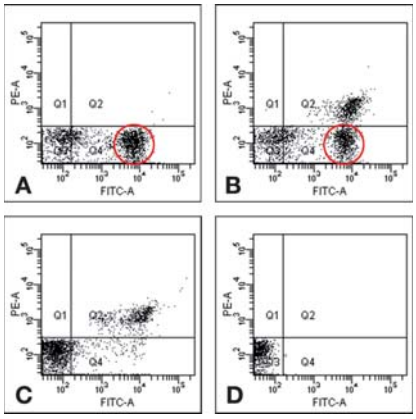


Figure 1:
Flow cytometry analysis of Jurkat cells. Assayed using $5x10^5$ cells in 500 µl Annexin binding buffer, 25 µl Annexin V-FITC conjugate and 25 µl propidium iodide solution, 15 min. RT.
FITC-A: FITC staining (binding of Annexin-FITC conjugate),
PE-A: Propidium iodide staining
A,B) Cells after induction of apoptosis by Staurosporin, under pure annexin-FITC staining (A) or under annexin-FITC / PI staining (B), respectively. C,D) Uninduced control cells under annexin-FITC / PI staining (C) and without staining (D), respectively.
Due to the binding of Annexin V to PS on the outer membrane surface, apoptotic cells are Annexin-FITC positive, but PI negative (Q4, circle). Q3 displays healthy cells (neg/neg), Q2 necrotic cells (Annexin-FITC pos and PI pos). Cells in Q1 (PI pos/ Annexin-FITC neg) are dead, non-apoptotic cells.

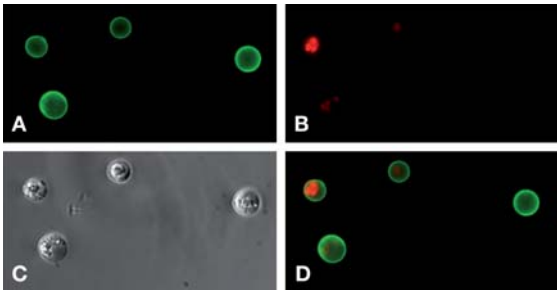


Figure 2:
Fluorescence microscopic analysis of Jurkat cells following induction of apoptosis by staurosporine. Assayed using 10^5 cells in 100 µl Annexin binding buffer, 5 µl Annexin V-FITC conjugate and 5 µl propidium iodide solution, 15 min. RT.
A) FITC fluorescence (green), B) propidium iodide fluorescence (red), C) bright field image, D) composite image. Apoptotic cells are FITC positive, PI negative. FITC pos/PI pos cells may be classified as being necrotic. Healthy cells are FITC/PI neg.

The kit contains:
Annexin V-FITC conjugate, propidium iodide solution,
Annexin V binding buffer, detailed instructions-for-use.
Excluding the columns, contents of this Kit may not be bought separately.
Store at +4 °C protected from light. Do not freeze.
1 set is sufficient for analysis of 50 samples of 10^5 cells each

Type analysis:

Appearance (test solution)	colourless to yellowish
Appearance PI solution	orange to red
Dye content	complies
Appearance Binding Buffer	colourless
pH value Binding Buffer	7,3-7,5

7735.1	50 Assays	195,55 €

▶ Specially coated sample slides see page 1286

Roti®-Stock 10x PBS

BioScience-Grade, ready-to-use, filtered and steam sterilised

ready-to-use S

For protein biochemistry, cytology, and molecular biology.

PBS 10x ready-to-use solution

10fold stock solution phosphate buffered saline. Very versatile standard solution for detection systems in protein biochemistry, cytological stainings and molecular biological assays.
With original seal.

Composition:

1.37 M NaCl, 27 mM KCl, 100 mM Na_2HPO_4, 20 mM KH_2PO_4 in deionised water, pH-value 7.4, 0.2 µm filtered and steam sterilised

1058.1	1 l	glass	106,45 €
Original pack 6 x 1 l			101,13/1 l

Instructions for use
can be found on the Internet next to the product description.

Blocking

ready-to-use

Roti®-ImmunoBlock

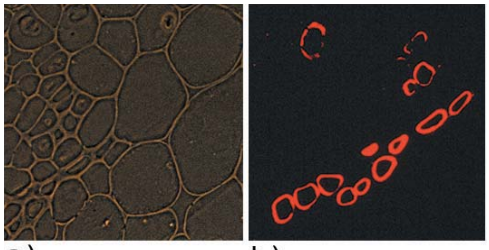
ready-to-use, 10x conc.

Protein free blocking reagent for immunocytological assays.

Suitable for
- Immunocytological assays
- Immunohistological assays
- Paraffin- and cryosections
- *in situ* hybridisation
- Cell culture samples
- Whole mount samples

Roti®-ImmunoBlock is an innovative blocking reagent on a polymer base without detergents and proteins.

This particular composition provides the following advantages:
- No contamination of your detection system through foreign proteins, reducing background and false-positive signals
- Specific binding signals are preserved whilst non-specific interaction is impeded, increasing the signal-to-noise ratio
- Ready-to-use solution for fast and easy applications



a.) b.)

Figure:
Scilla siberica: Cross section of a conducting bundle from the leaf. Immunofluorescent detection of a protein in sieve cells:
a) Phase contrast
b) Immunofluorescence, blocking with Roti®-ImmunoBlock

With kind permission of Dr. Deumling, MPI for Culture Research, Cologne.

T144.1	250 ml	glass	42,90 €

▶ Many further products for immunochemical detection see chapter Biochemistry/Western & ELISA and Histology.

Albumin, IgG free

>98 %, IgG-free, for biochemistry and molecular biology

Recommended as blocking and stabilising reagent in all antibody-mediated detection systems.

BSA, lyophilised, acetylated

M ~66 000 g/mol

Storage temp.: +4 °C

Protease-free

DNAse-free RNAse-free

Albumin, highly purified and tested for presence of immunoglobulins (IgGs), proteases, RNAse, and DNAse.
For purification of Albumin, IgG-free, an extensive heat-shock/diafiltration method is used, which has been shown to bring more highly purified products than the standard process acc. to Cohn.

3737.1	10 g	plastic	50,45 €
3737.2	50 g	plastic	139,65 €
3737.3	200 g	plastic	418,20 €
3737.4	500 g	plastic	865,40 €
Original pack 6 x 500 g			822,13/500 g

▶ Further albumins, powdered milk etc. see chapter Biochemistry/Western & ELISA.

Substrates for Immuno Detection

Carl Roth offers you a wide range of substrates for biochemistry, cellular biology and microbiology. The key substrates for immunochemical applications are summarised here.

For detailed information regarding usage, chemical details, safety instructions and further package sizes for these and many other substrates, refer to "**Substrates**" in the chapter Biochemistry or to Chemicals A-Z.

For Alkalic Phosphatase (AP)

Substrate	Application	Detection	Art. No.	Pack Qty.	€
BCIP-Natrium salt	western, *in situ*, histochemistry	colour (brown-violet)	**A155.1**	100 mg	25,70
			A155.2	500 mg	107,40
			A155.3	1 g	188,15
			A155.4	5 g	633,20
BCIP-Toluidin salt*	western, *in situ*, histochemistry	colour (brown)	**6368.1**	500 mg	33,25
			6368.2	1 g	63,45
			6368.3	5 g	241,90
NBT*	western, *in situ*, histochemistry	colour (brown-violet)	**4421.1**	100 mg	15,95
			4421.2	500 mg	40,75
			4421.3	1 g	77,30
			4421.4	5 g	274,15
Rose-phos-Toluidin salt	western, *in situ*, histochemistry	colour (pink)	**4247.1**	50 mg	43,55
			4247.2	100 mg	79,05

For additional product data and safety information, see chapter Chemicals A-Z.

For Horse Raddish Peroxidase (HRP)

Substrate	Application	Detection	Art. No.	Pack Qty.	€
DAB	western, *in situ*, histochemistry	colour (brown)	**CN75.1**	1 g	21,40
			CN75.2	5 g	67,65
			CN75.3	10 g	115,60

For additional product data and safety information, see chapter Chemicals A-Z.

Please note our **Technical Information Brochure** on the Internet next to the products:

Immunostaining by HRP and AP Protocols

Preparation for Microscopy

Roti®-Bond Adhesion Slides

Fast and highly efficient immobilisation of cellular material with optimal structure conservation.

The new adhesive coating of the Roti®-Bond adhesion slides reacts to natural surface structures of cells and tissues, anchoring them securely to the glass surface. Due to this procedure, based on different binding principles, the cells do not lose their antigenicity, their cell functionality and their three-dimensional structure.

- Assays using only several hundred cells possible
- No cell loss even during harsh incubation procedures
- Excellent recovery rate
- Compatible with all standard and modern assay systems and all fluorescent dyes
- Particularly adapted to assays using stem cells

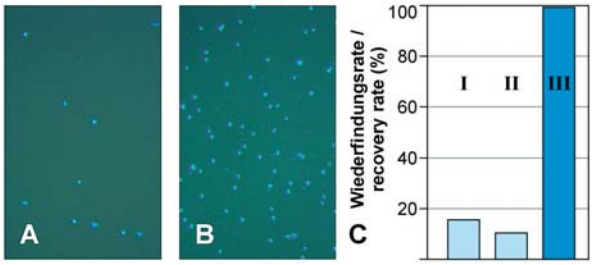


Figure:
Brand comparison of efficient cell immobilisation.
1800 murine myeloma cells in 30 µl PBS were applied to each slide. Cells were counted after full immunohistochemical assay including alkali treatment (70 mM NaOH, 150 mM NaCl, 40 % ethanol, 5 min, RT) and DAPI-counterstaining of the remaining nuclei.
A: Other adhesion slide,
B: Roti®-Bond Adhesion Slide,
C: Recovery rate in percent (I and II: other adhesion slides, III: Roti®-Bond)

Application:
Immobilisation of cells or tissue sections occurs immediately after contact to the glass surface. Drying of the samples is therefore not necessary. The cellular material can then be fixed with all common fixatives. Cell cultivation can be continued in appropriate culture medium after cell adhesion, allowing *in-vivo* live assays, e.g. with a multiphoton or laserscan microscope.
At present, there is no evidence of any preferential cell type binding in heterogenous cellular material.
Dimensions: L 75 mm x W 25 mm, thickness 1 mm

Roti®-Bond adhesion slides 50 and 100 are delivered in Rotilabo®-slide boxes.

Art. No.	Pack Qty.	€
CL20.1	5	11,75
CL20.2	50	84,85
CL20.3	100	118,25

Roti®-Liquid Barrier Marker, colourless

ready-to-use

For immunology, histology and molecular biology.
Glass bottle with brush.

Danger H225-H304-H315-H336-H411

The solution is applied to slides or other glass surfaces. After drying, a resistant hydrophobic film remains providing a barrier to aqueous liquids. Circles drawn with Roti®-Liquid Barrier Marker prevent aqueous solutions from spreading by increasing the surface tension of the water. Therefore expensive antibody solutions for example, can be used more effectively. The barrier film is resistant to ethanol and aceton, it can, however, be wiped off the glass surface with a dry cloth or a cloth impregnated with xylene.
Areas of applications: Ideal for immunological, histological and molecularbiological assays.
For use with solvents as ethanol or acetone.

AN91.1	10 ml		glass	31,10 €
AN91.2	5 x 10 ml	new size	glass	121,40 €

Roti®-Liquid Barrier Marker, red

ready-to-use

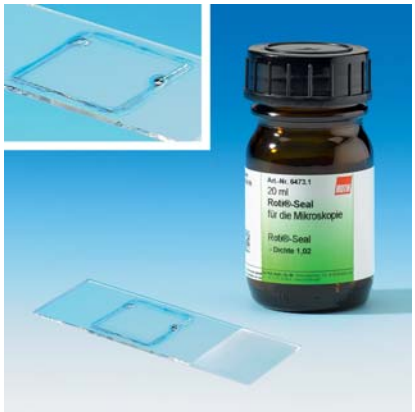
For immunology, histology and molecular biology.
Glass bottle with brush.

Danger H225-H304-H315-H336-H411

The solution is applied to slides or other glass surfaces. After drying, a resistant hydrophobic film remains providing a barrier to aqueous liquids. Circles drawn with Roti®-Liquid Barrier Marker prevent aqueous solutions from spreading by increasing the surface tension of the water. Therefore expensive antibody solutions for example, can be used more effectively. The barrier film can be wiped off the glass surface with a dry cloth or a cloth impregnated with xylene.
Areas of applications: Ideal for immunological, histological and molecularbiological assays.
For use without solvants as ethanol or acetone, for the red dye in the stained solution is not solvent resistant.

AN92.1	10 ml		glass	31,10 €
AN92.2	5 x 10 ml	new size	glass	121,40 €

▶ Further adhesion slides, coated, see page 277



Roti®-Seal

for microscopy

Aqueous cover slip sealant.

- Non-hazardous ingredients
- Solvent-free
- Solidification by light

Roti®-Seal is used to seal the edges of the coverslip. Therefore, it protects the mounted specimen reliably against damages caused by air humidity. Roti®-Seal is solid at room temperature. Prior to use it is melted on a water bath (max. 50-55 °C), then it is applied around the edges of the coverslip by using a pipette or a glass rod. Exposure to light (day-light is sufficient) allows the sealant to harden within a short time.
Melt on a water bath (50-55 °C) prior to use.

6473.1	20 ml	glass	10,25 €

Roti®-Mount FluorCare

ready-to-use

for fluorescence microscopy

Aqueous mounting medium with antifading effect.

Storage temp.: +4 °C

Roti®-Mount FluorCare has been developed especially for fluorescene microscopy and is compatible with all current fluorescent dyes. It is an aqueous mountant with an additional antifading reagent which reduces photobleaching drastically. Fluorescence will remain for many weeks. In contrast to other mounting media Roti®-Mount FluorCare does not show autofluorescence at any common wavelength.
Roti®-Mount FluorCare is also available with the dyes DAPI (Art. No. HP20.1) and propidiumiodide (Art. No. HP21.1) for simultaneous counter staining of nuclei.

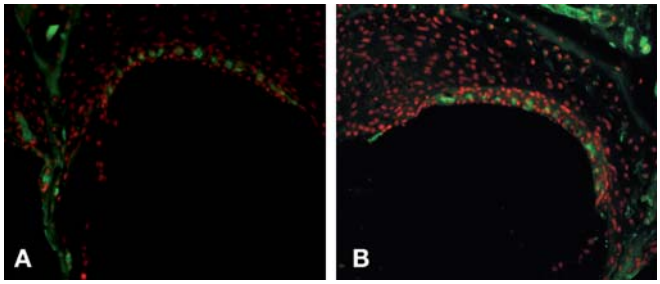


Figure:
Immunostaining of DNA adducts (red) and CNPase (green) in cryosections of the inner ear (stria vascularis) from mice
a) mounted in glycerol
b) mounted in Roti®-Mount FluorCare

With kind assistance of laboratory Dr. J. Thomale, DNA-Repair Group, Institute of Cell Biology, West German Cancer Centre Essen

HP19.1	15 ml	dropp. bottle	51,10 €

Roti®-Mount FluorCare DAPI

ready-to-use

for fluorescence microscopy

Aqueous mounting medium with antifading effect.
Contains DAPI for counterstaining.

Storage temp.: +4 °C

Roti®-Mount FluorCare DAPI is an aqueous mounting medium with antifading effect. Additional it contains ready-to-use DAPI allowing counterstaining of nuclei and mounting at the same time. DAPI has an excitation maximum at 359 nm and an emission maximum at 461 nm.

HP20.1	15 ml	dropp. bottle	62,90 €

Roti®-Mount FluorCare PI

ready-to-use

for fluorescence microscopy

Aqueous mounting medium with antifading effect.
Contains propidiumiodide (PI) for counterstaining.

Storage temp.: +4 °C

Roti®-Mount FluorCare PI is an aqueous mounting medium with antifading effect. Additional it contains ready-to-use propidiumiodide allowing counterstaining of nuclei and mounting at the same time. Propidiumiodide has an emission maximum of 535 nm and an emission maximum of 617 nm.

HP21.1	15 ml	dropp. bottle	62,90 €

NEW

ready-to-use

Demoslides Fluoro-4C

Reference sample for fluorescent microscopy

Glass slide with ready-to-use cell specimen.

Fluorescent preparation Fluoro-4C

Storage temp.: +4 °C

- 4 fluorochromes
- Planar and 3D cell structures
- Excellent signal output
- Good photo stability

Durable test preparation of neuronal cells of a murine cell culture. Contains the markers Tubulin-Cy2, Nestin-Cy3 and DCX-Cy5 and in addition DAPI-stained nuclei. The specimens show 3D-structures in form of cell aggregates (spherules) and a network of planar cells. There is an intracellular co-localization between Tubulin-Cy2 and DCX-Cy5.
Ideal for testing or calibration of confocal laser scanning microscopes and other fluorescent microscopes. Excellent signal output and good photo stability. Ready to use for microscopy.
For fine tuning of fluorescent microscopes.
Specimen stained with 4 fluorochromes.

8987.1	1 piece	258,00 €
8987.2	2 pieces	489,15 €

Microbiology

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Hygiene Monitoring 1293

Ready-Made Media
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- NEW Roti®-ContiPlates 1306
- Roti®-Aquatest Plates 1308
- Compact Dry 1311

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- ... for Microbiology 1315
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Media acc. to European Pharmacopoeia

Medium	Art. No.	acc. to Ph. Eur. 6.0 (2008)	acc to Ph. Eur. 6.0 (2008, Harmonized Method), 6.3 (2009), 7.0 (2011), or 8.0 (2014)
Antibiotic Medium No. 1	CL53	*not listed in this norm*	Antibiotic Agar No. 1 (Seed Agar) *(not list. in 8.0)*
Baird Parker Agar (Base)	X913	Agar Medium O	*not listed in this norm*
Brilliant Green Lactose Sucrose Agar	AE43	Agar Medium L	*not listed in this norm*
Brilliant Green Tetrathionate Bile Broth	AE42	Broth Medium I	*not listed in this norm*
CASO Agar	X937	Agar Medium B	Casein Soya Bean Digest Agar
CASO Broth	X938	Broth Medium A	Casein Soya Bean Digest Broth
CASO Broth, granulated	6678	Broth Medium A	Casein Soya Bean Digest Broth
Cetrimide Agar (Base)	X918	Agar Medium N	Cetrimide Agar
Columbia Agar (Base)	X919	Medium Q	Columbia Agar
Desoxycholate Citrate Agar	AE44	Agar Medium J	*not listed in this norm*
Lactose-Broth	X921	Broth Medium D	*not listed in this norm*
Lactose Sulphite Broth (Base)	AE46	Medium R	*not listed in this norm*
MacConkey Agar	X922	Agar Medium H	MacConkey Agar
MacConkey Broth	AE47	Broth Medium G	MacConkey Broth
Mannitol Salt Agar	CL81	*not listed in this norm*	Mannitol Salt Agar
Mossel EE Broth	AE65	Enriched Broth Medium E	Enterobacteria enrichment broth-Mossel
Peptone Water, buffered	AE67	Buffered Sodium Chloride-Peptone Solution pH 7.0	Buffered Sodium Chloride-Peptone Solution pH 7.0
Potato Extract Glucose Agar	X931	*not listed in this norm*	Potato Dextrose Agar
R2A Agar	CL01	Agar Medium S	*not listed in this norm*
Rappaport Vassiliadis Broth	CL03	*not listed in this norm*	Rappaport Vassiliadis *Salmonella* Enrichment Broth
Reinforced Clostridial Medium	AE66	Medium P	Reinforced Medium for *Clostridia*
Sabouraud 2 % Glucose Bouillon	AE23	*not listed in this norm*	Sabouraud Dextrose Broth
Sabouraud 4% Glucose Agar	X932	Agar Medium C	Sabouraud Dextrose Agar
Sabouraud 4% Glucose Agar (with chloroamphenicol)	AE48	Agar Medium C	*not listed in this norm*
Triple Sugar Iron Agar	AE49	Agar Medium M	*not listed in this norm*
Violet Red Bile Agar with Glucose and Lactose	AE45	Agar Medium F	*not listed in this norm*
Violet Red Bile Agar with Glucose	X939	*not listed in this norm*	Violet Red Bile Glucose Agar
XLD Agar	X941	Agar Medium K	Xylose, Lysine, Desoxycholate Agar

Standard Code Designations

Abbreviation	Broth/Agar	Art. No.
BCYE Agar	Legionella Agar	CL48
BHI	Brain Heart Infusion Broth	X916
BP	Baird Parker Agar	X913
BPLS	Brilliant Green Lactose Sucrose Agar	AE43
CASO	CASO Agar or Broth	X924, X925
CCDA	Campylobacter Agar	5756
CIN	Yersinia Selective Agar	5780
CLED	CLED Agar	2835
CN	Pseudomonas Selective Agar	CP67
CPLP	TAT Broth	3935
DG18	Dichlorane Glycerol Agar	AE26
DRBC	Dichlorane Bengal Red Agar	AE25
DRCM	Differential-Reinforced Clostridia Medium	CL78
GVCP Agar	Legionella Agar	CL48
mCP	m-CP Agar	CL55
MRS	MRS Agar or Broth	X924, X925
MYP	Mannitol Egg Yolk Polymyxin Agar	5765
PC	Plate Count Agar	X930
PCM	Plate Count Agar with milk	HP08
R2A	R2A Agar	CL01
RBC	Bengal Red Agar	AE24
RCM	Reinforced Clostridial Medium	AE66
RVS	Rappaport Vassiliadis Broth	CL03

Abbreviation	Broth/Agar	Art. No.
SMAC	Sorbitol MacConkey Agar	5778
TAT	TAT Broth	3935
TBA	Tryptone Bile Salts Agar	CP69
TBX	TBX chromogenic Agar	CL47
TSA	Trypton Soy Agar	CP70
TSB	CASO Broth	X938
TSB Agar	CASO Agar	X937
TSC	TSC Agar	CL51
VRBD	Violet Red Bile Agar with Glucose	X939
VRB	Violet Red Bile Agar with Lactose	X940
WPCA	Yeast Extract (Water Plate Count) Agar	CP63
XLD	XLD Agar	X941
YGC	Yeast Glucose Agar	CL00
YNB	Yeast Nitrogen Base	HP26

▶ Media for water analysis see page 1293

Review of Anhydrous Nutrient Media

		Media Specialised for...													
Art. No.	Medium	Pharm. Eur.	Water	Whole Germ	Coli	Clo & Bruc & Camp	Entero	Yeast & Mould	Lacto & Bac	Pseudo & Leg & Lis	Sal & Shig	Staph & Strep	Chromo	Special	Mol Biol
X967	2x YT Agar														
X966	2x YT Broth														
6676	2x YT Broth, granulated														
CP61	Acetamide Broth (Solution A)									Pseu					
CL53	Antibiotic Medium No. 1														
CL54	Antibiotic Medium No. 23														
CL79	Azide Dextrose Broth														
X913	Baird Parker Agar (Base)											Staph			
AE24	Bengal Red Agar (with chloroamph.) (RBC)														
CP62	Bile Esculine Azide Agar														
X914	Blood Agar (Base)											Strep			
8281	Blood Agar No.2 (Base)								Bac	Lis		Strep			
X915	Brain-Heart-Infusion Agar														
X916	Brain-Heart-Infusion Broth														
CL06	Brilliant Green Bile Broth														
AE43	Brilliant Green Lactose Sucrose Agar										Sal				
AE42	Brilliant Green Tetrathionate Bile Broth										Sal				
5752	Brucella Agar					Bru									
5754	Brucella Broth					Bru									
5756	Campylobacter Agar, blood-free (Base)					Camp									
8847	Campylobacter Selective Agar (Base) NEW					Camp									
2922	Candida chromogenic Agar														
X937	CASO Agar (Soy Broth, TSB Agar)														
8848	CASO Agar with Lecithin/Polysorbate 80 NEW														
X938	CASO Broth (Soy Broth, TSB)														
6678	CASO Broth, granulated (Soy Broth, TSB)														
0139	CASO Broth vegetal (Soy Broth, TSB)														
X918	Cetrimide Agar (Base)									Pseu					
2835	CLED Agar														
2836	CLED Agar plus														
2923	Coli Fluoro Broth														
8849	Coliforms chromogenic Agar (ISO) NEW														
CL45	Coliforms chromogenic Agar														
X919	Columbia Agar (Base)														
2997	Cronobacter chromogenic Agar														
8850	D/E Neutralizing Agar NEW														
AE44	Desoxycholate Citrate Agar										Sal, Shi				
AE25	Dichlorane Bengal Red Agar (with chloroamph.) (DRBC)														
AE26	Dichlorane Glycerol Agar (DG18) (Base)														
CL78	Differential Reinforced Clostridial Medium (DRMC)					Clo									
8295	DNase Test Agar											Staph			
8310	EC Broth														
X920	Endo Agar (Base)														
HP17	Fraser Broth (Base)									Lis					
HP18	Fraser Half Broth (Base)									Lis					
HP07	Gelatine Agar (DEV)														
CP64	King's B Medium (Base)									Pseu					
5758	Kligler Iron Agar														
X921	Lactose Broth										Sal				
CL76	Lactose Broth (DEV)														
CL77	Lactose Peptone Broth (DEV)														
AE46	Lactose Sulphite Broth (Base)					Clo									
CL80	Lauryl Sulphate Broth														
X965	LB Agar (Lennox)														
6671	LB Agar (Lennox), granulated														
0159	LB Agar (Lennox) vegetal														
X969	LB Agar (Luria/Miller)														
6675	LB Agar (Luria/Miller), granulated														
X964	LB Broth (Lennox)														
6669	LB Broth (Lennox), granulated														
0155	LB Broth (Lennox) vegetal														

X968	LB Broth (Luria/Miller)														
6673	LB Broth (Luria/Miller), granulated														
CL48	Legionella Agar (Base)									Leg					
5759	Letheen Agar modified														
5761	Letheen Broth modified														
3008	Listeria chromogenic Agar (Base)									Lis					
8322	Lysin Iron Agar										Sal, Shi				
X922	MacConkey Agar										Shi				
AE47	MacConkey Broth														
X923	Malt Extract Agar														
CP75	Malt Extract Broth														
CL81	Mannitol Salt Agar											Staph			
5765	Mannitol Egg Yolk Polymyxin Agar (Base)								Bac						
CP73	Marine Broth														
5766	Maximum Recovery Solution														
CL55	m-CP Agar					Clo									
3014	m-EI-chromogenic Agar (Base)														
AE65	Mossel EE Broth										Sal				
X924	MRS Agar								Lac						
HP65	MRS Agar pH 5.7								Lac						
X925	MRS Broth								Lac						
HP64	MRS Broth pH 5.7								Lac						
3026	MRSA chromogenic Agar (Base)											Staph			
X926	Mueller Hinton Agar											Staph			
X927	Mueller Hinton Broth														
8323	Mueller Kauffmann Broth (Base)										Sal				
X928	Nutrient Agar														
CL02	Nutrient Agar (DEV)														
CP66	Nutrient Agar (DEV/ISO)									Pseu					
X929	Nutrient Broth														
X974	NZCYM Broth														
X973	NZYM Broth														
HP09	Orange Serum Agar														
5767	Oxford Listeria Agar (Base)									Lis					
5768	Palcalm Listeria Agar (Base)									Lis					
X917	Peptone Water, buffered														
6680	Peptone Water, buffered, granulated														
AE67	Peptone Water, buffered (Ph. Eur.)														
X930	Plate Count Agar														
HP08	Plate Count Agar with Powdered Milk														
X931	Potato Extract Glucose Agar														
CP74	Potato Extract Glucose Broth														
3075	Pseudomonas chromogenic Agar									Pseu					
CP67	Pseudomonas Selective Agar (CN Agar) (Base)									Pseu					
CL01	R2A Agar														
CL03	Rappaport Vassiliadis Broth (RVS)										Sal				
8329	Rogosa Agar								Lac						
AE66	Reinforced Clostridial Medium (RCM)					Clo									
AE22	Sabouraud 2% Glucose Agar														
AE23	Sabouraud 2% Glucose Bouillon														
X932	Sabouraud 4% Glucose Agar														
X933	Sabouraud 4% Glucose Agar (with chloroamph.)														
AE48	Sabouraud 4% Glucose Agar (with chloroamph.) (Ph.Eur.)														
CL46	Salmonella chromogenic Agar										Sal				
X934	Salmonella Shigella Agar										Sal				
5771	Schaedler Agar														
5772	Schaedler Broth														
5774	Simmons Citrate Agar														
X935	Slanetz Bartley Agar											Strep			
CP68	Slanetz Bartley Medium (with tetrazolium chloride)														
AE27	SOB Broth														
5778	Sorbitol MacConkey Agar														
AE91	Standard Count Agar														
AE93	Standard Nutrient Agar I														
AE92	Standard Nutrient Broth I														
3935	TAT Broth (Base)														
CL47	TBX chromogenic Agar														
8333	TCBS-Agar														
X972	Terrific Broth														
0161	Terrific Broth vegetal														
HP61	Terrific Broth modified														
X936	Todd Hewitt Bouillon											Strep			
AE49	Triple Sugar Iron Agar (Base)										Sal				
CP69	Tryptone Bile Salts Agar (TBA)														
CP70	Tryptone Soy Agar (TSA)														

CP71	**Tryptophane Broth**														
CL51	**TSC Agar (Base)**					Clo									
CP65	**TTC Chapman Agar (with sod. heptadecylsulph.) (Base)**														
8337	**Universal Beer Agar (Base)**								Lac						
8320	**Urea Agar acc. to Christensen (Base)**										Sal, Shi				
3089	**UTI chromogenic Agar**											Staph			
X939	**Violet Red Bile Agar with Glucose (VRBD)**														
AE45	**Violet Red Bile Agar with Dextrose and Lactose**														
X940	**Violet Red Bile Agar with Lactose (VRB)**														
CL04	**Wort Agar (Base)**														
5779	**Wort Broth**														
X941	**XLD Agar**										Sal, Shi				
CP63	**Yeast Extract Agar**														
CL00	**Yeast Glucose Agar (with chloroamph.) (YGC)**														
HP26	**Yeast Nitrogen Base (without Amino Acids)**														
5780	**Yersinia Selective Agar (Base)**														
X971	**YPD Agar**														
X970	**YPD Broth**														

Legend:

Ph. Eur.	Media acc. to European Pharmacopeia
Water	Media for drinking water analysis
Whole Germ	Detection of whole germs or unspecific microorganisms
Coli	Detection of coliforms and *E. coli*
Clo & Bruc & Camp	Detection of *Clostridia*, *Brucella* or *Campylobacter*
Entero	Detection of enterobacteria
Yeast & Mould	Detection of yeasts or moulds
Lacto & Bac	Detection of lactobacilli or bacilli
Pseudo & Leg & Lis	Detection of pseudomonads, legionells or listeriae
Sal & Shig	Detection of salmonellae or shigellae
Staph & Strep	Detection of staphylococci or streptococci
Chromo	Chromogenic and fluorogenic media
Special	Media for special applications
Mol Biol	Media for applications in molecular biology

Nutrient Media for Water Analysis acc. to European Drinking Water Directives

Medium	Art. No.	Norms
Acetamide Broth (Solution A)	CP61	DEV, TWVO 2001, EN ISO 16266
Bile Esculin Azide Agar	CP62	DEV, TWVO 2001, ISO 7899-2
Brilliant Green Bile Broth	CL06	DIN 10172
Coliforms chromogenic Agar	CL45	-
Coliforms chromogenic Agar (ISO) NEW	8849	EN ISO 9308-1
EC Broth	8310	ISO 7251
Gelatin Agar (DEV)	HP07	DEV
King's B Medium (Base)	CP64	DEV, TWVO 2001, EN ISO 16266
Lactose Broth (DEV)	CL76	DEV
Lactose Peptone Broth (DEV)	CL77	DEV
Lauryl Sulphate Broth	CL80	APHA
Legionella Agar (Base)	CL48	EN ISO 11731-2
m-CP Agar	CL55	TWVO 2001
m-EI-chromogenic Agar (Base)	3014	-
Nutrient Agar (DEV/ISO)	CP66	DEV, TWVO 2001, EN ISO 16266
Nutrient Agar (DEV)	CL02	DEV, DIN 38 411
Pseudomonas Selektive Agar (CN Agar) (Base)	CP67	DEV, TWVO 2001, EN ISO 16266
R2A-Agar	CL01	Ph. Eur.
Rappaport Vassiliadis Broth (RVS)	CL03	Ph. Eur.
Salmonella chromogenic Agar	CL46	-
Slanetz Bartley Medium (with tetrazolium chloride)	CP68	DEV, TWVO 2001, ISO 7899-2
Standard Count Agar	AE91	-
Tryptone Bile Salts Agar (TBA)	CP69	DEV, TWVO 2001, EN ISO 9308-1
Tryptone Soy Agar (TSA)	CP70	DEV, TWVO 2001, EN ISO 9308-1
Tryptophane Culture Broth	CP71	DEV, TWVO 2001, EN ISO 9308-1
TSC Agar (Base)	CL51	DEV, EN ISO 7937
TTC Chapman Agar (with sodium heptadecylsulphate) (Base)	CP65	DEV, TWVO 2001, EN ISO 9308-1
Yeast Extract Agar	CP63	DEV, TWVO 2001, EN ISO 6222

Acc. to EN ISO 16266:2008 (replaces EN ISO 12780:2002), EN ISO 6222:1999, ISO 7899-2:2000, EN ISO 9308-1:2000, EN ISO 7937:2004

Hygiene Monitoring

In recent years, the prevention of infection, environmental-, residential- and communal hygiene have become very important even in day-to-day life. Today, hygiene monitoring equipment is installed, required and, in some cases, already prescribed by law in institutions, facilities and a variety of other areas. These include hospitals, rehabilitation clinics, ambulance services, blood donor services, drinking water supply systems, public swimming baths, sports facilities, schools, public offices, companies, hotels, gastronomy and canteens, food retailing, food-producing companies and ports.

The main emphasis of hygiene monitoring is on checking the results of cleaning and decontamination processes, e.g. in-house monitoring of food production and processing, determining the hygiene status of kitchens, sports facilities and sanitary facilities, checking the contamination status of air conditioning systems for the protection of employees and customers, and raising awareness of hygiene problems during training.

Roth offers a wide range of hygiene monitoring products which are quick and easy use even for novices.

- Easy and safe handling - also for laymen
- Simple interpretation
- Storage and transport at room temperature
- Suitable for hygiene monitoring and contamination survey wherever needed, for schooling and student's courses

Rotitest® Protein

Rotitest® Bio Analysis

ready-to-use

Protein detection system for rapid control of surfaces after the cleaning process.
Protein quick test
Storage temp.: +20 °C

Warning H226

- Most simple handling
- Result in 2 mins. maximum
- Definite interpretation through colour shift
- Well suitable for laymen

Rapid and simple test system for detection of protein contamination on surfaces. Optimal for hygiene control and testing of cleaning efficiency of table tops, sales counters, handles etc.

This Rotitest® Protein is very easy to apply: Using the integrated swab the respective surface is probed; pressing of the lid automatically drips the detection solution onto the swab head. Interpretation is simple due to the distinct colour shift from yellow-orange to dark green-blue. Results are available in 2 mins. maximum.

Each package contains simple-to-follow instructions-for-use.

Store at 15-25 °C protected from light. Do not freeze.
Suitable for testing of any surface.

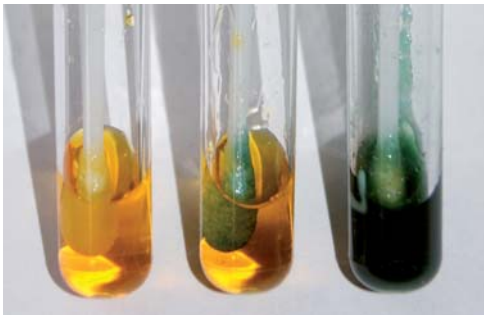


Figure:
Colour shift to dark green-blue caused by presence of proteins.

4803.1	20 swabs	84,40 €

ATP Measurement with a System: Lumitester plus LuciPac®

Lumitester PD30

By Kikkoman
Easy-to-use, lightweight luminometer for ATP measurement. For reliable monitoring of liquids, dry and wet surfaces as part of hygiene control in the manufacturing sector, in the foodstuffs and animal feed sector, in patients- and health care, in gastronomy and trade, in training and in many other areas.

- Lightweight and easy-to-use
- Fast and easy handling
- Highly sensitive, precise measurement of ATP and AMP
- Ready for use after 8 seconds
- Auto-calibration
- Definition of own limit values is possible
- Data transfer via USB to computer
- Documentation and analysis software (Excel-based) included

NEW with Lumitester PD30:
– 8 language display options
– Data analysis software allows to match the testing mode to the particular measurement situation
– Stand-up soft case included as accessory

Technical specifications:

Measurement duration	10 seconds
Display	LCD
Calibration	Auto-calibration
Port	USB
Temperature range	5 to 40 °C
Measurement date	Internal date and time
Data output	RLU (Relative Light Units)
Data memory	2000 analyses
Power supply	2 x AA alkaline cells or 2 x nickel-metal hybrid batteries
Outer dimensions (W x H x L)	65 x 32 x 175 mm
Weight	235 g (excluding batteries)

Mechanism: Both ATP (adenosine triphosphate) and the more stable form AMP (adenosine monophosphate) are found all living cells and, therefore, provide an exact and quantitative marker for the presence of bacteria, fungi or food residue. An enzyme/substrate complex in the LuciPac® Pen sampling tube reacts with both ATP *and* AMP to release bioluminescence whose intensity correlates directly with the quantity of ATP/AMP present. The Lumitester PD30 fully converts this bioluminescence into a measurement result and is, therefore, the most sensitive measuring system available today.

Thus, liquids and surfaces can be quickly and easily tested for contamination by foodstuffs and micro-organisms using the Lumitester PD30 and the LuciPac® Pen sampling pen. Within approximately 30 seconds, the Lumitester PD30 can provide information on hygiene status or the efficiency of cleaning and disinfection procedures. The system is easy and safe to operate, even by non-professionals. Simply insert the sampling tube and close the unit. Then press the *Enter* button, and the measurement result will be displayed within 10 seconds.

Suitable for use with LuciPac® Pen Aqua (Art. No. NC58) for monitoring liquids and with LuciPac® Pen (Art. No. NC59) for the analysis of surfaces.

Art. No.	Pack Qty.	€
NC57.1	1	1494,25

Lumitester PD20 Bag

Made by Kikkoman
Protective cover for safe-keeping of the Lumitester PD20 and accessories. Also suitable for Lumitester PD30.

Art. No.	Pack Qty.	€
NC61.1	1	33,25

Hygiene (greek ὑγιεινή τέχνη [hygieiné téchne] = conducive to health [art])
The word "hygiene" is a collective term applied to all measures for the prevention of infectious diseases and the spread thereof as well as for the preservation of health.
Hygiene is often used incorrectly as a synonym for cleanliness, which, however, represents only a small part of hygiene. On the contrary, hygiene is the science of applying measures for the protection of health.

LuciPac® Pen

Kikkoman for hygiene control

For testing for the contamination of surfaces by ATP/AMP measurement using Lumitester PD20 and PD30.

Storage temp.: +4 °C

For reliable monitoring of dry and wet surfaces in the manufacturing sector, in the foodstuffs and animal feed sector, in patients- and health care, in gastronomy and trade, in training and in many other areas.

- Quick and easy sampling
- Easy and quick measurement within seconds
- Sensitive and reproducible measurement

Using the LuciPac® Pen sampling pen, surfaces can be tested easily and quickly for contamination by bacteria, fungi and food residue. Organic contamination is indicated by the presence of ATP or AMP on these surfaces. An enzyme/substrate complex in the LuciPac® Pen sampling tube reacts with ATP and AMP to produce bioluminescence whose intensity correlates directly with the amount of ATP/AMP present. The Lumitester PD20 or PD30 then determines the bioluminescence as a direct measure of original contamination.
The unit is easy to operate, even by non-professionals. Just moisten the swab and swipe it across the surface. Then put the swab back into the tube and push it down into the reaction chamber. Shake the tube until the reagents are released and measure the bioluminescence in the Lumitester PD20 or PD30.

20 LuciPac® Pens each are packed in a resealable aluminium bag.
Store in a dark place.

NC59.1	20 pieces	Aluminium bag	89,80 €
NC59.2	100 pieces	Aluminium bag	385,95 €

LuciPac® Pen Aqua

Kikkoman for hygiene control

For testing for the contamination of liquids by ATP/AMP measurement using Lumitester PD20 and PD30.

Storage temp.: +4 °C

For reliable monitoring of liquids, e.g. contamination control of water and wastewater.

- Quick and easy sampling
- Exact sample volumes of 150 µl
- Easy and quick measurement within seconds
- Sensitive and reproducible measurement

Using the LuciPac® Pen Aqua sampling pen, liquids can be tested quickly and easily for organic contamination. The organic contamination of liquids, e.g. by bacteria, is indicated by the presence of ATP or AMP in these samples. An enzyme/substrate complex in the LuciPac® Pen Aqua sampling tube reacts with ATP and AMP to produce bioluminescence whose intensity correlates directly with the amount of ATP/AMP present. The Lumitester PD20 or PD30 then determines the bioluminescence as a direct measure of original contamination. The sampling comb ensures precise sampling of 150 µl with a deviation of ≤2 %. Test results are, therefore, highly reproducible and comparable.
The unit is easy to operate, even by non-professionals. Just immerse the sampling comb into the liquid. Then put the comb back into the tube and push it down into the reaction chamber. Shake the tube until the reagents are released and measure the bioluminescence in the Lumitester PD20 or PD30.
20 LuciPac® Pens Aqua each are packed in a resealable aluminium bag.
Store in a dark place.

NC58.1	20 pieces	Aluminium bag	89,80 €
NC58.2	100 pieces	Aluminium bag	385,95 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Lumitester PD30
Function and use (EN)

▶ Dip- and contact agar for detection of Legionells in water see page 1300

Lumitester LED Control Swab

By Kikkoman

The Lumitester LED control swab, once charged, produces a stable, exactly defined and calibrate light signal that can be used check the functioning of the Lumitester PD20 or PD30. The product illustration shows the LED control swab (back) in comparison with a LuciPac® Pen sampling tube.

Immediately before checking the Lumitester, connect the LED control swab to the power supply using the supplied charging cable and charge for 30 to 60 seconds. Then disconnect the LED control swab from the power supply and insert the LuciPac® Pen sampling tube into the cleaned measuring chamber of the Lumitester. The luminous energy emission is measured by pressing the *Enter* button.

Comparing the measurement result with the printed information indicates the condition of the unit. If the nominal value of 80 to 120 % is achieved, the Lumitester is in perfect working order. If not, please contact us to have the Lumitester and control swab recalibrated.

Art. No.	Pack Qty.	€
NC60.1	1	978,25

Monitoring of Pasteurised Milk

Rotitest® Phosphatase paper

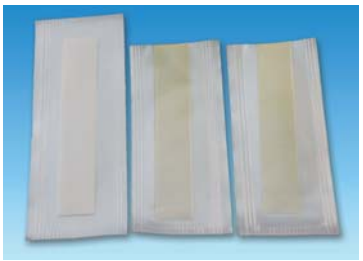
ready-to-use

Rotitest® Bio Analysis

For detection of phosphatase in Milk.

Storage temp.: +4 °C

Test paper for efficiency monitoring of milk pasteurisation.
The test paper, impregnated with detection reagent, is cut at one end and allowed to soak by dipping it into a sample of the milk to be analysed. During incubation at 37 °C for 2 hours in maximum, a yellow colouring shows presence of Alkalic Phosphatase, hence the non-efficient pasteurisation of the milk.



Sensitivity of the phosphatase test system is 0.5 % raw milk in pasteurised milk. This test system does not provide quantitative data.
One package contains 10 single welded test papers, impregnated with detection reagent.

Type analysis:

Paper colour. ..... white
Colour shift to yellow. ..... complies
Sensitivity. ..... complies

8470.1	10 pieces	18,85 €

Microbiology

Swab Tests

Rotitest® Listeria

Rotitest® Bio Analysis

Detection system for exclusion, or affirmation, of contamination by listeriae.
Storage temp.: +20 °C

- Most simple handling
- Definite interpretation through colour shift
- Well suitable for laymen

Simple test system for detection, or exclusion, of listeriae contamination on surfaces. Optimal for control and minimisation of the contamination risk caused by *Listeria ssp.*, particularly *L. monocytogenes*.
This Rotitest® Listeria is very easy to apply: Using the integrated swab the respective surface is probed and the swab is firmly pressed into the sterile nutrient medium. After incubation for 24-48 hours (37 °C) a distinct blackening of the medium indicates the presence of listeriae, hence the contamination of the respective surface.
Each package contains simple-to-follow instructions-for-use.
Note: This test system only allows exclusion, or affirmation, of a listeriae contamination per se. Quantitation is not possible.

Figure:
Colour shift to black caused by presence of listeria.
Store at 5-25 °C. Do not freeze.
Suitable for testing of any surface.

Type analysis:

Appearance (nutrient medium).	brown
Sterility test.	complies
Growth of bacterial test strains	complies

4805.1	25 swabs	117,20 €

Rotitest® Coliform

Rotitest® Bio Analysis

Detection system for exclusion, or affirmation, of contamination by coliforms.
Storage temp.: +20 °C

- Most simple handling
- Definite interpretation through colour shift
- Well suitable for laymen

Simple test system for detection, or exclusion, of coliform contamination on surfaces. Optimal for hygiene monitoring and for minimisation of the contamination risk caused by coliforms in general., particularly *E. coli*.
This Rotitest® Coliform is very easy to apply: Using the integrated swab the respective surface is probed and the swab is firmly pressed into the sterile nutrient medium. After incubation for 18-24 hours (37 °C) a distinct colour shift of the medium from purple to yellow indicates the presence of coliforms, hence the contamination of the respective surface.
Each package contains simple-to-follow instructions-for-use.
Note: This test system only allows exclusion, or affirmation, of a coliform contamination per se. Quantitation is not possible.

Figure:
Colour shift to yellow-orange caused by presence of coliforms.
Gas formation hints to presence of *E. coli*.
Store at 16-26 °C. Do not freeze.
Suitable for testing of any surface.

Type analysis:

Appearance (nutrient medium).	red-brown
Sterility test.	complies
Growth of bacterial test strains.	complies

4806.1	25 swabs	117,20 €

▶ Small incubator Heratherm IMC18 see page 932

▶ Cultura® M mini incubator see page 931

Please note:
The Rotitest® systems provide **non-quantitative data only**, and aren't equipped to measure any contamination magnitude.

EC Blue System

For qualitative and quantitative detection of Coliforms, and *E. coli* in particular, in water.

- Fast - results in just 24 hours
- Simple - easy to handle, even by non-professionals
- Safe - easy-to-interpret colour reaction
- Sensitive - 1 cfu/100 ml detection limit
- Efficient - simultaneous analysis of coliforms and *E. coli*
- Also suitable for chlorinated and turbid water

Quick and safe process for the analysis of coliform bacteria in general, and *E. coli* specifically in water. The test is also suitable for analysis of turbid water samples and water samples containing suspended matter. Bacteria stressed by chlorinated water can generally also be verified.
The formation of a blue to blue-green colour after incubation at 35 °C indicates the presence of coliform bacteria in the water. This colour change is due to an enzymatic colour reaction of the coliform-specific galactosidase with the chromogenic substrate X-Gal.

The presence of *E. coli* can easily be detected by the occurrence of fluorescence under UV light (see EC-Blue Mini UV lamp Art. No. KK49.1). Approximately 95 % of all *E. coli* strains produce the enzyme ß-glucuronidase, which reacts with an enzyme substrate contained in EC Blue to release a fluorescent dye.

Quantification is possible using EC Blue Quant/MPN (Art. No. 0199.1).

EC Blue 100P

NISSUI for water analysis

Pour 100 ml of the test water into a sterile container and dissolve the contents of a single-dose sachet of EC Blue 100P powder in it.
The EC Blue Comparator for 100 ml (Art. No. 0349.1) is available for the comparison of own samples with a slightly positive control.
EC Blue 100P saves space and cost thanks to its practical packaging in a blister pack. Store protected from light.
Dissolve a single-dose sachet of analysis reagent in 100 ml of test water.

0202.1	100 pieces	plastic	407,45 €

ready-to-use

EC Blue 100

NISSUI for water analysis

Add 100 ml of the test water to one bottle of EC Blue 100 and dissolve the powdered contents in the test water.
The EC Blue Comparator for 100 ml (Art. No. 0349.1) is available for the comparison of own samples with a slightly positive control.
EC Blue 100 saves time and preliminary work because the reagent mixture is provided in sterile test bottles for direct use. Store protected from light.
Add 100 ml sample water.

0209.1	80 pieces	plastic	579,45 €

ready-to-use

EC Blue 10

NISSUI for water analysis

Add 10 ml of the test water to one bottle of EC Blue 10 and dissolve the powdered contents in the test water.
The EC Blue Comparator for 10 ml (Art. No. 0349.2) is available for the comparison of own samples with a slightly positive control.
EC Blue 10 saves time and preliminary work because the reagent mixture is provided in sterile test bottles for direct use. Store protected from light.
Add 10 ml sample water.

7754.1	150 pieces	plastic	514,95 €

EC Blue Comparator

NISSUI for water analysis

1 bottle of *E. coli* positive control for EC Blue system, colour intensity "1 cfu".

Storage temp.: +4 °C

Positive control for the EC Blue System, colouration of 1 cfu (colony forming unit). The product illustration shows the comparator for 100 ml in comparison with 5 negative samples.
The presence of *E. coli* can easily be detected by the occurrence of fluorescence under UV light (see EC-Blue Mini UV lamp Art. No. KK49.1). Approximately 95 % of all *E. coli* strains produce the enzyme ß-glucuronidase. This enzyme hydrolyses the enzyme substrate MUG and thus releases a fluorescent dye that can be detected with UV light.

Store protected from light.

0349.2	10 ml	plastic	130,65 €
0349.1	100 ml	plastic	150,40 €

EC Blue Mini UV lamp

By Fujitsu
Small, handy UV lamp for quick and simple detection of *E. coli* bacteria in EC Blue assays.

Technical specifications:

Wave length	365 nm
Temperature range	0 to 40 °C
Outer dimensions (W x H x L)	52 x 21 x 160 mm
Demand	4 watt
Power supply	4 x AA alkaline cells
Weight	100 g (excluding batteries)

The presence of *E. coli* can easily be detected by the occurrence of fluorescence under UV light. Approximately 95 % of all *E. coli* strains produce the enzyme ß-glucuronidase, which reacts with an enzyme substrate contained in EC Blue to release a fluorescent dye.

Art. No.	Pack Qty.	€
KK49.1	1	120,95

EC Blue Quant/MPN

By NISSUI
For fast and easy quantification of coliform bacteria according to MPN(Most Probable Number Method), e.g. according to DIN EN ISO 9308-2:2014-06. Optimised for use with EC Blue 100 and 100P.

- Reproducible, precise results
- Detection limit 1 cfu/100 ml
- No pre-dilution required
- Test result after 24 hours
- Simultaneous quantitation of coliforms and *E. coli*
- Also suitable for chlorinated and turbid water

The unique, innovative design of the EC BlueQuant/MPN allows rapid and reliable processing of MPN tests – simple to operate and without any additional equipment, except an incubator. The method is based on the standardised MPN method that uses at least three different dilution levels in increments of 10 and 5 compartments per dilution. Testing with the EC BlueQuant/MPN does not require a series of dilutions. When pouring the mixture, due to the special layout, the compartments are filled in such a way as to ensure correct serial dilution. After incubating the sample for 24 hours at about 35 °C, the result can be read off the device and converted to cfu/ml using ISO standard tables (e.g. DIN EN ISO 9308-2:2014-06).

Presence of *E. coli* can easily be detected by the occurrence of fluorescence under UV light (see EC-Blue Mini UV lamp Art. No. KK49.1). Approximately 95 % of all *E. coli* strains produce the enzyme ß-glucuronidase, which reacts with an enzyme substrate contained in EC Blue to release a fluorescent dye.

Detection limit: 1 cfu/100 ml for coliforms and *E. coli*.
The set consists of 18 EC Blue Quant/MPN chambers including lids.

Size (L x W x H)	Art. No.	Pack Qty.	€
11 x 9 x 5 cm	**0199.1**	18	325,80

Roti®-DipSlides

Sterile dip slides with solid, ready-made culture medium for easy microbiological analysis of solutions and surfaces.

- **2 in 1:** DipSlide and contact agar
- Very easy application
- Reliable assay and easy interpretation
- Suitable for determination of the microbiological status and for hygiene control in a variety of domains
- Detailed Instructions-for-use included

Examples of use:

Dipping into liquid

Probing of surface

Roti®-DipSlides are made of a flexible plastic tongue which is coated with solid culture medium on both sides. Following dipping into the solution to be tested or inoculation by pressing to a surface, the slide is placed back into the sterile tube and incubated. Total area for analysis is 8 cm² per side. Ø tube 2,5 cm.
Please note: Larger quantities are produced freshly. Hence, longer delivery times may occur.

Art. No.	Agar 1	Agar 2	Detection of
2493	Plate Count Agar (PC)	Legionella Agar	whole germs + legionells
2924	Plate Count Agar (PC)	Violet Red Bile Agar with Glucose (VRBD)	whole germs + enterobacteria
2925	Plate Count Agar (PC)	Violet Red Bile Agar with Lactose (VRB)	whole germs + coliforms
2926	Plate Count Agar (PC)	Bengal Red Agar* (RBC)	whole germs + yeast/moulds
3934	Caso Agar with TTC	Bengal Red Agar (RBC) with antibiotics	whole germs + yeast/moulds
2927	Plate Count Agar (PC)	Plate Count Agar (PC)	whole germs
8023	D/E Neutralizing Agar	D/E Neutralizing Agar	whole germs after disinfection NEW
8715	Plate Count Agar (PC) NEW	Caso Agar with Lecithin/ Polysorbate 80	whole germs + whole germs after disinfection
2837	Nutrient Agar	Nutrient Agar with TTC	whole germs
2954	Violet Red Bile Agar with Glucose (VRBD)	Violet Red Bile Agar with Glucose (VRBD)	enterobacteria
2955	Violet Red Bile Agar with Lactose (VRB)	Violet Red Bile Agar with Lactose (VRB)	coliforms/*E. coli*
2956	Sabouraud 4 % Glucose Agar*	Sabouraud 4 % Glucose Agar*	yeast/moulds
2957	CLED Agar	MacConkey Agar	urinary tract bacteria + enterobacteria/coliforms
8045	MacConkey Agar	Cetrimide Agar	enterobacteria + pseudomonads NEW

*with chloroamphenicol

NEW

ready-to-use

S

Roti®-DipSlide D/Eneutral

ready-to-use, sterile, for microbiology

For total germ count on surface after disinfection. For hygiene monitoring. Contains 5 neutralizers.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Sodium bisulfite, Sodium thioglycolate, Sodium thiosulphate, Lecithin and Polysorbate 80 (Tween® 80) neutralise the growth-inhibiting impact of disinfectants and preservatives.
Both sides (D/Eneutral): D/E Neutralizing Agar (Art. No. 8850) for total germ count after disinfection. For hygiene monitoring.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar both sides (D/Eneutral):

Dextrose	10 g/l
Lecithin	7 g/l
Sodium thiosulphate	6 g/l
Casein peptone	5 g/l
Polysorbate 80	5 g/l
Yeast extract	2,5 g/l
Sodium bisulfite	2,5 g/l
Sodium thioglycolate	1 g/l
Bromocresol purple	0,02 g/l
Agar	15 g/l
pH value	7,6 ±0,2
Colour	purple
Growth of test strains	complies

8023.1	20 slides	box	56,45 €

▶ DipSlide Incubator EM4 see page 1373

▶ Cultura® M mini incubator see page 931

▶ More small incubators see page 932

Microbiology

NEW

ready-to-use

S

Roti®-DipSlide MacCon/Cetr

ready-to-use, sterile, for microbiology

For detection of enterobacteria like salmonellae or shigellae and pseudomonads in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Roti®-DipSlide MacCon/Cetr is suitable for the supervision of cooling and process water as well as of pool water (DIN EN ISO 16266) and for monitoring of the microbiological status of evaporative cooling systems and cooling towers (VDI guideline 2047, Federal Environment Ministry (BImSchG)).
Side 1 (MacCon): MacConkey Agar (Art. No. X922) for detection of enterobacteria/coliforms like salmonellae or shigellae.
Side 2 (Cetr): Cetrimide Agar (Art. No. X918) for detection of pseudomonads.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (MacCon):

Gelatine peptone	17,0 g/l
Meat and casein peptone	3,0 g/l
Lactose monohydrate	10,0 g/l
Sodium chloride (NaCl)	5,0 g/l
Bile salt (Cholate)	1,5 g/l
Neutral red	0,03 g/l
Crystal Violet	0,001 g/l
Agar	13,5 g/l
pH value	7,1 ± 0,2
Colour	violet-red
Growth of test strains	complies

Agar side 2 (Cetr):

Pancreas hydrolysate made from gelatin	20,0 g/l
Magnesium chloride	1,4 g/l
Potassium sulphate	10,0 g/l
Cetrimide	0,3 g/l
Agar	13,6 g/l
pH-value	7,2 ±0,2
Colour	opaque white
Growth of test strains	complies

8045.1	20 slides	box	56,45 €

NEW

ready-to-use

S

Roti®-DipSlide PCA/TSA-Letheen

ready-to-use, sterile, for microbiology

For total germ count in liquids or on surfaces. Suitable for analysis of cosmetics and of preservative containing products or after disinfection. Contains two neutralizers.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Roti®-DipSlide PCA/TSA-Letheen is suitable for 14-day controls of evaporative cooling systems (VDI guideline 2047).
Lecithin and Polysorbate 80 (Tween® 80) neutralise the growth-inhibiting impact of disinfectants and preservatives.
Side 1 (PCA): Plate Count Agar (acc. to APHA, ISO 4833:2003) (Art. No. X930) for total germ count.
Side 2 (TSA-Letheen): CASO Agar with Lecithin/Polysorbate 80 (Art. No. 8848) for detection of microorganisms from cosmetics and disinfected surfaces.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (PCA):

Casein peptone	5,0 g/l
Glucose	1,0 g/l
Yeast extract	2,5 g/l
Agar	15,0 g/l
pH value	7,0 ± 0,2
Colour	amber, slightly opalescent
Growth of test strains	complies

Agar side 2 (TSA-Letheen):

Pancreatic digest of casein	15,0 g/l
Soy peptone (papain hydrolysate)	5,0 g/l
Sodium chloride (NaCl)	5,0 g/l
Lecithin	0,7 g/l
Polysorbate 80	5 g/l
Agar	15,0
pH-value	7,2 ±0,2
Colour	amber, slightly opalescent
Growth of test strains	complies

8715.1	20 slides	box	56,45 €

Instructions for use
can be found on the Internet next to the product description.

Roti®-DipSlide PCA/Legionella

ready-to-use, sterile, for microbiology

For total germ count and for detection of legionells in solution or on surface.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Side 1 (PCA): Plate Count Agar (acc. to APHA, ISO 4833:2003) (Art. No. X930) for total germ count.
Side 2 (Legionella): Legionella Agar (acc. to ISO 11731-2) (Art. No. CL48) for selective detection of legionells.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (PCA):

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0
Colour	amber, slightly opalescent
Growth of test strains	complies

Agar side 2 (Legionella):

Yeast extract	10 g/l
Charcoal activated	2 g/l
GVPC selective additive	complies
Growth additive	complies
Agar	13 g/l
pH-value	6,9
Colour	black
Growth of test strains	complies

2493.1	20 pieces	box	56,45 €

Roti®-DipSlide PCA/Legionella is suitable for supervision of units for heating of drinking water (Drinking Water Regulations), for surveillance of ventilation and air conditioning, as well as for monitoring of the microbiological status of evaporative cooling systems.

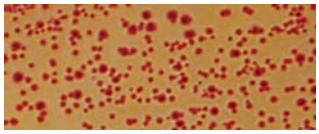
Roti®-DipSlide CASO-TTC/RBCenr

ready-to-use, sterile, for microbiology

For total germ count and for detection of yeasts and moulds in solution or on surface. Suitable for analysis of water-mixable cooling lubricants, air conditions, water-soluble paint, and cosmetics.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Side 1 (CASO-TTC): Tryptic Soy Agar (CASO) (Ph. Eur.) (Art. No. X937) for reliable total germ count.
Side 2 (RBCenr): enriched Bengal Red Agar (with antibiotics) for detection of yeasts and moulds.



E. coli (wild type) on agar supplemented with TTC (example).

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (CASO-TTC):

Caseine peptone	15 g/l
Soja peptone	5 g/l
Sodium chloride (NaCl)	5 g/l
TTC	0,02 g/l
Agar	15 g/l
pH value	7,3
Colour	amber, slightly opalescent
Growth of test strains	complies

Agar side 2 (RBCenr):

Meat peptone	5 g/l
Casein peptone	5 g/l
Glucose	40 g/l
Bengal red	0,05 g/l
Trimethoprim	0,03 g/l
Gentamycin	0,03 g/l
Agar	15 g/l
pH-value	7,2
Colour	intense pink
Growth of test strains	complies

3934.1	20 pieces	box	56,45 €

Roti®-DipSlide CASO-TTC/RBCenr is suitable for analysis of water-mixable cooling lubricants, air conditions, water-soluble paint, and cosmetics.

ready-to-use

Roti®-DipSlide PCA/RBCplus

ready-to-use, sterile, for microbiology

For total germ count and for detection of yeasts and moulds in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Side 1 (PCA): Plate Count Agar (acc. to APHA, ISO 4833:2003) (Art. No. X930) for total germ count.
Side 2 (RBCplus): Bengal Red Agar (with chloroamphenicol) (Art. No. AE24) for detection of yeasts and moulds.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (PCA):

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0
Colour	amber, slightly opalescent
Growth of test strains	complies

Agar side 2 (RBCplus):

Peptone	5 g/l
Glucose	10 g/l
Potassium phosphate	1 g/l
Magnesium sulphate ($MgSO_4$)	0,5 g/l
Chloroamphenicol	0,1 g/l
Bengal red	0,05 g/l
Agar	15 g/l
pH-value	7,2
Colour	intense pink
Growth of test strains	complies

2926.1	20 slides	box	56,45 €

ready-to-use

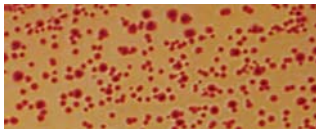
Roti®-DipSlide Nutrient-TTC

ready-to-use, sterile, for microbiology

For total germ count in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Side 1 (Nutrient): Nutrient agar for total germ count
Side 2 (Nutrient-TTC): Nutrient agar with TTC for reliable detection of all living micro-organisms by formazan caused staining (red) of all colonies.



E. coli (wild type) on agar supplemented with TTC (example).

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (Nutrient):

Meat peptone	5 g/l
Meat extract	3 g/l
Agar	12 g/l
pH value	7,0
Colour	amber, slightly opalescent
Growth of test strains	complies

Agar side 2 (Nutrient-TTC):

Meat peptone	5 g/l
Meat extract	3 g/l
TTC	0,05 g/l
Agar	12 g/l
pH-value	7,0
Colour	amber, slightly opalescent
Growth of test strains	complies

2837.1	20 pieces	box	56,45 €

Application:

- Remove carrier from sterile vial. Screw-cap serves automatically as holder.
- Press agar gently onto surface or immerse in liquid
- Replace carrier into vial and close cap
- Incubate vial with carrier at a temperature suitable for the bacteria

Important information on refrigerated transports

All products identified as being particularly temperature-sensitive are shipped in **special ice boxes with freezer packs or in dry ice.**
Additional costs resulting from such, **will be invoiced** (further informations on request).

Please note:
In order to guarantee optimum product quality, the dispatch of refrigerated transport products will be carried out **on Mon and Tue only outside Germany!**
Slight delays in delivery are therefore possible.

Roti®-DipSlide PCA

ready-to-use, sterile, for microbiology

For total germ count in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Both sides (PCA): Plate Count Agar (acc. to APHA, ISO 4833:2003) (Art. No. X930) for total germ count.
Expiration time on request.
Do NOT freeze!

Formulation:

Agar both sides (PCA):

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0
Colour	amber, slightly opalescent
Growth of test strains	complies

2927.1	20 slides	box	56,45 €

Roti®-DipSlide Sab4plus

ready-to-use, sterile, for microbiology

For detection of yeasts and moulds in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Both sides (Sab4plus): Sabouraud 4 % Glucose Agar (with chloroamphenicol) (Art. No. X933) for detection of yeasts and moulds.
Expiration time on request.
Do NOT freeze!

Formulation:

Agar both sides (Sab4plus):

Meat and casein peptone	10 g/l
Glucose	40 g/l
Chloroamphenicol	0,5 g/l
Agar	15 g/l
pH value	5,6
Colour	amber, slightly opalescent
Growth of test strains	complies

2956.1	20 slides	box	56,45 €

Roti®-DipSlide CLED/MacCon

ready-to-use, sterile, for microbiology

For detection of bacteria of the urinary tract and of enterobacteria/Coliforms in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Side 1 (CLED): CLED Agar (Art. No. 2835) for detection of bacteria of the urinary tract.
Side 2 (MacCon): MacConkey-Agar (Ph. Eur.) (Art. No. X922) for detection of enterobacteria/Coliforms.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (CLED):

Casein peptone	4 g/l
Gelatine peptone	4 g/l
Beef extract	3 g/l
Lactose	10 g/l
L-Cysteine	0,128 g/l
Bromothymol blue	0,02 g/l
Agar	15 g/l
pH value	7,3
Colour	green
Growth of test strains	complies

Agar side 2 (MacCon):

Gelatin peptone (Pancreas hydrolysate)	17 g/l
Meat and casein peptone	3 g/l
Lactose monohydrate	10 g/l
Bile salt (Cholate)	1,5 g/l
Sodium chloride (NaCl)	5 g/l
Neutral red	0,03 g/l
Crystal Violet	0,001 g/l
Agar	13,5 g/l
pH-value	7,1
Colour	violet-red
Growth of test strains	complies

2957.1	20 slides	box	56,45 €

For easy interpretation of results, use the following table:

No. of colonies	Result	Interpretation
0	Negative	No contamination
1-10	Weakly positive	Weak contamination
11-20	Positive	Low contamination
21-100	Strongly positive	High contamination
>100	Highly positive	Very high contamination

Detection limit is 10^2 cfu/ml solution assayed.

For detailed instructions on interpretation see instruction-for-use.

Roti®-DipSlide PCA/VRB

ready-to-use, sterile, for microbiology

For total germ count and for detection of Coliforms in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Side 1 (PCA): Plate Count Agar (acc. to APHA, ISO 4833:2003) (Art. No. X930) for total germ count.
Side 2 (VRB): Violet Red Bile Agar with Lactose (Art. No. X940) for detection of Coliforms.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (PCA):

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0
Colour	amber, slightly opalescent
Growth of test strains	complies

Agar side 2 (VRB):

Yeast extract	3 g/l
Pancreas hydrolysate made from gelatin	7 g/l
Sodium chloride (NaCl)	5 g/l
Bile salts	1,5 g/l
Lactose	10 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH-value	7,4
Colour	purple-red
Growth of test strains	complies

2925.1	20 slides	box	56,45 €

Roti®-DipSlide PCA/VRBD

ready-to-use, sterile, for microbiology

For total germ count and for detection of enterobacteria in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Side 1 (PCA): Plate Count Agar (acc. to APHA, ISO 4833:2003) (Art. No. X930) for total germ count.
Side 2 (VRBD): Violet Red Bile Agar with Glucose (Ph. Eur.) (Art. No. X939) for detection of enterobacteria.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar side 1 (PCA):

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0
Colour	amber, slightly opalescent
Growth of test strains	complies

Agar side 2 (VRBD):

Yeast extract	3 g/l
Pancreas hydrolysate made from gelatin	7 g/l
Sodium chloride (NaCl)	5 g/l
Bile salts	1,5 g/l
Glucose monohydrate	10 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH-value	7,4
Colour	purple-red
Growth of test strains	complies

2924.1	20 slides	box	56,45 €

Roti®-DipSlide VRB

ready-to-use, sterile, for microbiology

For detection of Coliforms in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Both sides (VRB): Violet Red Bile Agar with Lactose (Art. No. X940) for detection of Coliforms.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar both sides (VRB):

Yeast extract	3 g/l
Pancreas hydrolysate made from gelatin	7 g/l
Sodium chloride (NaCl)	5 g/l
Bile salts	1,5 g/l
Lactose	10 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH value	7,4
Colour	purple-red
Growth of test strains	complies

2955.1	20 slides	box	56,45 €

Roti®-DipSlide VRBD

ready-to-use, sterile, for microbiology

For detection of enterobacteria in liquids or on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Sterile dip slides with solid culture medium for easy microbiological analysis of solutions and surfaces.
Both sides (VRBD): Violet Red Bile Agar with Glucose (Ph. Eur.) (Art. No. X939) for detection of enterobateria.

Expiration time on request.
Do NOT freeze!

Formulation:

Agar both sides (VRBD):

Yeast extract	3 g/l
Pancreas hydrolysate made from gelatin	7 g/l
Sodium chloride (NaCl)	5 g/l
Bile salts	1,5 g/l
Glucose monohydrate	10 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH value	7,4
Colour	purple-red
Growth of test strains	complies

2954.1	20 slides	box	56,45 €

Roti®-ContiPlates

Sterile culture medium contact plates for the microbiological analysis of surfaces.

NEW

Example of use:

The plate is gently pressed onto the surface for some seconds. Afterwards the plate is closed with the lid and incubated.
Please note: Larger quantities are produced freshly. Hence, longer delivery times may occur.

- Diameter 60 mm
- Very easy application
- Domed agar surface especially suitable for testing specimen surfaces
- Prepared with our tried and tested dehydrated media mixtures
- Grid on the bottom of the plate for easy interpretation
- Each plate can be obtained individually without contaminating the other plates
- Detailed Instructions-for-use included

Art. No.	Abbreviation	Agar	Application
9630	PCA	Plate-Count-Agar	Whole germs
9631	VRBD	Violet Red Bile Agar with Glucose	Enterobacteria
9632	RBC	Bengal Red Agar (with chloroamphenicol)	Yeasts and moulds
9633	Sab4plus	Sabouraud 4 % Glucose Agar (with chloroamphenicol)	Yeasts and fungi
9634	TSA-Letheen	CASO Agar with Lecithin/ Polysorbate 80	Whole germs after disinfection
9635	mCP	m-CP Agar	*Clostridium perfringens*

NEW

ready-to-use

S

Roti®-ContiPlate m-CP

ready-to-use, sterile, for microbiology

For enumeration of *Clostridium perfringens* on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

The m-CP Agar (Art. No. CL55) is recommended by TWVO for enumeration of Clostridium perfringens.
Expiration time on request. Do NOT freeze!

Formulation:

Saccharose	5 g/l
L-Cysteine hydrochloride	1 g/l
Magnesium sulphate heptahydrate	0,1 g/l
Tryptose	30 g/l
Polymyxin B sulphate	0,025 g/l
Bromocresol purple	0,04 g/l
Iron(III)-chloride hexahydrate ($FeCl_3 \cdot 6 H_2O$)	0,09 g/l
Chromogene Mixture	0,16 g/l
D-Cycloserine	0,4 g/l
Yeast extract	20 g/l
Agar	15 g/l
pH value	7,6 ±0,2
Colour	violet
Growth of test strains	complies
Diameter	60 mm

9635.1	20 pieces	box	39,80 €

NEW

ready-to-use

S

Roti®-ContiPlate VRBD

ready-to-use, sterile, for microbiology

For detection of enterobacteria on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

The Violet Red Bile Agar with Glucose (Art. No. X939) is recommended by Pharm. Eur. and ISO 21528 for enumeration of enterobacteria.
Expiration time on request. Do NOT freeze!

Formulation:

Glucose monohydrate	10 g/l
Gelatine peptone	7 g/l
Sodium chloride (NaCl)	5 g/l
Yeast extract	3 g/l
Bile salts	1,5 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH value	7,4 ±0,2
Colour	purple-red
Growth of test strains	complies
Diameter	60 mm

9631.1	20 pieces	box	39,80 €

NEW

ready-to-use

Roti®-ContiPlate RBC

ready-to-use, sterile, for microbiology

For counting yeasts and moulds on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Danger H318-H350

The Bengal Red Agar (with chloroamphenicol) (Art. No. AE24) is recommended for enumeration of yeasts and moulds.
Expiration time on request. Do NOT freeze!

Formulation:

Glucose	5 g/l
Peptone	10 g/l
Potassium phosphate	1 g/l
Magnesium sulphate ($MgSO_4$)	0,5 g/l
Chloroamphenicol	0,1 g/l
Bengal red	0,05 g/l
Agar	15 g/l
pH value	7,2 ±0,2
Colour	intense pink
Growth of test strains	complies
Diameter	60 mm

9632.1	20 pieces	box	39,80 €

NEW

ready-to-use

Roti®-ContiPlate Sab4plus

ready-to-use, sterile, for microbiology

For selective detection of yeasts and pathogenic fungi on surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

Danger H350

The Sabouraud 4 % Glucose Agar (with chloroamphenicol) (Art. No. X933) is recommended for selective isolation of yeasts and pathogenic fungi.
Expiration time on request. Do NOT freeze!

Formulation:

Glucose	40 g/l
Meat and casein peptone	10 g/l
Chloroamphenicol	0,5 g/l
Agar	15 g/l
pH value	5,6 ±0,2
Colour	amber, slightly opalescent
Growth of test strains	complies
Diameter	60 mm

9633.1	20 pieces	box	39,80 €

NEW

ready-to-use

Roti®-ContiPlate PCA

ready-to-use, sterile, for microbiology

For total germ count on surfaces.

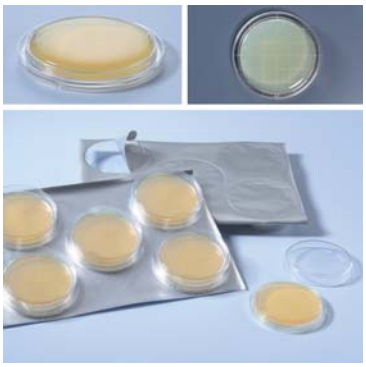
Storage temp.: +4-15 °C • Transport temp.: cooled

The Plate Count Agar (Art. No. X930) is recommended by APHA and ISO 4833 for total germ count.
Expiration time on request. Do NOT freeze!

Formulation:

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0 ±0,2
Colour	amber, slightly opalescent
Growth of test strains	complies
Diameter	60 mm

9630.1	20 pieces	box	39,80 €



NEW

ready-to-use

Roti®-ContiPlate TSA-Letheen

ready-to-use, sterile, for microbiology

For detection of microorganisms on disinfected surfaces.

Storage temp.: +4-15 °C • Transport temp.: cooled

The TSA-Letheen Agar (Art. No. 8848) is recommended for detection of microorganisms in presence of preservatives or after disinfection.
Expiration time on request. Do NOT freeze!

Formulation:

Pancreatic digest of casein	15 g/l
Soy peptone (papain hydrolysate)	5 g/l
Sodium chloride (NaCl)	5 g/l
Lecithin	0,7 g/l
Polysorbate 80	5 g/l
Agar	15 g/l
pH value	7,2 ±0,2
Colour	amber, slightly opalescent
Growth of test strains	complies
Diameter	60 mm

9634.1	20 pieces	box	39,80 €

Roti®-Aquatest Plates

Sterile culture medium plates for the microbiological analysis of liquid samples.

NEW

- Diameter 55 mm
- Easy application
- Optimal for membrane filtration method
- Also applicable for the microbiological analysis of samples in general
- Prepared with our tried and tested dehydrated media mixtures
- Each plate can be obtained individually without contaminating the other plates
- Detailed instructions-for-use included

The germs of expected low-germ liquid samples are concentrated by membrane filtration. Afterwards, the membrane is placed on top of the medium and incubated.
Using a membrane with a grid helps counting the resulting colonies.

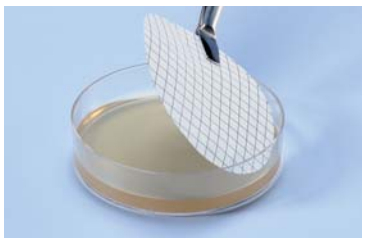


Fig.: Example of use of Roti®-Aquatest Plate PCA

Samples which are expected to have a higher microbiological burden are prepared in a serial dilution. Afterwards, every dilution step is plated and incubated. The number of grown colonies is noted as result.
Please note: Larger quantities are produced freshly. Hence, longer delivery times may occur.

Art. No.	Abbreviation	Agar	Application
9640	PCA	Plate-Count-Agar	Whole germs
9641	Colichrom	*E. coli* and Coliforms chromogenic Agar	*E. coli* and Coliforms
9642	YE	Yeast extract Agar	Bacteria, Yeast, Moulds and moulds
9643	Sab4	Sabouraud 4 % Glucose-Agar	Yeast and fungi
9644	R2A	Reasoner's 2A Agar	Heterotrophic bacteria
9646	Cetr	Cetrimide Agar	*Pseudomonas aeruginosa*
9648	Strep	Slanetz-Bartley Agar	Faecal streptococci
9649	mCP	m-CP Agar	*Clostridium perfringens*
9650	Staph	Mannitol Salt Agar/ Chapman Agar	Pathogenic staphylococci

NEW

ready-to-use

S

Roti®-Aquatest Plate PCA

APHA, ISO 4833, ready-to-use, sterile, for microbiology

For enumeration of the aerobic microbial flora.

Storage temp.: +4-15 °C • Transport temp.: cooled

The Plate Count Agar (Art. No. X930) is recommended by APHA and ISO 4833 for total germ count.
Expiration time on request. Do NOT freeze!

Formulation:

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0 ±0,2
Colour	amber, slightly opalescent
Growth of test strains	complies
Diameter	55 mm

9640.1	20 pieces	box	30,65 €

NEW

ready-to-use

S

Roti®-Aquatest Plate Colichrom

ready-to-use, sterile, for microbiology

For detection and enumeration of *E. coli* and other coliforms.

Storage temp.: +4-15 °C • Transport temp.: cooled

The Coliforms chromogenic Agar (Art. No. CL45) is recommended for detection of *E. coli* and other Coliforms.
Expiration time on request.Do NOT freeze!

Formulation:

Sodium chloride (NaCl)	5 g/l
Casein, enzymatically digested	3 g/l
di-Sodium hydrogen phosphate	2,7 g/l
Sodium dihydrogen phosphate	2,2 g/l
Sodium pyruvate	1 g/l
Tryptophane	1 g/l
Sorbitol	1 g/l
Chromogene Mixture	0,4 g/l
Sodium heptadecyl sulphate (Tergitol-7)	0,15 g/l
Vancomycin	0,005 g/l
Cefsulodin	0,005 g/l
Agar	10 g/l
pH value	6,8 ±0,2
Colour	amber
Growth of test strains	complies
Diameter	55 mm

9641.1	20 pieces	box	73,65 €

Roti®-Aquatest Plate YE

DEV, ISO 6222, ready-to-use, sterile, for microbiology

For enumeration of microorganisms in general, e.g. bacteria, moulds or yeast.

Storage temp.: +4-15 °C • Transport temp.: cooled

The Yeast Extract Agar (Art. No. CP63) is recommended for enumeration of microorganisms in general.
Expiration time on request. Do NOT freeze!

Formulation:

Tryptone.	6 g/l
Yeast extract.	3 g/l
Agar.	15 g/l
pH value.	7,2 ±0,2
Colour.	amber, slightly opalescent
Growth of test strains.	complies
Diameter.	55 mm

9642.1	20 pieces	box	30,65 €

Roti®-Aquatest Plate R2A

Ph.Eur., ready-to-use, sterile, for microbiology

For enumeration of heterotrophic bacteria.

Storage temp.: +4-15 °C • Transport temp.: cooled

The R2A Agar (Art. No. CL01) is recommended by the Ph. Eur. for enumeration of heterotrophic bacteria.
Expiration time on request. Do NOT freeze!

Formulation:

Yeast extract.	0,5 g/l
Peptone.	0,5 g/l
Casein hydrolysed.	0,5 g/l
Glucose.	0,5 g/l
Starch.	0,5 g/l
di-Potassium hydrogen phosphate.	0,3 g/l
Magnesium sulphate ($MgSO_4$).	0,024 g/l
Sodium pyruvate.	0,3 g/l
Agar.	15 g/l
pH value.	7,2 ±0,2
Colour.	amber
Growth of test strains.	complies
Diameter.	55 mm

9644.1	20 pieces	box	30,65 €

Roti®-Aquatest Plate Cetr

Ph.Eur., ready-to-use, sterile, for microbiology

For isolation of *Pseudomonas aeruginosa*.

Storage temp.: +4-15 °C • Transport temp.: cooled

Warning H400

The Cetrimide Agar (Art. No. X918) is recommended by the Ph. Eur. for isolation of *Pseudomonas aeruginosa*.
Expiration time on request. Do NOT freeze!

Formulation:

Gelatin peptone (Pancreas hydrolysate).	20 g/l
Magnesium chloride.	1,4 g/l
Potassium sulphate.	10 g/l
Cetrimide.	0,3 g/l
Glycerol.	10 ml/l
Agar.	13,6 g/l
pH value.	7,2 ±0,2
Colour.	opaque white
Growth of test strains.	complies
Diameter.	55 mm

9646.1	20 pieces	box	30,65 €

Roti®-Aquatest Plate Sab4

Ph.Eur., ready-to-use, sterile, for microbiology

For cultivation of yeasts and fungi.

Storage temp.: +4-15 °C • Transport temp.: cooled

The Sabouraud 4% Glucose Agar (Art. No. X932) is recommended by the Ph. Eur. for cultivation of yeasts like *Candida albicans* and moulds.
Expiration time on request. Do NOT freeze!

Formulation:

Meat and casein peptone.	10 g/l
Glucose monohydrate.	40 g/l
Agar.	15 g/l
pH value.	5,6 ±0,2
Colour.	amber, slightly opalescent
Growth of test strains.	complies
Diameter.	55 mm

9643.1	20 pieces	box	30,65 €

NEW

ready-to-use

S

Roti®-Aquatest Plate m-CP

TWVO 2001, ready-to-use, sterile, for microbiology

For enumeration of *Clostridium perfringens.*

Storage temp.: +4-15 °C • Transport temp.: cooled

The m-CP Agar (Art. No. CL55) is recommended by the TWVO 2001 for enumeration of *Clostridium perfringens*.
Expiration time on request. Do NOT freeze!

Formulation:

Saccharose.	5 g/l
L-Cysteine hydrochloride.	1 g/l
Magnesium sulphate heptahydrate.	0,1 g/l
Iron(III)-chloride hexahydrate ($FeCl_3 \cdot 6\ H_2O$).	0,09 g/l
Bromocresol purple.	0,04 g/l
Chromogene Mixture.	0,16 g/l
D-Cycloserine.	0,4 g/l
Polymyxin B sulphate.	0,025 g/l
Tryptose.	30 g/l
Yeast extract.	20 g/l
Agar.	15 g/l
pH value.	7,6 ±0,2
Colour.	purple
Growth of test strains.	complies
Diameter.	55 mm

9649.1	20 pieces	box	50,45 €

NEW

ready-to-use

S

Roti®-Aquatest Plate Strep

DEV, ISO 7899-2, ready-to-use, sterile, for microbiology

For enumeration of intestinal streptococci.

Storage temp.: +4-15 °C • Transport temp.: cooled

Warning H312-H412-EUH032

The Slanetz-Bartley Agar (Art. No. X935) is recommended by the ISO 7899-2 for enumeration of intestinal streptococci.
Expiration time on request. Do NOT freeze!

Formulation:

di-Potassium hydrogen phosphate.	4 g/l
Sodium azide.	0,4 g/l
Tetrazolium chloride (TTC).	0,1 g/l
Tryptose.	20 g/l
Yeast extract.	5 g/l
Glucose.	2 g/l
Agar.	10 g/l
pH value.	7,2 ±0,1
Colour.	amber, slightly opalescent
Growth of test strains.	complies
Diameter.	55 mm

9648.1	20 pieces	box	34,95 €

NEW

ready-to-use

S

Roti®-Aquatest Plate Staph

Ph.Eur., ready-to-use, sterile, for microbiology

For isolation of pathogenic staphylococci.

Storage temp.: +4-15 °C • Transport temp.: cooled

The Mannitol Salt Agar (Chapman Agar) (Art. No. CL81) is recommended by the Ph.Eur. for isolation of pathogenic staphylococci.
Expiration time on request. Do NOT freeze!

Formulation:

Pancreatic digest of casein.	5 g/l
Peptone (peptic digest of animal tissue).	5 g/l
Beef extract.	1 g/l
Sodium chloride (NaCl).	75 g/l
D-Mannitol.	10 g/l
Phenol red.	0,025 g/l
Agar.	15 g/l
pH value.	7,4 ±0,2
Colour.	purple
Growth of test strains.	complies
Diameter.	55 mm

9650.1	20 pieces	box	30,65 €

Compact Dry Ready-Made Plates

Dry ready-made plates for easy microbiological analysis of solutions and compact samples.

made by NISSUI

- Storage and transport at room temperature
- Simple and safe use
- Safely stackable
- Easy interpretation through chromogenic additives and 1 x 1 cm grid
- Detailed instructions-for-use included
- Suitable for control of foods and feeds, cosmetics and pharmaceutical samples, for hygiene monitoring and contamination survey, for schooling and student's courses

Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret.
Compact Dry plates are easy and safe to handle. Due to storage at room temperature, they may be used even on site. One millilitre of the sample to be analysed is applied onto the sterile plate surface, spreading itself evenly over the plate during rehydration of the medium. Dry sample matter is homogenised and solubilised using the Compact Dry Dilution Rack (Art. No. 4823.1) prior to plate inoculation. Growth area is 20 cm². Inner Ø 47 mm

Compact Dry CF

NISSUI for microbiology

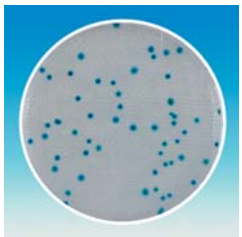
ready-to-use S

Ready-made plates with anhydrous chromogenic nutrient medium for detection of coliforms.

Ready-made agar plate coliforms

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. The nutrient medium used for Compact Dry CF plates is related to the Coliform chromogenic Agar and resembles a modified version of the Compact dry EC plates. Chromogenic Mixture has been replaced by X-gal, causing all coliform bacteria to grow in colonies of a bright blue colour.



AOAC-, MicroVal-, and NordVal- certified.

4827.1	40 plates	blister	70,85 €
4827.2	240 plates	blister	364,45 €

Compact Dry EC

NISSUI for microbiology

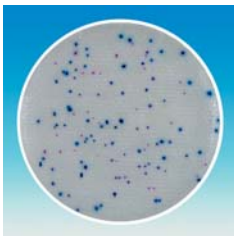
ready-to-use S

Ready-made plates with anhydrous chromogenic nutrient medium for detection of coliforms in general, particularly *E. coli*.

Ready-made agar plate *E. coli*

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. The nutrient medium used for Compact Dry EC plates is related to the Coliform chromogenic Agar. Colonies of *E. coli* show a bright blue colour, while other coliforms grow in red to pink coloured colonies. Addition of red and blue colonies results in total count of coliforms.



AOAC-, MicroVal-, and NordVal- certified.

4826.1	40 plates	blister	71,95 €
4826.2	240 plates	blister	385,95 €

Art. No.	Compact Dry	Detection of	Certificate
4816	TC	whole germs	AOAC, MicroVal, NordVal
1070	X-BC	*Bacillus cereus*	MicroVal
1087	X-SA	*Staphylococcus aureus*	AOAC, MicroVal, NordVal
4817	SL	salmonells	-
4818	YM	yeast/moulds	AOAC, MicroVal, NordVal
4826	EC	coliforms /*E. coli*	AOAC, MicroVal, NordVal
4827	CF	coliforms	AOAC, MicroVal, NordVal
4828	ETB	enterobacteria	MicroVal, NordVal

Compact Dry ETB

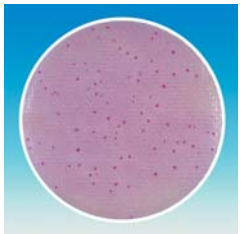
NISSUI for microbiology

Ready-made plates with anhydrous chromogenic nutrient medium for detection of enterobacteriaceae.

Ready-made agar plate enterobacteria

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. The nutrient medium used for Compact Dry ETB plates is deduced from the Violet Red Bile Agar with Dextrose (VRBD). Enterobacteriaceae grow in red colonies.



MicroVal- and NordVal-certified.

4828.1	40 plates	blister	79,05 €
4828.2	240 plates	blister	407,45 €

Compact Dry TC

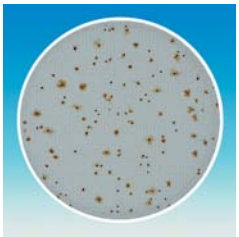
NISSUI for microbiology

Ready-made plates with anhydrous chromogenic nutrient medium for total germ count.

Ready-made agar plate total count

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. Compact Dry TC are based on a standard total-germ-count agar under addition of TTC which, being a redox-indicator, stains all living bacterial colonies red.



AOAC- MicroVal-, and Nordval certified.

4816.1	40 plates	blister	68,30 €
4816.2	240 plates	blister	342,95 €

Compact Dry SL

NISSUI for microbiology

Ready-made plates with anhydrous chromogenic nutrient medium for detection of salmonellae.

Ready-made agar plate salmonells

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. The nutrient medium used for Compact Dry SL plates is deduced from the formulation of Triple Sugar Iron Agar. Salmonellae may easily be identified by the green colouring of the colonies, accompanied by colour shift of the plate to yellow due to alcalization of the medium. Salmonellae producing hydrogen sulphide grow in black colonies on yellow medium.

4817.1	40 plates	blister	91,95 €
4817.2	240 plates	blister	456,90 €

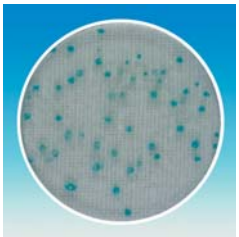
Compact Dry X-BC

NISSUI for microbiology

Ready-made plates with anhydrous chromogenic nutrient medium for detection of *Bacillus cereus.*

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. The nutrient medium used for Compact Dry X-BC plates is based on a nutritious formulation, using mannitol as selective agent. Colonies of *Bacillus cereus* grow in a light blue or blue colour.



MicroVal certified.

1070.1	40 plates	blister	96,25 €
1070.2	240 plates	blister	510,65 €

▶ Sterile filter systems with a 47 mm membrane for microbiological water analysis (Monitors), see Microbiology / Accessories!

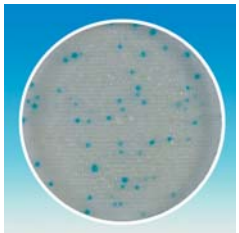
Compact Dry X-SA

NISSUI for microbiology

Ready-made plates with anhydrous chromogenic nutrient medium for detection of *Staphylococcus aureus.*

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. The nutrient medium used for Compact Dry X-SA plates is based on a mannitol agar, using lithium as additional selective agent. *Staphylococci* grow in a light to bright cyan-blue colour.



AOAC-, MicroVal-, and NordVal certified.

1087.1	40 plates	blister	96,25 €
1087.2	240 plates	blister	510,65 €

Compact Dry YM

NISSUI for microbiology

Ready-made plates with anhydrous chromogenic nutrient medium for detection of yeasts and moulds.

Ready-made agar plate yeasts and molds

Storage temp.: +20 °C

Anhydrous nutrient plates for simple microbiological analysis of solutions and dry matter.
Compact Dry plates made by NISSUI are suitable for detection and enumeration of microorganisms from foods and feeds, cosmetics and pharmaceutical samples, as well as for hygiene monitoring and contamination control in food-producing areas. Due to the chromogenic additives, bacterial colonies depict specific colouring, making them easy to interpret. The nutrient medium used for Compact Dry YM plates is deduced from an enriched version of the Potato Extract Glucose Agar. While accompanying bacteria are inhibited by inherent antibiotics, yeast colonies show a bright blue colour. Due to the net quality of the plate matrix, moulds are able to form their natural, three-dimensional growth structure accompanied by their respective characteristic colouring.

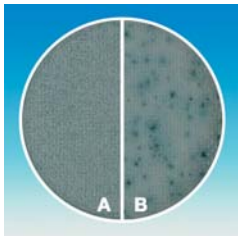


Figure:
A: *Candida albicans* ATCC 10231
B: *Aspergillus niger* ATCC 16404

AOAC-, MicroVal-, and Nordval-certified.

4818.1	40 plates	blister	71,95 €
4818.2	240 plates	blister	385,95 €

Compact Dry Swab

NISSUI for microbiology

All-in-one set of swab and nutrient broth for microbiological sampling of surfaces.

Storage temp.: +20 °C

Sterile all-in-one system for sampling in the microbiological field of work. Suitable for analysis of foods and feeds, in pharmaceutical areas, as well as for hygiene monitoring, and for exclusion of contaminations.
Compact Dry Swabs made by NISSUI are particularly easy to apply, and may also be used by laymen. In order to test a surface, the respective area is wiped with the sterile cotton swab. After returning the swab into the tube, the germs are released into the nutrient broth by agitation. The amount of 1 ml medium has been optimised for inoculation of nutrient agar plates in general, also making this swab most compatible with Compact Dry plates.

Compact Dry Swabs are particularly suitable for sampling at difficult-to-access areas or when working on site. The sample taken may be transported inside the swab. Storage at room temperature as well as easy application makes them a very versatile tool in microbiology.

Contains 1 ml **Peptone Water, buffered**

Type analysis:

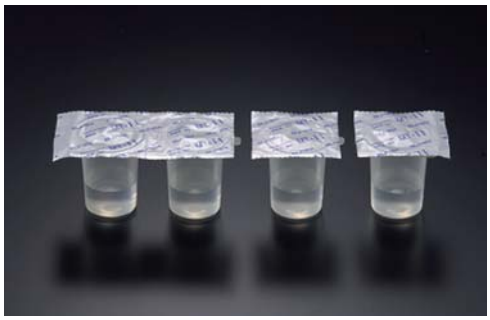
Appearance nutrient broth. ..... light yellow
Turbidity..... clear
Sterility.....complies
pH value. 6,8-7,2

4809.1	40 swabs	box	93,00 €
4809.2	240 swabs	box	482,70 €

Our tip for most simple **filtration and microbiological analysis of liquids:**

Bottle-top filter holders **KA90.1**
+ Cellulose mixed ester (CME) membrane filters **NH80.1** (non-sterile)
+ Screw neck bottles DURAN (made by Schott) (e.g. 1 Litre, **A361.1**)

- Apply membrane to filter holder
- Screw filter holder onto bottle
- *Optional:* Wrap whole construct in aluminum foil
- Steam sterilize
- Ready-for-use (or ready-for-store)



Compact Dry Dilution Rack MRD

ELMEX for microbiology

For preparation of dilution series of microbiological samples. Sterile nutrient broth.

Maximum Recovery Solution in racks

Storage temp.: +20 °C

Ready-made nutrient broth in racks for easy preparation of dilution series for microbiological assays.
Each rack consist of 4 wells with 9 mls of Maximum Recovery Solution each (Art. No. 5766). By transferring 1 ml, 10-fold dilution series are very easily prepared. Each well is sealed by an aluminium foil, and may be separated from the others at a perforation line. Using the Compact Dry Opener (Art. No. 4825.1, please order separately) a hole may be pierced into the lid, providing access for pipetting.
128 wells in 32 racks of 4 separable wells each.

Type analysis:

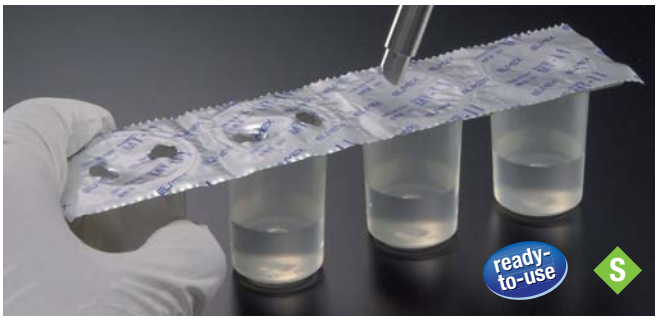
Appearance of solution. ..... light beige
Turbidity. ..... clear
Peptone. ..... 1,0 g/l
NaCl. ..... 8,5 ±0,5 g/l
Sterility. ..... complies
pH value. ..... 7,1 ±0,5

1096.1	128 wells	box	171,90 €

Compact Dry Opener

Made by NISSUI. Metal pen for easy penetration of the aluminium foil sealing the Compact Dry Dilution Racks.

Art. No.	Pack Qty.	€
4825.1	1	32,15



Compact Dry Dilution Rack

ELMEX for microbiology

For preparation of dilution series of microbiological samples. **Sterile PBS.**

Storage temp.: +20 °C

Sterile buffer solution in racks for easy preparation of dilution series for microbiological assays.

Each rack consist of 4 wells with 9 mls phosphate buffered saline each. By transferring 1 ml, 10-fold dilution series are very easily prepared. Each well is sealed by an aluminium foil, and may be separated from the others at a perforation line. Using the Compact Dry Opener (Art. No. 4825.1) a hole may be pierced into the lid, providing access for pipetting.
128 wells in 32 racks of 4 separable wells each.

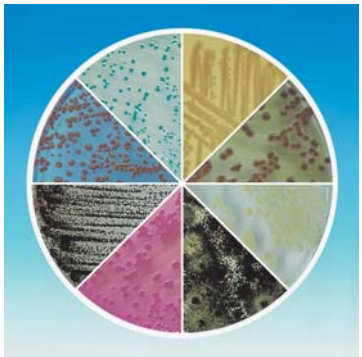
Type analysis:

Appearance of solution. ..... limpid to light yellow
Turbidity. ..... clear
Content NaCl. ..... 0,85 ±0,1 %
Sterility. ..... complies
pH value. ..... 7,1±0,5

4823.1	128 wells	box	144,95 €

Microbiological Nutrient Media

ROTH provides the most important microbiological nutrient media as ready-made mixtures. Our anhydrous media fulfil the highest purity and quality requirements, several media are formulated according to the specifications of the European Pharmakopoeia (Ph.Eur.), European and German drinking water regulations, APHA, and other ISO standards.
Our microbiological nutrient media are suitable for analysis of food, cosmetics, pharmaceutics, and research, as well as for service and waste water analysis.



- **Optimised formulation**
- **Superior quality and purity**
- **Tried and tested ready-made mixtures**
- **Big packs on request**

Acetamide Broth (Solution A)

DEV, EN ISO 16266:2008, for microbiology

For confirmation of *Pseudomonas aeruginosa* in water samples.

Storage temp.: +20 °C

Warning H351

Application: Use 3,4 g for 1 l broth. Solubilise in 900 ml, add freshly prepared solution B (sodium molybdate, Art. No. 0274.1, and iron sulfat, Art. No. P015.1) and adjust with water to 1 l.

Guarantee analysis:

Potassium dihydrogen phosphate.	1 g/l
Magnesium sulphate ($MgSO_4$)	0,2 g/l
Acetamide.	2 g/l
Sodium chloride (NaCl).	0,2 g/l
pH value.	7,0 ±0,5

CP61.1	500 g	plastic	165,05 €
Original pack 6 x 500 g			156,80/500 g

Antibiotic Medium No. 1

Ph.Eur., for microbiology

Standard agar medium for detection and for assaying the potency of antibiotics.

Antibiotic Agar No. 1 (Ph.Eur. 7,0), Penassay Seed Agar

Storage temp.: +20 °C

Application: Use 30,5 g for 1 l agar.

Guarantee analysis:

Peptone.	6,0 g/l
Casein peptone (Pancreas hydrolysate).	4,0 g/l
Yeast extract.	3,0 g/l
Beef extract.	1,5 g/l
Glucose monohydrate.	1,0 g/l
Agar.	15,0 g/l
pH-value .	6,6 ±0,1

CL53.1	500 g	plastic	104,85 €
Original pack 6 x 500 g			99,61/500 g

Antibiotic Medium No. 23

for microbiology

Agar medium for detection and for assaying the potency of antibiotics.

Storage temp.: +20 °C

Application: Use 27,1 g for 1 l agar. Directly prior to pouring add 14,3 g ammonium chloride in 10 ml sterile water.

Guarantee analysis:

Glucose.	10,0 g/l
Yeast extract.	2,5 g/l
di-Potassium hydrogen phosphate.	0,69 g/l
Potassium dihydrogen phosphate.	0,45 g/l
Agar.	13,5 g/l
pH-value .	5,6 ±0,1

CL54.1	500 g	plastic	83,35 €
Original pack 6 x 500 g			79,18/500 g

Azide Dextrose Broth

for microbiology

For enrichment and detection of enterococci.

Storage temp.: +20 °C

Warning H302-H412

Application: Use 34,7 g (1x) or 69,4 g (2x) for 1 l broth.

Formulation:

Casein peptone.	15 g/l
Meat extract.	4,5 g/l
Glucose.	7,5 g/l
Sodium chloride (NaCl).	7,5 g/l
Sodium azide.	0,2 g/l
pH value.	7,2 ±0,2

CL79.1	500 g	plastic	87,00 €
Original pack 6 x 500 g			82,65/500 g

Baird Parker Agar (Base)

Ph.Eur., for microbiology

For isolation and enumeration of staphylococci.
Agar medium O (Ph.Eur. 6.0)
Storage temp.: +20 °C

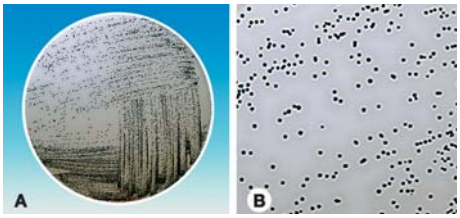


Figure:
A: *Staphylococcus aureus*
B: Enlargement of A, showing clear zones round the colonies (Lecithinase break-down of egg yolk).
Application: Use 63 g for 1 l agar. Add egg yolk emulsion tellurit (Art. No. 2978.1) to 5 % final concentration.

Guarantee analysis:

Casein peptone (pancreas hydrolysate)	10 g/l
Beef extract.	5 g/l
Yeast extract.	1 g/l
Lithium chloride.	5 g/l
Glycine.	12 g/l
Sodium pyruvate.	10 g/l
Agar.	20 g/l
pH value.	6,8 ±0,2

X913.1	500 g	plastic	104,85 €
Original pack 6 x 500 g			99,61/500 g

▶ RPF Supplement see page 1346

▶ Egg Yolk Tellurite Emulsion see page 1344

Bengal Red Agar (with chloroamphenicol)

for microbiology

Standard-selective agar for counting yeast and food mould fungi.
RBC Agar
Storage temp.: +20 °C

Danger H340-H350

The addition of chloroamphenicol inhibits bacterial growth.
Bengal red limits the size and the spreading of fungal colonies, so that slow-growing species are not overgrown by fast-growing ones.

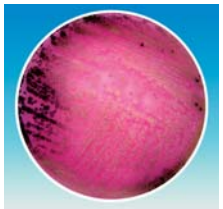


Figure: *Aspergillus niger*
Application: Use 31,6 g for 1 l agar.

Formulation:

Peptone.	5 g/l
Glucose.	10 g/l
Potassium phosphate.	1 g/l
Magnesium sulphate ($MgSO_4$)	0,5 g/l
Chloroamphenicol.	0,1 g/l
Bengal red.	0,05 g/l
Agar.	15 g/l
pH value.	7,2 ±0,2

AE24.1	500 g	plastic	104,85 €
Original pack 6 x 500 g			99,61/500 g

Bile Esculin Azide Agar

DEV, ISO 7899-2:2000, for microbiology

For isolation and identification of intestinal enterococci from water samples.
Storage temp.: +20 °C

Warning H412-H302

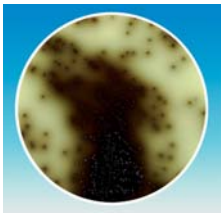


Figure:
Esculin hydrolysis and reaction with ferric citrate caused by *Enterococcus faecalis*. Medium surrounding the brown to black coloured *E. faecalis* colonies is also stained brown.
Application: Use 56,6 g for 1 l agar.

Guarantee analysis:

Tryptone.	17 g/l
Peptone.	3 g/l
Yeast extract.	5 g/l
Ox bile dehydrated.	10 g/l
Sodium chloride (NaCl).	5 g/l
Esculin.	1 g/l
Ammonium iron(III)citrate.	0,5 g/l
Sodium azide.	0,15 g/l
Agar.	15 g/l
pH value.	7,1 ±0,1

CP62.1	500 g	plastic	185,45 €
Original pack 6 x 500 g			176,18/500 g

Blood Agar (Base)

for microbiology

For isolation, cultivation and detection of haemolytic reaction of fastidious microorganisms.
Storage temp.: +20 °C

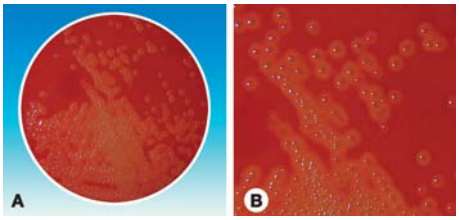


Figure:
A: *Streptococcus pyogenes*
B: Enlargement of A, showing β-haemolysis caused by *S. pyogenes*
Application: Use 40 g for 1 l agar. If required, add 50-110 ml defibr. blood.

Formulation:

Meat peptone.	10 g/l
Heart infusion.	10 g/l
Sodium chloride (NaCl).	5 g/l
Agar.	15 g/l
pH value.	7,3 ±0,2

X914.1	500 g	plastic	76,90 €
Original pack 6 x 500 g			73,06/500 g

Instructions for use
can be found on the Internet next to the product description.

Blood Agar No. 2 (Base)

ISO 7932, ISO 11290-1, for microbiology

For cultivation and detection of haemolytic reaction of fastidious microorganisms.

Storage temp.: +20 °C

Particularly recommended for confirmation of *Bacillus cereus* and *Listeria monocytogenes*.
Application: Use 39,5 g for 1 l agar, add 50-70 ml defibr. blood.

Guarantee analysis:

Proteose peptone.	15 g/l
Yeast extract.	5 g/l
Sodium chloride (NaCl).	5 g/l
Liver extract.	2,5 g/l
Agar.	12 g/l
pH value.	7,0 ±0,2

8281.1	500 g	plastic	105,90 €
Original pack 6 x 500 g			100,61/500 g

Brain-Heart-Infusion Broth

for microbiology

For cultivation of fastidious microorganisms.

BHI Broth

Storage temp.: +20 °C

Application: Use 37 g for 1 l broth.

Formulation:

Pig Brain Infusion.	7,5 g/l
Pig Heart Infusion.	10 g/l
Peptone.	10 g/l
Glucose.	2 g/l
Sodium chloride (NaCl).	5 g/l
Disodium phosphate.	2,5 g/l
pH value.	7,4 ±0,2

X916.1	500 g	plastic	82,70 €
Original pack 6 x 500 g			78,57/500 g
X916.2	1 kg	plastic	142,45 €
Original pack 6 x 1 kg			135,33/1 kg

Brain-Heart-Infusion Agar

for microbiology

For cultivation of fastidious microorganisms.

BHI Agar

Storage temp.: +20 °C

Application: Use 52 g for 1 l agar.

Approximate formula in g/l:

Calf Brain Infusion.	7,5 g/l
Beef Heart Infusion.	10 g/l
Peptone.	10 g/l
Glucose.	2 g/l
Sodium chloride (NaCl).	5 g/l
Disodium phosphate.	2,5 g/l
Agar.	15 g/l
pH value.	7,4 ±0,2

X915.1	500 g	plastic	90,20 €
Original pack 6 x 500 g			85,69/500 g

„Infusion“

In the early days of bacteriology, so-called "infusions" (tissue extraction) were used in microbiological media. During the development of the dry media, these extracts were dried and used in a powdery form to produce purified and standardised extracts. Today, extracts or special, highly purified peptones are commonly used in modern media.

As simply manufactured and non-standardised natural products, "infusion" have a relatively low batch-to-batch constancy and vary both in composition and in nutrient content. However, they are still commonly used in several classic media.

Brilliant Green Bile Broth

DIN 10172, for microbiology

For selective enrichment and enumeration of coli bacteria in milk, water samples, faeces and other material.

Storage temp.: +20 °C

Adding 40 mg/l Novobiocin (Art. No. 0247.1) during selective detection of coliform bacteria further reduces the growth of attendant flora (Alcaide *et al.*, 1982, *J. Appl. Bact.* 53:143-6).

Figure:
① *Escherichia coli* (turbidity and gas formation (arrow))
② *Enterobacter aerogenes* (turbidity)
③ Uninoculated broth
Application: Use 40 g for 1 l broth.

Guarantee analysis:

Gelatine peptone.	10 g/l
Lactose.	10 g/l
Bile salts.	20 g/l
Brilliant green.	0,0133 g/l
pH value.	7,2 ±0,2

CL06.1	500 g	plastic	135,35 €
Original pack 6 x 500 g			128,58/500 g

Brilliant Green Lactose Sucrose Agar

Ph.Eur., for microbiology

Highly selective medium for the isolation of *Salmonellae* from pathological specimens and food.

Agar medium L (Ph.Eur. 6.0), **BPLS**

Storage temp.: +20 °C

Application: Use 58,1 g for 1 l agar.

Guarantee analysis:

Meat and casein peptone.	10 g/l
Yeast extract.	3 g/l
Sodium chloride (NaCl).	5 g/l
Lactose monohydrate.	10 g/l
Saccharose.	10 g/l
Phenol red.	0,08 g/l
Brilliant green.	0,0125 g/l
Agar.	20 g/l
pH value.	6,9 ±0,2

AE43.1	500 g	plastic	88,05 €
Original pack 6 x 500 g			83,65/500 g

Brilliant Green Tetrathionate Bile Broth

Ph.Eur., for microbiology

For selective enrichment of *Salmonellae* in food and faeces.
Broth medium I (Ph.Eur. 6.0)
Storage temp.: +20 °C
Application: Use 63 g for 1 l broth.

Guarantee analysis:

Peptone	8,6 g/l
Dried beef bile	8 g/l
Sodium chloride (NaCl)	6,4 g/l
Calcium carbonate	20 g/l
Potassium tetrathionate	20 g/l
Brilliant green	0,07 g/l
pH value	7,0 ±0,2

AE42.2	100 g	plastic	109,55 €
AE42.1	500 g	plastic	428,95 €
Original pack 6 x 500 g			407,50/500 g

Brucella Broth

for microbiology

For cultivation of *Brucella* and other fastidious microorganisms.
Storage temp.: +20 °C
Also suitable for enrichment of fastidious microorganisms like, e.g. *Campylobacter*.
Application: Use 28,1 g for 1 l broth.

Formulation:

Meat peptone	10 g/l
Casein peptone	10 g/l
Sodium chloride	5 g/l
Yeast extract	2 g/l
Glucose	1 g/l
Sodium bisulfite	0,1 g/l
pH value	7,0 ±0,2

5754.1	500 g	plastic	77,95 €
Original pack 6 x 500 g			74,05/500 g

Brucella Agar

for microbiology

For cultivation of *Brucella* and other fastidious microorganisms in foods and other specimens.
Storage temp.: +20 °C
In order to gain a selective medium, supplement with Nystatin, Bacitracin, Polymyxin B, Cycloheximide, Vancomycin and Nalidixic acid.
Application: Use 43,1 g for 1 l agar, add 50 ml defibr. sheep blood.

Formulation:

Meat peptone	10 g/l
Casein peptone	10 g/l
Sodium chloride	5 g/l
Yeast extract	2 g/l
Glucose	1 g/l
Sodium bisulfite	0,1 g/l
Agar	15 g/l
pH value	7,0 ±0,2

5752.1	500 g	plastic	89,15 €
Original pack 6 x 500 g			84,69/500 g

Campylobacter Agar, blood-free (Base)

for microbiology

For isolation of *Campylobacter jejuni*, *Campylobacter coli*, and *Campylobacter laridis* in foods, and other samples.
Campy-Selective-Bloodfree-Medium, Bolton-Agar, Blood-free **CCDA**, Modified **CCDA**
Storage temp.: +20 °C
Modified formulation acc. to Bolton (Bolton *et al*., (1984) *Clin. Microbiol.* 19:169-171), replacing blood with charcoal, sodium pyruvate and iron sulphate.
Application: Use 45,5 g for 1 l agar. After cooling add 2 vials (2x5 ml) reconstituted Campylobacter Supplement (Art. No. 4857.1).

Formulation:

Casein peptone	10 g/l
Beef extract	10 g/l
Sodium chloride	5 g/l
Casein hydrolysed	3 g/l
Bacteriological charcoal	4 g/l
Sodium deoxycholate	1 g/l
Iron sulphate	0,25 g/l
Sodium pyruvate	0,25 g/l
Agar	12 g/l
pH value	7,4 ±0,2

5756.1	500 g	plastic	147,85 €
Original pack 6 x 500 g			140,46/500 g

▶ Campylobacter Supplement see page 1343

Campylobacter Selective Agar (Base)

NEW

for microbiology

For isolation of *Campylobacter coli* and *C. jejuni*.
Preston Agar, Campy Agar
Storage temp.: +20 °C
The Campylobacter Selective Agar is based on the formulation of Bolton and Robertson (Bolton and Robertson (1982) *J. Clin. Path.* 35:462-7). Trough addition of the Campylobacter Preston Supplement (Art. No. 8851), the Agar is highly selective for *Campylobacter coli* and *C. jejuni.*
Application: Use 18,5 g for 475 ml agar. After cooling add 5-7 % lysed blood and 1 vial of Campylobacter Preston Supplement (Art. No. 8851).

Formulation:

Casein peptone	10 g/l
Beef extract	10 g/l
Sodium chloride (NaCl)	5 g/l
Agar	12 g/l
pH value	7,5 ±0,2

8847.1	500 g	plastic	129,00 €
Original pack 6 x 500 g			122,55/500 g

▶ Campylobacter Preston Supplement see page 1343

Please note our **Technical Information Brochure** on the Internet next to the products:

Microbiological Media
Manual for preparation and storage

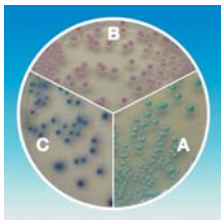
Candida chromogenic Agar

for microbiology

Selective medium for isolation and quick identification of pathogeneous Candida species.

Storage temp.: +4 °C

Danger H350



Staining of species:
A: *Candida albicans* turquoise-green (glucuronidase)
B: *Candida krusei* purple-pink (galactosidase)
C: *Candida tropicalis* blue (glucosidase)
Candida parasilosis and *C. glabrata* light-purple to light white

Application: Use 45,9 g for 1 l agar.

Formulation:

Peptone	10 g/l
Glucose	20 g/l
Chloroamphenicol	0,5 g/l
Chromogene Mixture	0,4 g/l
Agar	15 g/l
pH value	6,1 ±0,2

2922.2	100 g	plastic	139,25 €
2922.1	500 g	plastic	504,20 €
Original pack 6 x 500 g			478,99/500 g

CASO Broth

Ph.Eur., for microbiology

For cultivation of fastidious and non-fastidious microorganisms.
Broth medium A (Ph.Eur. 6,0), Casein Soya Bean Digest Broth (Ph.Eur. 6.3, 7.0 and 8.0), Soy Peptone Broth, **TSB Broth**, Tryptic Soy Broth
Storage temp.: +20 °C
Application: Use 30 g for 1 l broth.

Guarantee analysis:

Casein peptone (pancreas hydrolysate)	17 g/l
Soy peptone (papain hydrolysate)	3 g/l
di-Potassium hydrogen phosphate	2,5 g/l
Sodium chloride (NaCl)	5 g/l
Glucose monohydrate	2,5 g/l
pH value	7,3 ±0,2

X938.1	500 g	plastic	64,40 €
Original pack 6 x 500 g			61,18/500 g
X938.2	1 kg	plastic	105,90 €
Original pack 6 x 1 kg			100,61/1 kg
X938.3	2,5 kg	plastic	206,40 €

CASO Broth, granulated

granulated, Ph.Eur., for microbiology

For cultivation of fastidious and non-fastidious microorganisms.
Broth medium A (Ph.Eur. 6,0), Casein Soya Bean Digest Broth (Ph.Eur. 6.3, 7.0 and 8.0), Soy Peptone Broth, **TSB Broth**, Tryptic Soy Broth
Storage temp.: +20 °C
Granulated, dust-minimized version with high solubility and superior homogeneity.
Application: Use 30 g for 1 l broth.

Guarantee analysis:

Casein peptone (pancreas hydrolysate)	17 g/l
Soy peptone (papain hydrolysate)	3 g/l
di-Potassium hydrogen phosphate	2,5 g/l
Sodium chloride (NaCl)	5 g/l
Glucose monohydrate	2,5 g/l
pH value	7,3 ±0,2
Granulation	complies

6678.1	500 g	plastic	96,25 €
Original pack 6 x 500 g			91,44/500 g
6678.2	1 kg	plastic	152,15 €
Original pack 6 x 1 kg			144,54/1 kg

CASO Broth vegetal

for molecular biology, animal-free

For cultivation of fastidious and non-fastidious microorganisms.
Soy Peptone Broth, **TSB Broth**, Tryptic Soy Broth
Storage temp.: +20 °C
Application: Use 30 g for 1 l broth.

Formulation:

Vegetable peptone	20 g/l
di-Potassium hydrogen phosphate	2,5 g/l
Sodium chloride (NaCl)	5 g/l
Glucose	2,5 g/l
pH value	7,3 ±0,2

0139.1	500 g	plastic	77,95 €
Original pack 6 x 500 g			74,05/500 g

CASO Agar

Ph.Eur., for microbiology

For isolation and cultivation of non-fastidious organisms.
Agar medium B (Ph.Eur. 6.0), Casein Soya Bean Digest Agar (Ph.Eur. 6.3, 7.0 and 8.0), Soy Peptone Agar, **TSB Agar**, Trypticasein Soy Agar
Storage temp.: +20 °C
Application: Use 40 g for 1 l agar.

Guarantee analysis:

Casein peptone (pancreas hydrolysate)	15 g/l
Soy peptone (papain hydrolysate)	5 g/l
Sodium chloride (NaCl)	5 g/l
Agar	15 g/l
pH value	7,3 ±0,2

X937.1	500 g	plastic	66,15 €
Original pack 6 x 500 g			62,84/500 g
X937.2	1 kg	plastic	117,75 €
Original pack 6 x 1 kg			111,86/1 kg
X937.3	2,5 kg	plastic	231,15 €

CASO Agar with Lecithin/Polysorbate 80

NEW

for microbiology

For detection of microorganisms from cosmetics and disinfected surfaces.
TSA Letheen, Tryptone Soy Agar Letheen, TSA with Tween® 80 and Lecithin
Storage temp.: +20 °C
Lecithin and Tween® 80 enable growth and colony counting of bacteria through inactivating disinfectants and preservatives like quaternary ammonium compounds.
Application: Use 45,7 g for 1 l agar.

Formulation:

Pancreatic digest of casein	15 g/l
Soy peptone	5 g/l
Sodium chloride (NaCl)	5 g/l
Lecithin	0,7 g/l
Polysorbate 80	5 g/l
Agar	15 g/l
pH value	7,2 ±0,2

8848.1	500 g	plastic	105,35 €
Original pack 6 x 500 g			100,08/500 g

Cetrimide Agar (Base)

Ph.Eur., for microbiology

For isolation and identification of *Pseudomonas aeruginosa*.
Agar medium N (Ph.Eur. 6.0), Cetrimide Agar (Ph.Eur. 6.3, 7.0 and 8.0)
Storage temp.: +20 °C

Warning H410

Recommended by the Harmonized Method (Ph.Eur. 6.0, 2.6.13.B) for growth of *Pseudomonas aeruginosa*.

Figure:
Production of pyoverdin by *Pseudomonas aeruginosa*. Being water soluble, pyoverdin diffuses through the agar, staining the originally opaque-white medium fluorescent greenish-yellow where *P. aeruginosa* colonies are located.
Application: Use 45,3 g for 1 l agar, add 10 ml glycerol.

Guarantee analysis:

Gelatin peptone (Pancreas hydrolysate)	20 g/l
Magnesium chloride	1,4 g/l
Potassium sulphate	10 g/l
Cetrimide	0,3 g/l
Agar	13,6 g/l
pH value	7,2 ±0,2

X918.1	500 g	plastic	88,70 €
Original pack 6 x 500 g			84,27/500 g

CLED Agar

for microbiology

For cultivation, differentiation and enumeration of gram-positive and gram-negative bacteria from the urinary tract.
Storage temp.: +20 °C
Inhibits swarming of *Proteus*.

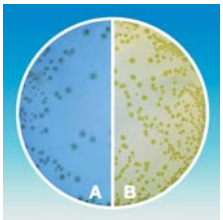


Figure:
A: *Proteus vulgaris* (blue colour due to pH-shift to >7.6)
B: *Escherichia coli* (colour greenish-yellow due to acid production caused by lactose fermentation)
Application: Use 36 g for 1 l agar.

Formulation:

Casein peptone	4 g/l
Gelatine peptone	4 g/l
Beef extract	3 g/l
Lactose	10 g/l
L-Cysteine	0,128 g/l
Bromothymol blue	0,02 g/l
Agar	15 g/l
pH value	7,3 ±0,2

2835.1	500 g	plastic	86,55 €
Original pack 6 x 500 g			82,22/500 g
2835.2	1 kg	plastic	146,00 €
Original pack 6 x 1 kg			138,70/1 kg

CLED Agar plus

for microbiology

For cultivation, easy differentiation by colour, and enumeration of gram-positive and gram-negative bacteria from the urinary tract.
Storage temp.: +20 °C
Inhibits swarming of *Proteus*. **With Andrade´s indicator**.
Application: Use 36,2 g for 1 l agar.

Formulation:

Casein peptone	4 g/l
Gelatine peptone	4 g/l
Beef extract	3 g/l
Lactose	10 g/l
L-Cysteine	0,128 g/l
Bromothymol blue	0,02 g/l
Andrade's indicator	0,01 g/l
Agar	15 g/l
pH value	7,5 ±0,2

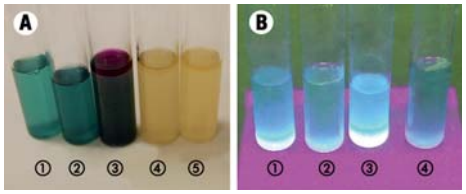
2836.1	500 g	plastic	91,95 €
Original pack 6 x 500 g			87,35/500 g

Coli Fluoro Broth

for microbiology

Enrichment medium for the simultaneous and easy detection of total Coliforms and *E. coli* in water, foods and dairy products.

Storage temp.: +4 °C



A) Staining of species:
E. coli greenish-blue (1,2), black-red after Indole reaction (3)
Enterobacter, Klebsiella, Citrobacter greenish-blue (1,2)
Shigella, Salmonella no colour change (4,5)
B) Fluorescence detection (365 nm):
E. coli fluorescence-positive (1,3)
Enterobacter, Klebsiella, Citrobacter, Shigella, Salmonella no fluorescence (2,4)
Application: Use 17 g for 1 l broth.

Formulation:

Tryptose	5 g/l
Sodium chloride	5 g/l
Dipotassium phosphate	2,7 g/l
Potassium phosphate	2 g/l
Sorbitol	1 g/l
Tryptophane	1 g/l
Sodium lauryl sulphate	0,1 g/l
Chromogenic-fluorogenic mixture	0,23 g/l
pH value	6,8 ±0,2

2923.2	100 g	plastic	122,05 €
2923.1	500 g	plastic	421,40 €
Original pack 6 x 500 g			400,33/500 g

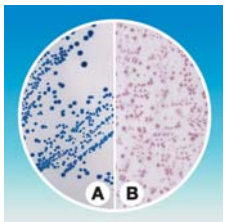
Coliforms chromogenic Agar (ISO)

ISO 9308-1, for microbiology

NEW

For detection and enumeration of *E. coli* and other coliforms in water. **CCA**

Storage temp.: +24 °C



Staining of species:
E. coli ATCC 25922 blue -dark violet (by reaction of the ß-D-Glucuronidase).
Enterobacter aerogenes ATCC 13048 red rose (by reaction of the ß-D-galactosidase).
The addition of tryptophane enables an indole test for *E. coli*.
Application: Use 26,45 g for 1 l agar.

Guarantee analysis:

Sodium chloride (NaCl)	5,0 g/l
di-Sodium hydrogen phosphate	2,7 g/l
Sodium dihydrogen phosphate	2,2 g/l
Yeast extract	2,0 g/l
Casein, enzymatically digested	1,0 g/l
Sodium pyruvate	1,0 g/l
Tryptophane	1,0 g/l
Sorbitol	1,0 g/l
Chromogene Mixture	0,4 g/l
Sodium heptadecyl sulphate (Tergitol-7)	0,15 g/l
Agar	10 g/l
pH value	6,8 ±0,2

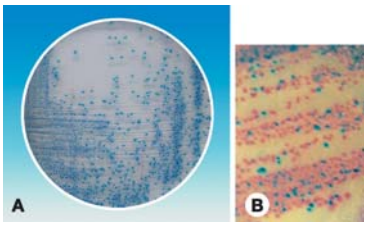
8849.1	500 g	plastic	428,95 €
Original pack 6 x 500 g			407,50/500 g

Coliforms chromogenic Agar

for microbiology

For selective enrichment and simultaneous detection of *E. coli* and other Coliforms in water and food samples.

Storage temp.: +20 °C



Staining of species:
A: *E. coli* blue (by reaction of the ß-D-Glucuronidase)
B: Other Coliforms salmon (by reaction of the ß-D-galactosidase)
E. coli (blue) and *Citrobacter* (salmon).
Application: Use 26,4 g for 1 l agar.

Formulation:

Sodium chloride (NaCl)	5 g/l
Phosphate buffer	4,9 g/l
Peptone	3 g/l
Sodium pyruvate	1 g/l
Tryptophane	1 g/l
Sorbitol	1 g/l
Chromogene Mixture	0,36 g/l
Sodium heptadecyl sulphate (Tergitol-7)	0,1 g/l
Agar	10 g/l
pH value	6,8 ±0,2

CL45.2	100 g	plastic	117,75 €
CL45.1	525 g	plastic	428,95 €

Columbia Agar (Base)

Ph.Eur., for microbiology

For cultivation of fastidious and non-fastidious microorganisms, also for Mycoplasms.

Medium Q (Ph.Eur. 6.0), Columbia Agar (Ph.Eur. 6.3, 7.0 and 8.0), Columbia Blood Agar (Base)

Storage temp.: +20 °C

Application: Use 42,5 g for 1 l agar. If required, add 50-110 ml defibr. blood.

Guarantee analysis:

Casein peptone (Pancreas hydrolysate)	10 g/l
Meat peptone (Pepsin hydrolysate)	5 g/l
Heart peptone (Pancreas hydrolysate)	3 g/l
Yeast extract	5 g/l
Corn starch	1 g/l
Sodium chloride (NaCl)	5 g/l
Agar	13,5 g/l
pH value	7,3 ±0,2

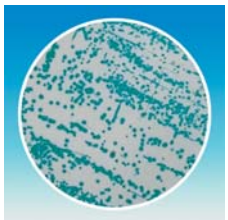
X919.1	500 g	plastic	71,50 €
Original pack 6 x 500 g			67,93/500 g
X919.2	1 kg	plastic	127,95 €
Original pack 6 x 1 kg			121,55/1 kg

Cronobacter chromogenic Agar

ISO 22964:2006, for microbiology

Selective medium for detection of *Cronobacter* (formerly *Enterobacter*) *sakazakii* in milk powder and powdered infant formulae.

Storage temp.: +4 °C



Staining of species:
Cronobacter (*Enterobacter) sakazakii* green to turquois (by reaction of the α-D-glucosidase)
E. coli transparent to red/violet
Staphylococcus inhibited
Application: Use 30,7 g for 1 l agar.

Guarantee analysis:

Casein peptone (Pancreas hydrolysate)	7 g/l
Sodium chloride	5 g/l
Yeast extract	3 g/l
Sodium deoxycholate	0,6 g/l
Chromogene Mixture	0,15 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH value	7,0 ±0,2

2997.1	100 g	plastic	209,65 €

D/E Neutralizing Agar

for microbiology

NEW

For detection and enumeration of microorganisms from a sanitized environment.

Dey-Engley Agar

Storage temp.: +20 °C

Warning H317-EUH031

Particularly recommended for testing areas or samples that have been treated with disinfectants or preservatives.
Application: Use 54 g for 1 l agar.

Formulation:

Dextrose	10 g/l
Lecithin	7 g/l
Sodium thiosulphate	6 g/l
Casein peptone	5 g/l
Polysorbate 80	5 g/l
Yeast extract	2,5 g/l
Sodium bisulfite	2,5 g/l
Sodium thioglycolate	1 g/l
Bromocresol purple	0,02 g/l
Agar	15 g/l
pH value	7,6 ±0,2

8850.1	500 g	plastic	91,40 €
Original pack 6 x 500 g			86,83/500 g

Deoxycholate Citrate Agar

Ph.Eur., for microbiology

For highly selective isolation of enteric pathogenes, particularly *Salmonella* and *Shigella*.

Agar medium J (Ph.Eur. 6.0)

Storage temp.: +20 °C

Figure:
Salmonella typhimurium grows well-developed, colourless colonies with a distinct black center.
Application: Use 70 g for 1 l agar.

Guarantee analysis:

Beef extract	10 g/l
Meat peptone	10 g/l
Lactose monohydrate	10 g/l
Sodium citrate	20 g/l
Iron(III) citrate	1 g/l
Sodium deoxycholate	5 g/l
Neutral red	0,02 g/l
Agar	13,5 g/l
pH value	7,5 ±0,2

AE44.1	500 g	plastic	96,65 €
Original pack 6 x 500 g			91,82/500 g
AE44.2	1 kg	plastic	170,95 €
Original pack 6 x 1 kg			162,40/1 kg

Dichlorane Bengal Red Agar (with chloroamphenicol)

ISO 21527-1, for microbiology

Selective agar for enumeration of yeast and food mould fungi, especially for strongly hyphen-forming fungi.

DRBC Agar

Storage temp.: +20 °C

Danger H350

The addition of dichlorane inhibits hyphen-forming fungi from spreading and improves counting. Chloroamphenicol and a low pH-value inhibit the growth of bacteria.

Figure: *Aspergillus brasiliensis*
Application: Use 31,6 g for 1 l agar.

Formulation:

Peptone	5 g/l
Glucose	10 g/l
Potassium phosphate	1 g/l
Magnesium sulphate ($MgSO_4$)	0,5 g/l
Chloroamphenicol	0,1 g/l
Dichlorane	0,002 g/l
Bengal red	0,025 g/l
Agar	15 g/l
pH value	5,6 ±0,2

AE25.1	500 g	plastic	127,95 €
Original pack 6 x 500 g			121,55/500 g

Dichlorane Glycerol Agar (Base)

ISO 21527-2, for microbiology

Selective agar for enumeration of yeast and food mould fungi, especially in half-dry and dry food.

DG18 Agar

Storage temp.: +20 °C

Danger H340-H350

The addition of dichlorane, the reduction of the water content by adding glycerol, and the low pH-value inhibit bacterial growth.

Figure: *Saccharomyces cerevisiae*
Application: Use 31,6 g for 1 l agar, add 18 vol.-% glycerol.

Formulation:

Peptone.	5 g/l
Glucose.	10 g/l
Potassium phosphate.	1 g/l
Magnesium sulphate ($MgSO_4$).	0,5 g/l
Chloroamphenicol.	0,1 g/l
Dichlorane.	0,002 g/l
Agar.	15 g/l
pH value.	5,6 ±0,2

AE26.1	500 g	plastic	117,20 €
Original pack 6 x 500 g			111,34/500 g

Differential Reinforced Clostridial Medium

for microbiology

For enrichment and enumeration of clostridia in foods and other samples.

DRCM

Storage temp.: +20 °C

Application: Use 27,5 g for 1 l broth.

Formulation:

Casein peptone.	5 g/l
Meat peptone.	5 g/l
Beef extract.	8 g/l
Yeast extract.	1 g/l
Soluble starch.	1 g/l
Glucose monohydrate.	1 g/l
Cystein hydrochloride.	0,5 g/l
Sodium acetate.	5 g/l
Sodium bisulfite.	0,5 g/l
Ammonium iron(III)citrate.	0,5 g/l
Sodium resazurin.	0,002 g/l
pH value.	7,1 ±0,2

CL78.1	500 g	plastic	98,80 €
Original pack 6 x 500 g			93,86/500 g

DNase Test Agar

for microbiology

For detection of DNase activity for identification of pathogenic bacteria.

Storage temp.: +20 °C

Particularly recommended for identification of pathogenic *Staphylococci*.

Figure:
Clear, DNA-free zone around a streak of *Staphylococcus aureus* ATCC 25923 (DNase positive).
Application: Use 42 g for 1 l agar.

Formulation:

Casein peptone.	15 g/l
Soy peptone.	5 g/l
Sodium chloride (NaCl).	5 g/l
Deoxyribonucleic acid.	2 g/l
Agar.	15 g/l
pH value.	7,3 ±0,2

8295.1	500 g	plastic	231,15 €
Original pack 6 x 500 g			219,59/500 g

EC Broth

ISO 7251, for microbiology

For detection and enumeration of coliform bacteria in water.

E. coli Bouillon

Storage temp.: +20 °C

Application: Use 37,4 g for 1 l broth.

Guarantee analysis:

Tryptose.	20 g/l
Lactose.	5 g/l
Sodium chloride (NaCl).	5 g/l
Dipotassium phosphate.	4 g/l
Potassium phosphate.	1,5 g/l
Bile salts No. 3.	1,9 g/l
pH value.	6,9 ±0,2

8310.1	500 g	plastic	100,55 €
Original pack 6 x 500 g			95,52/500 g

Microbiological Quality Control

Microbiological quality control of Roth molecular biological and microbiological culture media and agar is carried out according to following guidelines:

- Plating relevant bacterial strains from standardized stock solution (as a rule in dilutions of 10^{-1} to 10^{-10}) on agar plates of culture medium to be tested. The preparation of the media and agar must be carried out strictly according to the instructions, which are included.
- Plates from a checked batch of culture media are used as a reference
- The developed colonies are counted and rated after adequate incubation. Counting is always carried out using the plate with colony number 30-300.
- Standardization and validation of test: reference plates are compared with the number of bacteria expected
- Reference and test plate colonies are analysed for size, colour, appearance and possible reaction to certain chemicals
- Growth count on the test plates:

„good“ or „satisfactory“	colony number = 50 % - 99 % of expected growth
„moderate“	colony number = 30 % - 50 % of expected growth
„inhibited“	colony number ≤ 30 % of expected growth
„zero“	no growth

Endo Agar (Base)

for microbiology

For isolation of enteric gram-negative bacteria, especially coliforms, from water, dairy products and foods.

Storage temp.: +20 °C

Figure: *Escherichia coli* grows red colonies accompanied by red staining of the surrounding medium (sodium sulphite/fuchsin reaction).
Application: Use 36 g for 1 l agar, add 5 ml basic fuchsin solution.

Formulation:

Peptone	10 g/l
Lactose	10 g/l
di-Potassium phosphate	3,5 g/l
Sodium sulphite	2,5 g/l
Agar	10 g/l
pH value	7,5 ±0,2

X920.1	500 g	plastic	73,65 €
Original pack 6 x 500 g			69,97/500 g

Fraser Broth (Base)

ISO 11290-1, for microbiology

Enrichment medium for detection and isolation of *Listeria* in foods and environmental samples.

Storage temp.: +20 °C

Full Fraser Broth including esculin, acriflavine and nalidixic acid.
Application: Use 57,3 g for 1 l broth. A slight precipitate may appear after autoclaving. Prior to use add sterile filtered ferric(III) ammonium citrate solution ad 0,5 g/l broth (Art. No. 3130.1).

Guarantee analysis:

Pancreatic digest of casein	5 g/l
Meat peptone	5 g/l
Beef extract	5 g/l
Yeast extract	5 g/l
Sodium chloride	20 g/l
Disodium phosphate	12 g/l
Potassium phosphate	1,35 g/l
Lithium chloride	3 g/l
Esculin	1 g/l
Acriflavine	0,025 g/l
Nalidixic acid	0,02 g/l
pH-value	7,2 ±0,2

HP17.1	500 g	plastic	117,20 €
Original pack 6 x 500 g			111,34/500 g

▶ Ammonium iron(III)citrate solution
see page 1343

Light-coloured precipitates in nutrient media

In media containing potassium or sodium phosphate, large amounts of yeast extract,or non-fat milk, light-coloured precipitates may form during autoclaving, appearing as opaqueness, light-coloured clouding or white precipitate. In the majority of cases this is insoluble calcium- or magnesium phosphates, which originate in exceeding of the solubility product during heating, and which don't resolubilise during cooling. Typical media showing these phosphate crystals are, for instance, Terrific Broth (TB), Plate Count Agar with non-fat milk, or **Fraser media**.

The amount of phosphates present is only slightly reduced by that, so the medium may be used without any problems. In case the cloudiness hinders analyses, the bouillon may be cleared from precipitates by sterile filtration. Agar media may generally be used directly.

In cases of recurrence we recommend to thoroughly check the desalting plant, or to desalt the water used repeatedly, in order to remove residual calcium carbonate (chalk).

Fraser Half Broth (Base)

ISO 11290-1, for microbiology

Enrichment medium for detection and isolation of *Listeria* in foods and environmental samples.

Storage temp.: +20 °C

Fraser Broth including esculin. With reduced amounts of acriflavine and nalidixic acid.
Application: Use 57,3 g for 1 l broth. A slight precipitate may appear after autoclaving. Prior to use add sterile filtered iron(III) ammonium citrate solution ad 0,5 g/l broth (Art. No. 3130.1).

Guarantee analysis:

Pancreatic digest of casein	5 g/l
Meat peptone	5 g/l
Beef extract	5 g/l
Yeast extract	5 g/l
Sodium chloride	20 g/l
Disodium phosphate	12 g/l
Potassium phosphate	1,3 g/l
Lithium chloride	3 g/l
Esculin	1 g/l
Acriflavine	0,0125 g/l
Nalidixic acid	0,01 g/l
pH-value	7,2 ±0,2

HP18.1	500 g	plastic	90,85 €
Original pack 6 x 500 g			86,31/500 g
HP18.2	1 kg	plastic	163,95 €
Original pack 6 x 1 kg			155,75/1 kg

Gelatin Agar (DEV)

DEV, for microbiology

For enumeration of the total microbial population and detection of gelatin-liquefying microorganisms in water samples.

Storage temp.: +20 °C

Application: Use 50 g for 1 l agar.

Guarantee analysis:

Meat peptone	10 g/l
Meat extract	10 g/l
Sodium chloride (NaCl)	5 g/l
Gelatine	10 g/l
Agar	15 g/l
pH value	7,3 ±0,2

HP07.1	500 g	plastic	119,90 €
Original pack 6 x 500 g			113,91/500 g

King's B Medium (Base)

DEV, EN ISO 16266:2008, for microbiology

For confirmation of *Pseudomonas aeruginosa* in water samples.

Storage temp.: +20 °C

Application: Use 38 g for 990 ml agar. Add 10 ml glycerol.

Guarantee analysis:

Peptone	20 g/l
di-Potassium hydrogen phosphate	1,5 g/l
Magnesium sulphate heptahydrate	1,5 g/l
Agar	15 g/l
pH value	7,2 ±0,2

CP64.1	500 g	plastic	141,40 €
Original pack 6 x 500 g			134,33/500 g

Kligler Iron Agar
for microbiology

For differentiation of gram-negative enterobacteria.
Double Sugar Iron Agar, **KIA**
Storage temp.: +20 °C

Figure:
① *Salmonella enteritidis*
② Uninoculated agar
Application: Use 52 g for 1 l agar.

Formulation:

Peptone mixture	20 g/l
Lactose	10 g/l
Sodium chloride	5 g/l
Glucose	1 g/l
Ammonium iron(III)citrate	0,5 g/l
Sodium thiosulphate	0,5 g/l
Phenol red	0,025 g/l
Agar	15 g/l
pH value	7,4 ±0,2

5758.1	500 g	plastic	77,95 €
Original pack 6 x 500 g			74,05/500 g

Lactose Broth
Ph.Eur., for microbiology

For detection and enumeration of coliform bacteria and for enrichment of *Salmonellae*.
Broth medium D (Ph.Eur. 6.0)
Storage temp.: +20 °C

Figure:
① *Escherichia coli* (gas formation (arrow))
② Uninoculated broth
Application: Use 13 g for 1 l broth.

Guarantee analysis:

Gelatin peptone (Pancreas hydrolysate)	5 g/l
Lactose monohydrate	5 g/l
Beef extract	3 g/l
pH value	6,9 ±0,2

X921.1	500 g	plastic	64,00 €
Original pack 6 x 500 g			60,80/500 g

Lactose-Broth (DEV)
DEV, for microbiology

For confirmation of *Escherichia coli* in water samples by lactose fermentation.
Storage temp.: +20 °C
Application: Use 28 g for 1 l broth.

Guarantee analysis:

Meat peptone	10 g/l
Meat extract	3 g/l
Sodium chloride (NaCl)	5 g/l
Lactose	10 g/l
Bromcresol purple	0,02 g/l
pH value	7,2 ±0,2

CL76.1	500 g	plastic	82,70 €
Original pack 6 x 500 g			78,57/500 g

Lactose Peptone Broth (DEV)
DEV, for microbiology

For enrichment and enumeration of coliform bacteria in water samples.
Storage temp.: +20 °C
Application: Use 35 g for 1 l broth.

Guarantee analysis:

Meat peptone	17 g/l
Soy peptone	3 g/l
Sodium chloride (NaCl)	5 g/l
Lactose	10 g/l
Bromcresol purple	0,02 g/l
pH value	7,2 ±0,2

CL77.1	500 g	plastic	102,70 €
Original pack 6 x 500 g			97,57/500 g
CL77.2	1 kg	plastic	176,20 €
Original pack 6 x 1 kg			167,39/1 kg

Lactose Sulphite Broth (Base)
Ph.Eur., for microbiology

For selective detection and enumeration of *C. perfringens*.
Medium R (Ph.Eur. 6.0)
Storage temp.: +20 °C
Application: Use 20,3 g for 1 l broth. Prior to use add sodium bisulphite solution and iron(III) ammonium citrate solution (Art. No. 3130.1).

Guarantee analysis:

Casein peptone (Pancreas hydrolysate)	5 g/l
Yeast extract	2,5 g/l
Sodium chloride (NaCl)	2,5 g/l
Lactose monohydrate	10 g/l
Cystein hydrochloride	0,3 g/l
pH value	7,1 ±0,2

AE46.1	500 g	plastic	74,75 €
Original pack 6 x 500 g			71,01/500 g

▶ Ammonium iron(III)citrate solution
see page 1343

Instructions for use
can be found on the Internet next to the product description.

Lauryl Sulphate Broth

ISO 4831:2006, for microbiology

For enrichment and detection of coliform bacteria in waters. **Flu Broth**
Storage temp.: +20 °C
Application: Use 35,6 g for 1 l broth.

Guarantee analysis:

Tryptose.	20 g/l
Lactose.	5 g/l
Sodium chloride (NaCl).	5 g/l
Potassium phosphate.	2,75 g/l
di-Potassium phosphate.	2,75 g/l
Sodium lauryl sulphate.	0,1 g/l
pH value.	6,8 ±0,2

CL80.1	500 g	plastic	93,45 €
Original pack 6 x 500 g			88,78/500 g

Legionella Agar (Base)

EN ISO 11731-2, for microbiology

For selective cultivation of *Legionella.*
BCYE Agar (Base), **GVCP Agar** (Base)
Storage temp.: +20 °C

Figure: *Legionella pneumophila*
Application: Use 2,5 g for 90 ml agar. After autoclaving add 1 vial (10 ml) reconstituted *Legionella* Growth Supplement (Art. No. CL49.1). If required also add 1 ml reconstituted *Legionella* GVCP Supplement (Art. No. CL50.1).

Guarantee analysis:

Yeast extract.	10,0 g/l
Charcoal activated.	2,0 g/l
Agar.	13,0 g/l
pH value.	6,9 ±0,2

CL48.1	500 g	plastic	115,60 €
Original pack 6 x 500 g			109,82/500 g

▶ Legionella Supplements see page 1344

Letheen Broth modified

for microbiology

For microbiological analyses of cosmetics, and samples containing disinfectants or preservatives.
Storage temp.: +20 °C
Based on the formulation acc. to FDA (Food and Drug Administration, USA), Bacteriological Analytical Manual (1995), Microbiological Methods for Cosmetics.
Application: Use 43,8 g for 1 l broth.

Formulation:

Meat peptone.	20 g/l
Casein peptone.	5 g/l
Polysorbate 80.	5 g/l
Sodium chloride.	5 g/l
Beef extract.	5 g/l
Yeast extract.	2 g/l
Glucose.	1 g/l
Lecithin.	0,7 g/l
Sodium bisulfite.	0,1 g/l
pH value.	7,2 ±0,2

5761.1	500 g	plastic	95,15 €
Original pack 6 x 500 g			90,39/500 g

Letheen Agar modified

for microbiology

For microbiological analyses of cosmetics, and samples containing disinfectants or preservatives.
Storage temp.: +20 °C
Based on the formulation acc. to FDA (Food and Drug Administration, USA), Bacteriological Analytical Manual (1995), Microbiological Methods for Cosmetics.
Application: Use 59,1 g for 1 l agar.

Formulation:

Meat peptone.	10 g/l
Casein peptone.	10 g/l
Polysorbate 80.	7 g/l
Sodium chloride.	5 g/l
Beef extract.	3 g/l
Yeast extract.	2 g/l
Glucose.	1 g/l
Lecithin.	1 g/l
Sodium bisulfite.	0,1 g/l
Agar.	20 g/l
pH value.	7,2 ±0,2

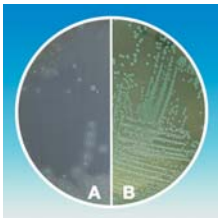
5759.1	500 g	plastic	107,00 €
Original pack 6 x 500 g			101,65/500 g

Listeria chromogenic Agar (Base)

ISO 11290:2004, for microbiology

Selective medium for detection and enumeration of *Listeria monocytogenes*.
Storage temp.: +4 °C

⚠ **Warning** H315-H319



Staining of species:
A: *Listeria monocytogenes* cyan-blue to turquois (by reaction of the β-D-glucosidase) with halo
B: *Listeria innocua* green to light greenish-blue
Enterococcus and *E. coli* inhibited
Application: Use 70,55 g for 1 l agar. After cooling add 2 vials (10 ml reconstituted) Listeria Chromo Selective Supplement (Art. No. 2947.1) and 2 vials (10 ml each) Listeria Chromo Lipase C Supplement (Art. No. 2948.1).

Guarantee analysis:

Meat peptone.	18 g/l
Lithium chloride.	10 g/l
Yeast extract.	10 g/l
Tryptone.	6 g/l
Sodium chloride.	5 g/l
di-Sodium hydrogen phosphate.	2,5 g/l
Glucose.	2 g/l
Sodium pyruvate.	2 g/l
Magnesium glycerophosphate.	1 g/l
Magnesium sulphate.	0,5 g/l
Chromogene Mixture.	0,05 g/l
Agar.	13,5 g/l
pH value.	7,2 ±0,2

3008.1	100 g	plastic	59,70 €

▶ Listeria Supplements see page 1344

Lysine Iron Agar
for microbiology

For rapid differentiation of *Enterobacteriaceae,* particularly *Salmonella arizonae.*

Storage temp.: +20 °C

Differentiation of *Enterobacteriaceae* on the basis of Lysine decarboxylation and -deamination, as well as of H_2S production.
Application: Use 33 g for 1 l agar.

Formulation:

L-Lysin	10 g/l
Gelatine peptone	5 g/l
Yeast extract	3 g/l
Dextrose	1 g/l
Ammonium iron(III)citrate	0,5 g/l
Sodium thiosulphate	0,04 g/l
Bromocresol purple	0,02 g/l
Agar	13,5 g/l
pH value	6,7 ±0,2

8322.1	500 g	plastic	160,20 €
Original pack 6 x 500 g			152,19/500 g

MacConkey Broth
Ph.Eur., for microbiology

For detection of coliform bacteria in water, milk and other liquids.

Broth medium G (Ph.Eur. 6.0), MacConkey Broth (Ph.Eur. 6.3, 7.0 and 8.0)

Storage temp.: +20 °C

Application: Use 35 g for 1 l broth.

Guarantee analysis:

Gelatin peptone (Pancreas hydrolysate)	20 g/l
Lactose monohydrate	10 g/l
Dehydrated ox bile	5 g/l
Bromocresol purple	0,01 g/l
pH value	7,3 ±0,2

AE47.1	500 g	plastic	74,75 €
Original pack 6 x 500 g			71,01/500 g

MacConkey Agar
Ph.Eur., EN ISO 21567, for microbiology

For selective isolation and identification of enterobacteria from waste water, foods and other samples.

Agar medium H (Ph.Eur. 6.0), MacConkey Agar (Ph.Eur. 6.3, 7.0 and 8.0)

Storage temp.: +20 °C

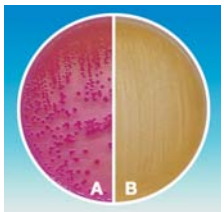


Figure:
A: *Enterobacter aerogenes*
B: *Shigella dysenteriae*
Application: Use 50 g for 1 l agar.

Guarantee analysis:

Gelatin peptone (Pancreas hydrolysate)	17 g/l
Meat and casein peptone	3 g/l
Lactose monohydrate	10 g/l
Bile salt (Cholate)	1,5 g/l
Sodium chloride (NaCl)	5 g/l
Neutral red	0,03 g/l
Crystal Violet	0,001 g/l
Agar	13,5 g/l
pH value	7,1 ±0,2

X922.1	500 g	plastic	75,80 €
Original pack 6 x 500 g			72,01/500 g
X922.2	1 kg	plastic	137,10 €
Original pack 6 x 1 kg			130,25/1 kg

Malt Extract Broth
for microbiology

For isolation and enumeration of yeasts and moulds, as well as for sterility testing.

Storage temp.: +20 °C

Application: Use 19 g for 1 l broth.

Formulation:

Malt extract	13,0 g/l
Gelatine peptone	5,5 g/l
Yeast extract	0,5 g/l
pH value	4,7 ±0,2

CP75.1	500 g	plastic	81,20 €
Original pack 6 x 500 g			77,14/500 g

Please note our **Technical Information Brochure** on the Internet next to the products:

Why Doesn't My Agar Gel?
Basics, tips & tricks

Malt Extract Agar
for microbiology

For cultivation of fungi and yeasts.

Storage temp.: +20 °C

Application: Use 33,6 g for 1 l agar.

Formulation:

Malt extract	12,75 g/l
Gelatine peptone	0,78 g/l
Glycerol	2,35 g/l
Dextrine	2,75 g/l
Agar	15 g/l
pH value	4,7 ±0,2

X923.1	500 g	plastic	74,75 €
Original pack 6 x 500 g			71,01/500 g
X923.2	1 kg	plastic	136,00 €
Original pack 6 x 1 kg			129,20/1 kg

Sterilisation of media containing sugar

Media containing sugar or **malt extract**, particularly those with a low pH, must be sterilised with care. We recommend autoclaving at up to 118 °C for a maximum of 15 min. Please observe the guidelines given in the instructions for use.

The reasons are as follows:

a) Heating sugar in combination with amino acids (from peptone, meat extract, yeast extract, or similar) can result in **toxic Maillard reaction products** which may interfere with proliferation of micro-organisms.

b) Inclusion of different sugar molecules and sugar degradation products will cause premature chain termination and inhibit chain cross-linking. The **gelability of agars containing sugar** will thereby be reduced.

Mannitol Egg Yolk Polymyxin Agar (Base)

for microbiology

For enumeration and isolation of *Bacillus cereus* in food, acc. to Mossel.
Bacillus cereus Selective Agar, **MYP Agar**
Storage temp.: +20 °C

Figure: *Bacillus cereus*
Application: Use 43 g for 1 l agar. After cooling add 100 ml Egg Yolk Emulsion (Art. No. 2977.1) and 2 vials (2x5 ml) reconstituted Bacillus cereus Supplement (Art. No. 4856.1).

Formulation:

Meat peptone	10 g/l
Sodium chloride	10 g/l
D-Mannitol	10 g/l
Beef extract	1 g/l
Phenol red	0,025 g/l
Agar	12 g/l
pH value	7,1 ±0,2

5765.1	500 g	plastic	86,55 €
Original pack 6 x 500 g			82,22/500 g

▶ Bacillus cereus Supplement see page 1343

Mannitol Salt Agar

Ph.Eur., for microbiology

For isolation of pathogenic *Staphylococci*.
Chapman Agar, Mannitol Salt Agar (Ph.Eur. 6.3, 7.0 and 8.0)
Storage temp.: +20 °C
Recommended by the Harmonized Method (Ph. Eur. 6.0, 2.6.13.B) for proliferation and identification of *Staphylococcus aureus*.

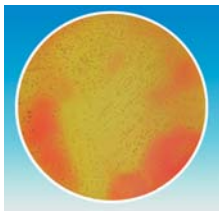


Figure: *Staphylococcus aureus*
Application: Use 111 g for 1 l agar. Optional: Add egg yolk emulsion (Art. No. 2977.1) to 5 % final concentration.

Guarantee analysis:

Pancreatic digest of casein	5 g/l
Peptone (peptic digest of animal tissue)	5 g/l
Beef extract	1 g/l
Sodium chloride	75 g/l
D-Mannitol	10 g/l
Phenol red	0,025 g/l
Agar	15 g/l
pH-value	7,4 ±0,2

CL81.1	500 g	plastic	57,95 €
Original pack 6 x 500 g			55,05/500 g

▶ Egg Yolk Emulsion see page 1344

Marine Broth

for microbiology

For enumeration and isolation of heterotropic marine bacteria.
Storage temp.: +20 °C
Application: Use 40,1 g for 1 l broth. May be slightly opalescent and may present a light precipitation.

Formulation:

Sodium chloride (NaCl)	19,4 g/l
Magnesium chloride	8,8 g/l
Peptone	5 g/l
Sodium sulphate (Na_2SO_4)	3,24 g/l
Calcium chloride	1,8 g/l
Yeast extract	1 g/l
Potassium chloride (KCl)	0,55 g/l
Sodium bicarbonate	0,16 g/l
Ferric citrate	0,1 g/l
Potassium bromide	0,08 g/l
Strontium chloride	0,034 g/l
Boric acid	0,022 g/l
Sodium silicate	0,004 g/l
Sodium fluoride	0,0024 g/l
Ammonium nitrate	0,0016 g/l
Disodium phosphate	0,008 g/l
pH value	7,6 ±0,2

CP73.1	500 g	plastic	84,40 €
Original pack 6 x 500 g			80,18/500 g

Maximum Recovery Solution

DIN 10162, LMBG, DIN EN ISO 6887-1, for microbiology

For homogenization and dilution of microbiological samples.
Storage temp.: +20 °C
Application: Use 9,5 g for 1 l broth.

Guarantee analysis:

Sodium chloride	8,5 g/l
Casein peptone	1 g/l
pH value	7,0 ±0,2

5766.1	500 g	plastic	50,00 €
Original pack 6 x 500 g			47,50/500 g

m-CP Agar

acc. to TWVO 2001, for microbiology

For isolation and enumeration of *Clostridium perfringens.*
Storage temp.: +20 °C
Application: Use 71,1 g for 1 l agar. After autoclaving add 2 vials (4 ml) reconstituted Clostridium perfringens Supplement (Art. No. CL52.1) and other supplements.

Guarantee analysis:

Tryptose	30 g/l
Yeast extract	20 g/l
Saccharose	5 g/l
L-Cysteine hydrochloride	1 g/l
Magnesium sulphate heptahydrate	0,1 g/l
Bromocresol purple	0,04 g/l
Agar	15 g/l
pH-value	7,6 ±0,2

CL55.1	500 g	plastic	156,45 €
Original pack 6 x 500 g			148,63/500 g

▶ Clostridium perfringens Supplement 1343

m-EI-chromogenic Agar (Base)

for microbiology

For detection and enumeration of *Enterococcus* in water via single step membrane filtration.

Storage temp.: +4 °C

Warning H302

Staining of species:
Enterococcus blue (by reaction of the β-D-glucosidase)
E. coli inhibited
Application: Use 71,95 g for 1 l agar. After autoclaving add 0,24 g nalidixic acid (Art. No. CN32.1) solubilised in water.

Formulation:

Yeast extract	30 g/l
Sodium chloride	15 g/l
Peptone	10 g/l
Esculin	1 g/l
Chromogene Mixture	0,75 g/l
Sodium azide	0,15 g/l
Cycloheximide	0,05 g/l
Agar	15 g/l
pH value	7,1 ±0,2

3014.1	100 g	plastic	81,20 €

Mossel EE Broth

Ph.Eur., for microbiology

For selective enrichment of enterobacteria in foods, particularly *Salmonella* and Coliforms.

Enriched broth medium E (Ph.Eur. 6.0), Enterobacteria enrichment broth-Mossel (Ph.Eur. 6.3, 7.0 and 8.0)

Storage temp.: +20 °C

Figure:
① Enterobacteria (here: *E. coli*), indicated by colour yellow caused by pH-shift
② Uninoculated broth
Application: Use 45 g for 1 l broth.

Guarantee analysis:

Pancreas hydrolysate made from gelatin	10 g/l
Glucose monohydrate	5 g/l
Dehydrated ox bile	20 g/l
Potassium dihydrogen phosphate	2 g/l
di-Sodium hydrogenphosphate dihydrate	8 g/l
Brilliant green	0,015 g/l
pH value	7,2 ±0,2

AE65.1	500 g	plastic	162,90 €
Original pack 6 x 500 g			154,76/500 g

MRSA chromogenic Agar (Base)

for microbiology

For detection of methicillin resistant staphylococci.

Storage temp.: +4 °C

Staining of species:
Staphylococcus aureus ATCC 43300 blue
(by reaction of the α-D-glucosidase)
Staphylococcus aureus ATCC 25923 and *E. coli* inhibited
Application: Use 103,4 g for 1 l agar. Do not overheat! After cooling add 2 vials (10 ml) reconstituted MRSA Cefoxitin Supplement (Art. No. 2975.1).

Formulation:

Nutrients	78 g/l
Peptone	11 g/l
Chromogene Mixture	1,9 g/l
Agar	12,5 g/l
pH value	7,2 ±0,2

3026.1	100 g	plastic	69,80 €

▶ MRSA Cefoxitin Supplement see page 1346

MRS Broth

for microbiology

For cultivation of lactobacilli. According to deMan, Rogosa and Sharpe.

Storage temp.: +4 °C

Application: Use 52 g for 1 l broth.

Formulation:

Peptone	10 g/l
Yeast extract	4 g/l
Beef extract	8 g/l
Glucose	20 g/l
Dipotassium phosphate	2 g/l
Sodium acetate	5 g/l
Ammonium citrate	2 g/l
Magnesium sulphate ($MgSO_4$)	0,2 g/l
Manganese sulphate	0,05 g/l
Polysorbate 80	1 g/l
pH value	6,2 ±0,2

X925.1	500 g	plastic	67,20 €
Original pack 6 x 500 g			63,84/500 g
X925.2	1 kg	plastic	113,45 €
Original pack 6 x 1 kg			107,78/1 kg
X925.3	2,5 kg	plastic	237,60 €

MRS Broth pH 5.7

ISO 15214, for microbiology

For cultivation of pH sensitive lactobacilli from foods and feeding stuff. According to deMan, Rogosa and Sharpe.

Storage temp.: +4 °C

MRS Broth with low pH value. For cultivation of special strains of lactobacilli, which show reduced growth under higher pH-values. Also for efficient protein expression of many proteins of *Lactobacillus*. 0.1 g/l Magnesium sulphate (anhydrous) is equivalent to 0.2 g/l Magnesium sulphate heptahydrate. 0.003 g/l Manganese sulphate (anhydrous) is equivalent to 0.05 g/l Manganese sulphate tetrahydrate.
Application: Use 54 g for 1 l broth.

Guarantee analysis:

Casein peptone.	10 g/l
Yeast extract.	4 g/l
Beef extract.	10 g/l
Glucose.	20 g/l
Dipotassium phosphate.	2 g/l
Sodium acetate.	5 g/l
Triammonium citrate.	2 g/l
Magnesium sulphate heptahydrate.	0,20 g/l
Mangansulphate tetrahydrate.	0,05 g/l
Polysorbate 80.	1,08 g/l
pH value.	5,7 ±0,1

HP64.1	500 g	plastic	71,50 €
Original pack 6 x 500 g			67,93/500 g

MRS Agar

for microbiology

For cultivation of lactobacilli. According to deMan, Rogosa and Sharpe.

Storage temp.: +4 °C

Application: Use 62 g for 1 l agar.

Formulation:

Peptone.	10 g/l
Yeast extract.	4 g/l
Beef extract.	8 g/l
Glucose.	20 g/l
Dipotassium phosphate.	2 g/l
Sodium acetate.	5 g/l
Ammonium citrate.	2 g/l
Magnesium sulphate ($MgSO_4$).	0,2 g/l
Manganese sulphate.	0,05 g/l
Polysorbate 80.	1 g/l
Agar.	10 g/l
pH value.	6,2 ±0,2

X924.1	500 g	plastic	70,45 €
Original pack 6 x 500 g			66,93/500 g
X924.2	1 kg	plastic	122,05 €
Original pack 6 x 1 kg			115,95/1 kg

MRS Agar pH 5.7

ISO 15214, for microbiology

For cultivation of pH sensitive lactobacilli from foods and feeding stuff. According to deMan, Rogosa and Sharpe.

Storage temp.: +4 °C

MRS Agar with low pH value. For cultivation of special strains of lactobacilli, which show reduced growth under higher pH-values. Also for efficient protein expression of many proteins of *Lactobacillus*.
0.1 g/l Magnesium sulphate (anhydrous) is equivalent to 0.2 g/l Magnesium sulphate heptahydrate. 0.003 g/l Manganese sulphate (anhydrous) is equivalent to 0.05 g/l Manganese sulphate tetrahydrate.
Application: Use 64 g for 1 l agar.

Guarantee analysis:

Casein peptone.	10 g/l
Yeast extract.	4 g/l
Beef extract.	10 g/l
Glucose.	20 g/l
Dipotassium phosphate.	2 g/l
Sodium acetate.	5 g/l
Triammonium citrate.	2 g/l
Magnesium sulphate heptahydrate.	0,20 g/l
Mangansulphate tetrahydrate.	0,05 g/l
Polysorbate 80.	1,08 g/l
Agar.	10 g/l
pH value.	5,7 ±0,1

HP65.1	500 g	plastic	79,05 €
Original pack 6 x 500 g			75,10/500 g

Mueller Hinton Broth

for microbiology

For cultivation of microorganisms and for antibiotic-sensitivity testing.

Storage temp.: +20 °C

Application: Use 21 g for 1 l broth. Slightly opalescent.

Formulation:

Beef Infusion.	2 g/l
Casein peptone (acidic hydrolysate).	17,5 g/l
Corn starch.	1,5 g/l
pH value.	7,4 ±0,2

X927.1	500 g	plastic	111,30 €
Original pack 6 x 500 g			105,74/500 g

Mueller Hinton Agar

for microbiology

For testing of organism susceptibility to antimicrobial agents by disk diffusion method. Also for cultivation of *Neisseria*.

Storage temp.: +20 °C

Application: Use 38 g for 1 l agar. Slightly opalescent.

Formulation:

Beef Infusion.	2 g/l
Casein peptone (acidic hydrolysate).	17,5 g/l
Corn starch.	1,5 g/l
Agar.	17 g/l
pH value.	7,4 ±0,2

X926.1	500 g	plastic	85,50 €
Original pack 6 x 500 g			81,23/500 g

Mueller Kauffmann Broth (Base)

for microbiology

For selective enrichment of *Salmonella* from meat and other foods.
Tetrathionate Broth, Tetrathionate Enrichment Broth
Storage temp.: +20 °C
Application: Use 82 g for 1 l broth. Add iodine and brilliant green.

Formulation:

Sodium thiosulphate	40,7 g/l
Calcium carbonate	25 g/l
Dehydrated ox bile	4,75 g/l
Sodium chloride (NaCl)	4,5 g/l
Meat peptone	4,5 g/l
Yeast extract	1,8 g/l
Meat extract	0,9 g/l
pH value	7,6 ±0,2

8323.1	500 g	plastic	76,90 €
Original pack 6 x 500 g			73,06/500 g

Nutrient Broth

for microbiology

For cultivation of non-fastidious microorganisms.
Storage temp.: +20 °C
Application: Use 8 g for 1 l broth.

Formulation:

Beef extract	3 g/l
Gelatine peptone	5 g/l
pH value	6,8 ±0,2

X929.1	500 g	plastic	70,45 €
Original pack 6 x 500 g			66,93/500 g
X929.2	1 kg	plastic	123,10 €
Original pack 6 x 1 kg			116,95/1 kg

Nutrient Agar

EN ISO 6579, ISO 10273, for microbiology

For cultivation of non-fastidious microorganisms.
Storage temp.: +20 °C
Application: Use 23 g for 1 l agar.

Guarantee analysis:

Gelatine peptone	5 g/l
Beef extract	3 g/l
Agar	15 g/l
pH value	6,8 ±0,2

X928.1	500 g	plastic	72,60 €
Original pack 6 x 500 g			68,97/500 g
X928.2	1 kg	plastic	131,70 €
Original pack 6 x 1 kg			125,12/1 kg

Nutrient Agar (DEV)

DEV, DIN 38 411, for microbiology

For enumeration of microorganisms in general in water samples and other sample material.
Storage temp.: +20 °C
Application: Use 43 g for 1 l agar.

Guarantee analysis:

Meat peptone	10 g/l
Meat extract	10 g/l
Sodium chloride (NaCl)	5 g/l
Agar	18 g/l
pH value	7,3 ±0,2

CL02.1	500 g	plastic	95,70 €
Original pack 6 x 500 g			90,92/500 g
CL02.2	1 kg	plastic	170,95 €
Original pack 6 x 1 kg			162,40/1 kg

Nutrient Agar (DEV/ISO)

DEV, EN ISO 16266:2008, for microbiology

For confirmation of *Pseudomonas aeruginosa* in water samples.
Storage temp.: +20 °C
Application: Use 28 g for 1 l agar.

Guarantee analysis:

Peptone	5 g/l
Meat extract	1 g/l
Yeast extract	2 g/l
Sodium chloride (NaCl)	5 g/l
Agar	15 g/l
pH value	7,4 ±0,2

CP66.1	500 g	plastic	94,10 €
Original pack 6 x 500 g			89,40/500 g

Orange Serum Agar

for microbiology

For isolation, detection and enumeration of acid-tolerant pathogens in fruit juices and fruit juice concentrates, particularly citrus products.
Storage temp.: +20 °C

Warning H315-H317-H411-EUH208

Application: Use 40 g for 1 l agar.

Formulation:

Casein peptone	10 g/l
Orange extract	5 g/l
Glucose	4 g/l
Potassium phosphate	3 g/l
Yeast extract	3 g/l
Agar	15 g/l
pH value	5,5 ±0,2

HP09.1	500 g	plastic	153,20 €
Original pack 6 x 500 g			145,54/500 g

Oxford Listeria Agar (Base)

ISO 11290-1, for microbiology

Selective medium for detection of *Listeria monocytogenes.*
Oxford Agar
Storage temp.: +20 °C

Warning H302-H315-H319

Based on Columbia Agar (Base) (Art. No. X919).

Figure: *Listeria monocytogenes*
Application: Use 55,5 g for 1 l agar. After cooling add 2 vials (2x2 ml) reconstituted Listeria Oxford Supplement (Art. No. 5801.1).

Guarantee analysis:

Peptone mixture	23 g/l
Sodium chloride	5 g/l
Starch	1 g/l
Lithium chloride	15 g/l
Esculin	1 g/l
Ammonium iron(III)citrate	0,5 g/l
Agar	10 g/l
pH value	7,0 ±0,2

5767.1	500 g	plastic	143,55 €
Original pack 6 x 500 g			136,37/500 g

▶ Listeria Oxford Supplement see page 1326

Palcam Listeria Agar (Base)

ISO 11290-1, for microbiology

Differential medium for detection of *Listeria ssp.*, particularly *L. monocytogenes.*

Palcam Agar

Storage temp.: +20 °C

Warning H315-H319

Based on Columbia Agar (Base) (Art. No. X919).

Figure: *Listeria monocytogenes*
Application: Use 68,8 g for 1 l agar. After cooling add 2 vials (2x2 ml) reconstituted Listeria Palcam Supplement (Art. No. 5803.1).

Guarantee analysis:

Peptone mixture	23 g/l
Sodium chloride	5 g/l
Starch	1 g/l
Lithium chloride	15 g/l
D-Mannitol	10 g/l
Yeast extract	3 g/l
Esculin	0,8 g/l
Glucose	0,5 g/l
Phenol red	0,08 g/l
Ammonium iron(III)citrate	0,5 g/l
Agar	10 g/l
pH value	7,2 ±0,2

5768.1	500 g	plastic	131,70 €
Original pack 6 x 500 g			125,12/500 g

▶ Listeria Palcam Supplement see page 1345

Peptone Water, buffered

Ph.Eur., for microbiology

For dilution and homogenisation of samples during microbiological analysis of food.
Sodium peptone buffer solution (Ph.Eur. 6.0), Buffered Sodium Chloride-Peptone Solution (Ph.Eur. 6.3, 7.0 and 8.0).

Storage temp.: +20 °C

Application: Use 16,1 g for 1 l broth.

Guarantee analysis:

Potassium hydrogen phosphate*	3,6 g/l
di-Sodium hydrogen phosphate dihydrate*	7,2 g/l
Sodium chloride (NaCl)	4,3 g/l
Casein peptone (Pancreas hydrolysate)	1,0 g/l
pH value	7,0 ±0,2

*equivalent to 0,067 M phosphate

AE67.1	500 g	plastic	59,70 €
Original pack 6 x 500 g			56,72/500 g
AE67.2	1 kg	plastic	101,60 €
Original pack 6 x 1 kg			96,52/1 kg

Please note our **Technical Information Brochure** on the Internet next to the products:

Clouding of Microbiological Nutrient Media
Basics, tips and tricks

Peptone Water, buffered

EN ISO 6887, EN ISO 6579, ISO 22964, EN ISO 19250, for microbiology

Diluent for homogenisation of food samples and for sample preparation for microbiological analysis.

Storage temp.: +20 °C

Application: Use 20 g for 1 l broth.

Guarantee analysis:

Pancreatic digest of casein	10 g/l
Sodium chloride (NaCl)	5 g/l
Disodium phosphate	3,5 g/l
Potassium phosphate	1,5 g/l
pH value	7,0 ±0,2

X917.1	500 g	plastic	51,50 €
Original pack 6 x 500 g			48,93/500 g
X917.2	1 kg	plastic	92,35 €
Original pack 6 x 1 kg			87,73/1 kg
X917.3	2,5 kg	plastic	188,15 €

Peptone water, buffered, granulated

granulated, EN ISO 6887, EN ISO 6579, ISO 22964, EN ISO 19250, for microbiology

Diluent for homogenisation of food samples and for sample preparation for microbiological analysis.

Storage temp.: +20 °C

Granulated, dust-minimized version with high solubility and superior homogeneity.
Application: Use 20 g for 1 l broth.

Guarantee analysis:

Pancreatic digest of casein	10 g/l
Sodium chloride (NaCl)	5 g/l
Disodium phosphate	3,5 g/l
Potassium phosphate	1,5 g/l
pH value	7,0 ±0,2
Granulation	complies

6680.1	500 g	plastic	76,90 €
Original pack 6 x 500 g			73,06/500 g
6680.2	1 kg	plastic	136,55 €
Original pack 6 x 1 kg			129,72/1 kg

Plate Count Agar

APHA, ISO 4833:2003, for microbiology

For enumeration of the aerobic microbial flora in milk, foods and other material.
Storage temp.: +20 °C
Application: Use 23,5 g for 1 l agar.

Guarantee analysis:

Casein peptone	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Agar	15 g/l
pH value	7,0 ±0,2

X930.1	500 g	plastic	73,65 €
Original pack 6 x 500 g			69,97/500 g
X930.2	1 kg	plastic	130,10 €
Original pack 6 x 1 kg			123,60/1 kg
X930.3	2,5 kg	plastic	256,95 €

Plate Count Agar with Powdered Milk

APHA, DIN 10192, LMBG, IDF, for microbiology

For enumeration of microorganisms in milk and dairy derivatives.
Storage temp.: +20 °C
Application: Use 24.5 g for 1 l agar.

Guarantee analysis:

Tryptone (Peptone from Casein)	5 g/l
Yeast extract	2,5 g/l
Glucose	1 g/l
Skimmed Milk Powder	1 g/l
Agar	15 g/l
pH value	7,0 ±0,2

HP08.1	500 g	plastic	85,90 €
Original pack 6 x 500 g			81,61/500 g

Potato Extract Glucose Broth

for microbiology

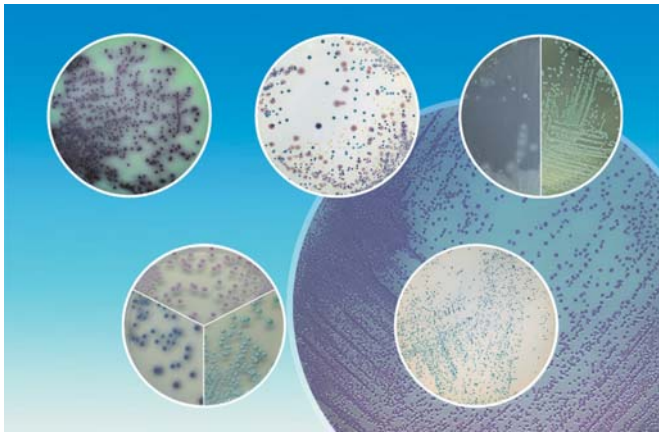
For identification, cultivation and enumeration of yeasts and moulds.
Storage temp.: +20 °C
Application: Use 26,5 g for 1 l broth. Slightly opalescent.

Formulation:

Potato infusion	6,5 g/l
Glucose	20 g/l
pH value	5,6 ±0,2

CP74.1	500 g	plastic	61,85 €
Original pack 6 x 500 g			58,76/500 g
CP74.2	1 kg	plastic	113,45 €
Original pack 6 x 1 kg			107,78/1 kg

Chromogenic Agars made by Roth



Potato Extract Glucose Agar

Ph.Eur., for microbiology

For cultivation and identification of yeasts and moulds.
Potato Dextrose Agar (Ph.Eur. 6.3, 7.0 and 8.0)
Storage temp.: +20 °C
Recommended by the Harmonized Method (Ph.Eur. 6.0, 2.6.12.B) for preperation of strains of *Aspergillus brasiliensis*.

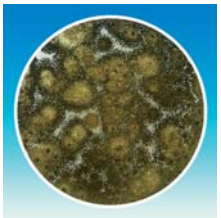


Figure: *Aspergillus brasiliensis*
Application: Use 39 g for 1 l agar. Slightly opalescent.

Guarantee analysis:

Potato infusion	4 g/l
Glucose	20 g/l
Agar	15 g/l
pH value	5,6 ±0,2

X931.1	500 g	plastic	88,70 €
Original pack 6 x 500 g			84,27/500 g
X931.2	1 kg	plastic	160,20 €
Original pack 6 x 1 kg			152,19/1 kg
X931.3	2,5 kg	plastic	372,95 €

Pseudomonas chromogenic Agar

for microbiology

For detection and isolation of *Pseudomonas*.
Storage temp.: +4 °C

Staining of species:
Pseudomonas aeruginosa magenta on green-blue coloured agar
E. coli, *Enterococcus*, *Salmonella* and *Staphylococcus* inhibited or colourless
Application: Use 37 g for 1 l agar. Do not overheat!

Formulation:

Nutrients	14 g/l
Peptone	10 g/l
Chromogene Mixture	1 g/l
Bromothymol blue	0,02 g/l
Agar	12 g/l
pH value	7,2 ±0,2

3075.1	100 g	plastic	105,90 €

Pseudomonas Selective Agar (Base)

DEV, EN ISO 16266:2008, for microbiology

For determination and enumeration of *Pseudomonas aeruginosa* from water samples by membrane filtration method.

CN Agar

Storage temp.: +20 °C

Warning H410

Application: Use 50,6 g for 990 ml agar. Add 10 ml glycerol.

Guarantee analysis:

Gelatine peptone.	16 g/l
Casein hydrolysed.	10 g/l
Anhydrous potassium sulphate.	10 g/l
Anhydrous magnesium chloride.	1,4 g/l
Cetrimide.	0,2 g/l
Nalidixic acid.	0,015 g/l
Agar.	13 g/l
pH value.	7,1 ±0,2

CP67.1	500 g	plastic	130,65 €
Original pack 6 x 500 g			124,12/500 g

R2A-Agar

Ph.Eur., for microbiology

For enumeration of heterotrophic bacteria from water samples.

Agar medium S (Ph.Eur. 6.0), Reasoner's 2A Agar

Storage temp.: +20 °C

Nutritionally reduced medium. Incubation of water samples on R2A Agar often leads to higher colony numbers of micro-organisms than found for rich media, particularly when incubation is performed at lower temperatures. The medium was originally developed by Reasoner and Geldreich to determine the total germ number in drinking water (Reasoner and Geldreich, 1985, *Appl. Environ. Microbiol.* 49:1).
Application: Use 18,1 g for 1 l agar.

Guarantee analysis:

Yeast extract.	0,5 g/l
Peptone.	0,5 g/l
Casein hydrolysed.	0,5 g/l
Glucose.	0,5 g/l
Starch.	0,5 g/l
di-Potassium hydrogen phosphate.	0,3 g/l
Magnesium sulphate ($MgSO_4$).	0,024 g/l
Sodium pyruvate.	0,3 g/l
Agar.	15 g/l
pH value.	7,2 ±0,2

CL01.1	500 g	plastic	114,50 €
Original pack 6 x 500 g			108,78/500 g

Microbiological Quality Control

Microbiological quality control of Roth molecular biological and microbiological culture media and agar is carried out according to following guidelines:

- Plating relevant bacterial strains from standardized stock solution (as a rule in dilutions of 10^{-1} to 10^{-10}) on agar plates of culture medium to be tested. The preparation of the media and agar must be carried out strictly according to the instructions, which are included.
- Plates from a checked batch of culture media are used as a reference
- The developed colonies are counted and rated after adequate incubation. Counting is always carried out using the plate with colony number 30-300.
- Standardization and validation of test: reference plates are compared with the number of bacteria expected
- Reference and test plate colonies are analysed for size, colour, appearance and possible reaction to certain chemicals
- Growth count on the test plates:

„good“ or „satisfactory“	colony number = 50 % - 99 % of expected growth
„moderate“	colony number = 30 % - 50 % of expected growth
„inhibited“	colony number ≤ 30 % of expected growth
„zero“	no growth

Rappaport Vassiliadis Broth

Ph.Eur., for microbiology

For selective enrichment of *Salmonellae* in foods, water- and other samples.

R10 Broth, Rappaport Vassiliadis *Salmonella* Enrichment Broth

(Ph.Eur. 6.3, 7.0 and 8.0), RVS Broth

Storage temp.: +20 °C

Recommended by the Harmonized Method (Ph.Eur. 6.0, 2.6.13.B) for proliferation of *Salmonella*.
This particular formulation is a slight modification of the original medium developed by Rappaport (Rappaport *et al.*, 1956, *J. Clin. Pathol.* 9: 261-1).
Application: Use 27,1 g for 1 l broth.

Guarantee analysis:

Anhydrous magnesium chloride.	13,58 g/l
Sodium chloride (NaCl).	8,0 g/l
Soy peptone.	4,5 g/l
Potassium dihydrogen phosphate.	0,6 g/l
di-Potassium hydrogen phosphate.	0,4 g/l
Malachite green .	0,036 g/l
pH value.	5,2 ±0,2

CL03.1	500 g	plastic	87,65 €
Original pack 6 x 500 g			83,27/500 g

Reinforced Clostridial Medium

Ph.Eur., for microbiology

For enrichment and enumeration of *Clostridiae* and other anaerobes from foods and other specimens.

Medium P (Ph.Eur. 6.0), Reinforced Medium for *Clostridia*

(Ph.Eur. 6.3, 7.0 and 8.0), **RCM**

Storage temp.: +20 °C

Application: Use 38 g for 1 l broth.

Guarantee analysis:

Beef extract.	10 g/l
Peptone.	10 g/l
Yeast extract.	3 g/l
Soluble starch.	1 g/l
Glucose monohydrate.	5 g/l
Cystein hydrochloride.	0,5 g/l
Sodium chloride (NaCl).	5 g/l
Sodium acetate.	3 g/l
Agar.	0,5 g/l
pH value.	6,8 ±0,2

AE66.1	500 g	plastic	97,30 €
Original pack 6 x 500 g			92,44/500 g

Rogosa Agar
for microbiology

For selective cultivation of lactobacilli.
Lactobacillus Selective Agar acc. to Rogosa
Storage temp.: +20 °C
Application: Use 75 g for 1 l agar.

Formulation:

Sodium acetate	15 g/l
Tryptone	10 g/l
Dextrose	10 g/l
Potassium phosphate	6 g/l
Yeast extract	5 g/l
Sucrose	5 g/l
Arabinose	5 g/l
Ammonium citrate	2 g/l
Polysorbate 80	1 g/l
Magnesium sulphate ($MgSO_4$)	0,57 g/l
Manganese sulphate	0,12 g/l
Iron sulphate	0,03 g/l
Agar	15 g/l
pH value	5,4 ±0,2

8329.1	500 g	plastic	128,50 €
Original pack 6 x 500 g			122,08/500 g

Sabouraud 2 % Glucose Bouillon
Ph.Eur., for microbiology

Selective media for taxonomic analysis of pathogenic fungi.
Sabouraud Dextrose Broth (Ph.Eur. 6.3, 7.0 and 8.0)
Storage temp.: +20 °C
Recommended by the Harmonized Method (Ph.Eur. 6.0, 2.6.13.B) for growth of *Candida albicans*.
The low amount of glucose supports the activation of the secondary metabolism and, subsequently, pigment formation.
Application: Use 30 g for 1 l broth.

Guarantee analysis:

Meat and casein peptone	10 g/l
Glucose	20 g/l
pH value	5,6 ±0,2

AE23.1	500 g	plastic	60,75 €
Original pack 6 x 500 g			57,71/500 g

Sabouraud 2 % Glucose Agar
for microbiology

Selective agar for taxonomic analysis of pathogenic fungi.
Storage temp.: +20 °C
The low amount of glucose supports the activation of the secondary metabolism and, subsequently, pigment formation.
Application: Use 47 g for 1 l agar.

Formulation:

Meat and casein peptone	10 g/l
Glucose	20 g/l
Agar	17 g/l
pH value	5,6 ±0,2

AE22.1	500 g	plastic	69,35 €
Original pack 6 x 500 g			65,88/500 g

Sabouraud 4 % Glucose Agar
Ph.Eur., for microbiology

For isolation, differentiation and cultivation of yeasts and fungi.
Agar medium C (Ph.Eur. 6.0), Sabouraud Dextrose Agar (Ph.Eur. 6.3, 7.0 and 8.0)
Storage temp.: +20 °C
Recommended by the Harmonized Method (Ph.Eur. 6.0, 2.6.13.B) for growth and identification of *Candida albicans*.

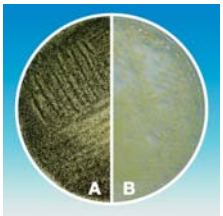


Figure:
A: *Aspergillus brasiliensis*
B: *Candida albicans*

Application: Use 65 g for 1 l agar.

Guarantee analysis:

Meat and casein peptone	10 g/l
Glucose monohydrate	40 g/l
Agar	15 g/l
pH value	5,6 ±0,2

X932.1	500 g	plastic	59,70 €
Original pack 6 x 500 g			56,72/500 g
X932.2	1 kg	plastic	103,75 €
Original pack 6 x 1 kg			98,56/1 kg

Sabouraud 4 % Glucose Agar (with chloroamphenicol)
Ph.Eur., for microbiology

Selective agar for cultivation and isolation of yeasts and pathogenic fungi.
Agar medium C with chloroamphenicol (Ph.Eur. 6.0)
Storage temp.: +20 °C
Application: Use 65 g for 1 l agar.

Guarantee analysis:

Meat and casein peptone	10 g/l
Glucose monohydrate	40 g/l
Chloroamphenicol	0,05 g/l
Agar	15 g/l
pH value	5,6 ±0,2

AE48.1	500 g	plastic	73,65 €
Original pack 6 x 500 g			69,97/500 g

Sabouraud 4 % Glucose Agar (with chloroamphenicol)
for microbiology

For selective isolation of yeasts and pathogenic fungi.
Storage temp.: +20 °C

Danger H340-H350

Application: Use 65,5 g for 1 l agar.

Formulation:

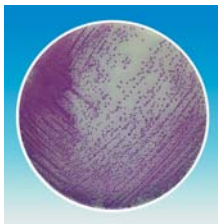
Meat and casein peptone	10 g/l
Glucose	40 g/l
Chloroamphenicol	0,5 g/l
Agar	15 g/l
pH value	5,6 ±0,2

X933.1	500 g	plastic	69,35 €
Original pack 6 x 500 g			65,88/500 g

Salmonella chromogenic Agar

for microbiology

For isolation of *Salmonella* from foods, waters and other samples.
Storage temp.: +4 °C



Staining of species:
Salmonella magenta (by reaction of the ß-D-galactosidase)
E. coli turquoise (by reaction of the ß-D-glucuronidase)
other *Enterobacteriaceae* clear or inhibited
Application: Use 37,1 g for 1 l agar.

Formulation:

Sodium citrate	8,5 g/l
Casein peptone	5 g/l
Beef extract	5 g/l
Chromogene Mixture	5,81 g/l
Agar	12,8 g/l
pH value	7,2 ±0,2

CL46.2	100 g	plastic	137,10 €
CL46.1	575 g	plastic	456,90 €

Salmonella-Shigella Agar

for microbiology

For isolation of pathogenic enterobacteria, especially *Salmonella* and *Shigella*.
Storage temp.: +20 °C

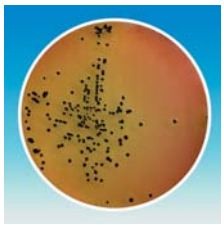


Figure: *Salmonella typhimurium*
Application: Use 60 g for 1 l agar.

Formulation:

Beef extract	5 g/l
Peptone mixture	5 g/l
Lactose	10 g/l
Ferric citrate	1 g/l
Bile salts	8,5 g/l
Sodium citrate	8,5 g/l
Sodium thiosulphate	8,5 g/l
Brilliant green	0,0003 g/l
Neutral red	0,025 g/l
Agar	13,5 g/l
pH value	7,0 ±0,2

X934.1	500 g	plastic	48,30 €
Original pack 6 x 500 g			45,89/500 g

Schaedler Broth

for microbiology

For enrichment and cultivation of anaerobic microorganisms.
Storage temp.: +20 °C

Warning H315-H319

Based on CASO Broth / Trypticasein Soy Broth (Art. No. X938).
Application: Use 28,4 g for 1 l broth.

Formulation:

Casein peptone	5,66 g/l
Soy peptone	1 g/l
Sodium chloride	1,66 g/l
Dipotassium hydrogen phosphate	0,83 g/l
Peptone mixture	5 g/l
Yeast extract	5 g/l
Glucose	5,83 g/l
Tris (hydroxymethyl aminomethane)	3 g/l
L-Cystine	0,4 g/l
Hemin	0,01 g/l
pH value	7,6 ±0,2

5772.1	500 g	plastic	100,00 €
Original pack 6 x 500 g			95,00/500 g

Schaedler Agar

for microbiology

For recovery and cultivation of anaerobic microorganisms.
Storage temp.: +20 °C
Based on CASO Broth / Trypticasein Soy Broth (Art. No. X938).
Application: Use 41,9 g for 1 l agar.

Formulation:

Casein peptone	5,66 g/l
Soy peptone	1 g/l
Sodium chloride	1,66 g/l
Dipotassium hydrogen phosphate	0,83 g/l
Peptone mixture	5 g/l
Yeast extract	5 g/l
Glucose	5,83 g/l
Tris (hydroxymethyl aminomethane)	3 g/l
L-Cystine	0,4 g/l
Hemin	0,01 g/l
Agar	13,5 g/l
pH value	7,6 ±0,2

5771.1	500 g	plastic	109,15 €
Original pack 6 x 500 g			103,69/500 g

Simmons Citrate Agar

ISO 10273, for microbiology

For differentiation of microorganisms on the basis of citrate utilization.
Koser Citrate Agar (modified)
Storage temp.: +20 °C
Application: Use 24.3 g for 1 l agar.

Guarantee analysis:

Sodium chloride	5 g/l
Sodium citrate	2 g/l
Ammonium dihydrogen phosphate	1 g/l
di-Potassium hydrogen phosphate	1 g/l
Magnesium sulphate	0,2 g/l
Bromothymol blue	0,08 g/l
Agar	15 g/l
pH value	6,9 ±0,2

5774.1	500 g	plastic	114,50 €
Original pack 6 x 500 g			108,78/500 g

Slanetz-Bartley Agar
for microbiology

For detection and enumeration of faecal *streptococci* by membrane filtration method or by direct plating.

Storage temp.: +20 °C

Warning H302-H412

Application: Use 41,5 g for 1 l agar.

Formulation:

Tryptose.	20 g/l
Yeast extract.	5 g/l
Glucose.	2 g/l
Dipotassium phosphate.	4 g/l
Sodium azide.	0,4 g/l
Tetrazolium chloride (TTC).	0,1 g/l
Agar.	10 g/l
pH value.	7,2 ±0,1

X935.1	500 g	plastic	117,20 €
Original pack 6 x 500 g			111,34/500 g

Slanetz-Bartley Medium (with tetrazolium chloride)
DEV, ISO 7899-2:2000, for microbiology

For detection and enumeration of intestinal enterococci from water samples.

Storage temp.: +20 °C

Warning H302-H412

Figure: *Enterococcus faecalis*
Application: Use 41,5 g for 1 l agar. Sterilise by sterile filtration, do not autoclave.

Guarantee analysis:

Tryptose.	20 g/l
Yeast extract.	5 g/l
Glucose.	2 g/l
di-Potassium hydrogen phosphate.	4 g/l
Sodium azide.	0,4 g/l
Tetrazolium chloride (TTC).	0,1 g/l
Agar.	10 g/l
pH value.	7,2 ±0,1

CP68.1	500 g	plastic	117,20 €
Original pack 6 x 500 g			111,34/500 g

Sorbitol MacConkey Agar
for microbiology

Selective and differential medium for detection of sorbitol-fermenting *E. coli* O157:H7.

MacConkey Agar with sorbitol, **SMAC Agar**

Storage temp.: +20 °C

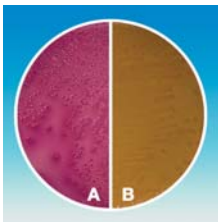


Figure:
A: *Escherichia coli* ATCC 25922
B: *Escherichia coli* O157:H7
Application: Use 51,5 g for 1 l agar.

Formulation:

Gelatine peptone.	20 g/l
Sorbitol.	10 g/l
Sodium chloride.	5 g/l
Bile salts No. 3.	1,5 g/l
Neutral red.	0,03 g/l
Crystal Violet.	0,001 g/l
Agar.	15 g/l
pH value.	7,1 ±0,2

5778.1	500 g	plastic	94,10 €
Original pack 6 x 500 g			89,40/500 g

Standard Count Agar
for microbiology

For enumeration of aerobic bacteria in milk, water and wastewaters.

Storage temp.: +20 °C

Application: Use 25 g for 1 l agar.

Formulation:

Meat extract.	3 g/l
Casein peptone.	5 g/l
Sodium chloride (NaCl).	5 g/l
Agar.	12 g/l
pH value.	7,2 ±0,2

AE91.1	500 g	plastic	87,65 €
Original pack 6 x 500 g			83,27/500 g

Please note our **Technical Information Brochure** on the Internet next to the products:

Microbiological Nutriens Media
Listing of Roth Nutrient Media according to applications.

Standard Nutrient Broth I

for microbiology

For cultivation and enumeration of fastidious bacteria.
Also high-base for preparing special culture media.
Storage temp.: +20 °C
Application: Use 25 g for 1 l broth.

Formulation:

Peptone.	15 g/l
Yeast extract.	3 g/l
Sodium chloride (NaCl).	6 g/l
Glucose.	1 g/l
pH value.	7,5 ±0,2

AE92.1	500 g	plastic	73,00 €
Original pack 6 x 500 g			69,35/500 g
AE92.2	1 kg	plastic	127,95 €
Original pack 6 x 1 kg			121,55/1 kg

Standard Nutrient Agar I

for microbiology

For cultivation and enumeration of fastidious bacteria.
Also high-base for preparing special culture agars.
Storage temp.: +20 °C

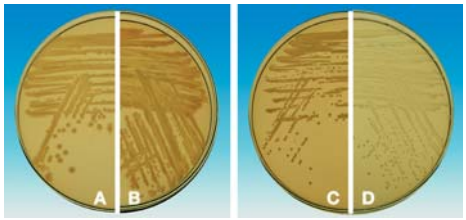


Figure:
A: *Escherichia coli*
B: *Pseudomonas aeruginosa*
C: *Staphylococcus aureus*
D: *Streptococcus agalactiae*

With kind permission of Nils Niederstebruch, GLOBOLAB e.V., Assling

Application: Use 37 g for 1 l agar.

Formulation:

Peptone.	15 g/l
Yeast extract.	3 g/l
Sodium chloride (NaCl).	6 g/l
Glucose.	1 g/l
Agar.	12 g/l
pH value.	7,5 ±0,2

AE93.1	500 g	plastic	75,15 €
Original pack 6 x 500 g			71,39/500 g
AE93.2	1 kg	plastic	127,95 €
Original pack 6 x 1 kg			121,55/1 kg

TAT Broth (Base)

USP, for microbiology

For proliferation and regeneration of microorganisms from a variety of matters, e.g. from cosmetics, and matters contaminated with antimicrobial reagents.
Casein peptone Lecithin Polysorbate Broth, **CPLP Broth**
Storage temp.: +20 °C
Application: Use 25 g for 1 l broth. Following autoclaving add 40 ml Tween® 20 (polysorbate).

Guarantee analysis:

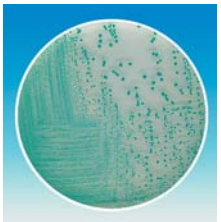
Casein peptone.	20 g/l
Soya lecithin.	5 g/l
pH value.	7,1 ±0,2

3935.1	500 g	plastic	99,90 €
Original pack 6 x 500 g			94,91/500 g
3935.2	1 kg	plastic	177,40 €
Original pack 6 x 1 kg			168,53/1 kg

TBX chromogenic Agar

ISO 16649-2 and -3, for microbiology

Selective agar for detection of *E.coli* in food samples.
Storage temp.: +20 °C



Staining of species:
E. coli turquoise (by reaction of the ß-D-glucuronidase)
other Enterobacteriaceae (*Salmonella, Streptococcus, Klebsiella*) clear or inhibited
Application: Use 36,6 g for 1 l agar.

Guarantee analysis:

Casein peptone.	20,0 g/l
Bile salts.	1,5 g/l
x-β-D-Glucuronide.	0,075 g/l
Agar.	15,0 g/l
pH value.	7,2 ±0,2

CL47.2	100 g	plastic	88,70 €
CL47.1	500 g	plastic	317,15 €
Original pack 6 x 500 g			301,29/500 g

TCBS Agar

for microbiology

For selective isolation of *Vibrio.*
Thiosulphate Citrate Bile Sucrose Agar, Cholera Medium TCBS, Cholera Agar
Storage temp.: +20 °C
Application: Use 88 g for 1 l agar.

Formulation:

Sucrose.	20 g/l
Sodium chloride (NaCl).	10 g/l
Sodium thiosulphate.	10 g/l
Sodium citrate.	10 g/l
Meat peptone.	5 g/l
Casein peptone.	5 g/l
Yeast extract.	5 g/l
Dehydrated ox bile.	5 g/l
Sodium cholate.	3 g/l
Ammonium iron(III)citrate.	1 g/l
Thymol blue.	0,04 g/l
Bromothymol blue.	0,04 g/l
Agar.	14 g/l
pH value.	8,6 ±0,2

8333.1	500 g	plastic	106,45 €
Original pack 6 x 500 g			101,13/500 g

Todd-Hewitt-Bouillon

for microbiology

For cultivation of β-hemolytic streptococci for serological typing.
Storage temp.: +20 °C
Application: Use 30 g for 1 l broth.

Formulation:

Heart infusion.	3,1 g/l
Peptone.	20 g/l
Glucose.	2 g/l
Sodium carbonate.	2,5 g/l
Sodium chloride (NaCl).	2 g/l
Disodium phosphate.	0,4 g/l
pH value.	7,8 ±0,2

X936.1	500 g	plastic	81,20 €
Original pack 6 x 500 g			77,14/500 g

Triple Sugar Iron Agar

Ph.Eur., for microbiology

For identification and differentiation of enterobacteria and for determination of *Salmonellae*. Agar medium M (Ph.Eur. 6.0), **TSI agar**

Storage temp.: +20 °C

Application: Use 64.6 g for 1 l agar.

Guarantee analysis:

Beef extract.	3 g/l
Yeast extract.	3 g/l
Beef- and casein peptone.	20 g/l
Sodium chloride (NaCl).	5 g/l
Lactose monohydrate.	10 g/l
Saccharose.	10 g/l
Glucose monohydrate.	1 g/l
Ammonium iron(III)citrate.	0,3 g/l
Sodium thiosulphate.	0,3 g/l
Phenol red.	0,025 g/l
Agar.	12 g/l
pH value.	7,4 ±0,2

AE49.1	500 g	plastic	74,10 €
Original pack 6 x 500 g			70,40/500 g

Tryptone Bile Salts Agar

DEV, EN ISO 9308-1:2000, for microbiology

For detection and enumeration of *E. coli* in foods and water samples. **TBA**

Storage temp.: +20 °C

Application: Use 36,5 g for 1 l agar.

Guarantee analysis:

Tryptone.	20 g/l
Bile salts.	1,5 g/l
Agar.	15 g/l
pH value.	7,2 ±0,1

CP69.1	500 g	plastic	110,20 €
Original pack 6 x 500 g			104,69/500 g

Tryptone Soy Agar

DEV, EN ISO 9308-1:2000, for microbiology

For the detection and enumeration of *E. coli* and other coliform bacteria in foods and water samples.

TSA, Trypticase-Soya-Agar

Storage temp.: +20 °C

Application: Use 40 g for 1 l agar.

Guarantee analysis:

Casein, tryptic digest.	15 g/l
Soy peptone.	5 g/l
Sodium chloride (NaCl).	5 g/l
Agar.	15 g/l
pH value.	7,2 ±0,1

CP70.1	500 g	plastic	74,10 €
Original pack 6 x 500 g			70,40/500 g

Tryptophane Culture Broth

DEV, EN ISO 9308-1:2000, for microbiology

For the detection of *E. coli* in foods and water samples by indole production.

Storage temp.: +20 °C

Escherichia transform lactose under acid production via β-galactosidase, and are negative in oxidase test and positive in indole production test. Kovac Reagent (Art. No. 2950.1) is added to 24-48 h old cultures in a concentration of 0.2 to 0.5 ml per 5 ml broth. A colour shift to dark red shown presence of indole.

Application: Use 16 g for 1 l broth.

Guarantee analysis:

Casein, tryptic digest.	10 g/l
L-Tryptophan.	1 g/l
Sodium chloride (NaCl).	5 g/l
pH value.	7,5 ±0,1

CP71.1	500 g	plastic	151,05 €
Original pack 6 x 500 g			143,50/500 g

▶ Kovacs' Reagent see page 1348

TSC Agar (Base)

DEV, EN ISO 7937:2004, for microbiology

For detection and enumeration of *Clostridium perfringens* in foods and animal feed.

Tryptose Soy Citrate Agar, Perfringens Agar, Clostridium perfringens Agar

Storage temp.: +20 °C

⚠ **Warning** H319

Application: Use 42 g for 1 l agar. After autoclaving add 2 vials (4 ml) reconstituted Clostridium perfringens Supplement (Art. No. CL52.1). Add 50 ml egg yolk emulsion (Art. No. 2977.1).

Guarantee analysis:

Tryptose.	15 g/l
Soy peptone.	5 g/l
Yeast extract.	5 g/l
Sodium bisulfite.	1 g/l
Ammonium iron(III)citrate.	1 g/l
Agar.	15,0 g/l
pH value.	7,6 ±0,2

CL51.1	500 g	plastic	107,40 €
Original pack 6 x 500 g			102,03/500 g

▶ Clostridium perfringens Supplement see page 1343

▶ Egg Yolk Emulsion see page 1344

TTC Chapman Agar (with sodium heptadecylsulphate) (Base)

DEV, EN ISO 9308-1:2000, for microbiology

For isolation and enumeration of coliform bacteria from water samples.
Chapman TTC Agar, Chapman Lactose Agar
Storage temp.: +20 °C

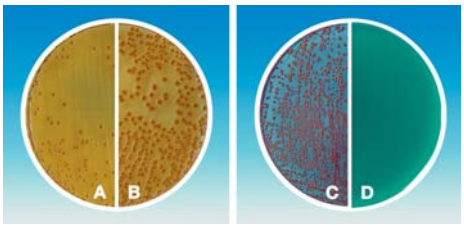


Figure:
A: *E. coli* ATCC 25922 (yellow colonies with orange centre)
B: *Klebsiella spp.* (orange colonies)
C: non-lactose fermenting species
D: non-induced agar
Application: Use 56,2 g for 1 l agar. Contains Tergitol. After autoclaving add TTC solution (Art. No. CP72.1) to 0.0025 %.

Guarantee analysis:

Lactose	20 g/l
Peptone	10 g/l
Yeast extract	6 g/l
Meat extract	5 g/l
Bromothymol blue	0,05 g/l
Sodium heptadecyl sulphate (Tergitol 7)	0,1 g/l
Agar	15 g/l
pH value	7,2 ±0,1

CP65.1	500 g	plastic	75,80 €
Original pack 6 x 500 g			72,01/500 g

▶ TTC Supplement see page 1346

Universal Beer Agar (Base)

for microbiology

For cultivation of beer spoiling microorganisms. **UBA**
Storage temp.: +20 °C
Application: Use 55 g for 1 l agar. Add 250 ml beer.

Formulation:

Peptonised milk	15 g/l
Yeast extract	10 g/l
Dextrose	10 g/l
Tomato juice	7 g/l
Potassium phosphate	0,5 g/l
Dipotassium phosphate	0,5 g/l
Sodium chloride (NaCl)	0,01 g/l
Magnesium sulphate ($MgSO_4$)	0,01 g/l
Manganese sulphate	0,01 g/l
Iron sulphate	0,01 g/l
Agar	12 g/l
pH value	6,3 ±0,2

8337.1	500 g	plastic	100,55 €
Original pack 6 x 500 g			95,52/500 g

Urea Agar acc. to Christensen (Base)

ISO 6579, ISO 19250, for microbiology

For differentiation of enterobacteria on the basis of urease production.
Christensen Agar
Storage temp.: +20 °C
Particularly recommended for differentiation between members of the *genera Proteus* and *Salmonella/Shigella*.
Application: Use 29 g for 1 l agar. Add 15 g Agar.

Guarantee analysis:

Urea	20 g/l
Sodium chloride (NaCl)	5 g/l
Potassium phosphate	2 g/l
Gelatine peptone	1 g/l
Dextrose	1 g/l
Phenol red	0,012 g/l
pH value	6,8 ±0,2

8320.1	500 g	plastic	111,30 €
Original pack 6 x 500 g			105,74/500 g

UTI chromogenic Agar

for microbiology

For detection and differentiation of microorganisms causing urinary tract infections. Urinary Tract Infection chromogenic Agar
Storage temp.: +4 °C

Staining of species:
E. coli pink (by reaction of the β-D-galactosidase)
Enterobacter, Klebsiella dark blue to violet (by reaction of the β-D-galactosidase and β-D-glucosidase)
Proteus light brown (by reaction of the tryptophan deaminase)
Enterococcus light to medium blue (by reaction of the β-D-glucosidase)
Staphylococcus light beige (natural colony colour)
Application: Use 47,5 g for 1 l agar.

Formulation:

Nutrients	13 g/l
Peptone	16 g/l
Tryptophane	2 g/l
Chromogene Mixture	0,5 g/l
Agar	16 g/l
pH value	7,2 ±0,2

3089.1	100 g	plastic	134,40 €

Violet Red Bile Agar with Dextrose and Lactose

Ph.Eur., for microbiology

For detection and enumeration of enterobacteria.
Agar Medium F (Ph.Eur. 6.0)
Storage temp.: +20 °C
Application: Use 51,5 g for 1 l agar.

Guarantee analysis:

Yeast extract	3 g/l
Pancreas hydrolysate made from gelatin	7 g/l
Cholate	1,5 g/l
Lactose monohydrate	10 g/l
Sodium chloride (NaCl)	5 g/l
Glucose monohydrate	10 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH value	7,4 ±0,2

AE45.1	500 g	plastic	73,65 €
Original pack 6 x 500 g			69,97/500 g

Violet Red Bile Agar with Glucose

ISO 21528, Ph.Eur., for microbiology

For cultivation and enumeration of enterobacteria in water, foods and other materials.
Violet Red Bile Glucose Agar (Ph.Eur. 6.3, 7.0 and 8.0), **VRBD Agar**
Storage temp.: +20 °C
Recommended by the Harmonized Method (Ph.Eur. 6.0, 2.6.13.B) for growth and identification of *Escherichia coli* and *Pseudomonas aeruginosa* durin testing for bile-tolerant gram-negative bacteria.
Application: Use 41,5 g for 1 l agar.

Guarantee analysis:

Yeast extract	3 g/l
Pancreas hydrolysate made from gelatin	7 g/l
Sodium chloride (NaCl)	5 g/l
Bile salts	1,5 g/l
Glucose monohydrate	10 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH value	7,4 ±0,2

X939.1	500 g	plastic	68,30 €
Original pack 6 x 500 g			64,89/500 g
X939.2	1 kg	plastic	115,60 €
Original pack 6 x 1 kg			109,82/1 kg
X939.3	2,5 kg	plastic	220,40 €

Violet Red Bile Agar with Lactose

ISO 4832, for microbiology

For detection and enumeration of coliforms in milk, foods and other materials. **VRB Agar**
Storage temp.: +20 °C

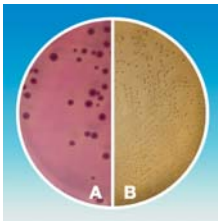


Figure:
A: *Eschericha coli*
B: *Salmonella gallinarium*
Application: Use 41,5 g for 1 l agar.

Guarantee analysis:

Yeast extract	3 g/l
Gelatine peptone	7 g/l
Sodium chloride (NaCl)	5 g/l
Bile salts	1,5 g/l
Lactose	10 g/l
Neutral red	0,03 g/l
Crystal Violet	0,002 g/l
Agar	15 g/l
pH value	7,4 ±0,2

X940.1	500 g	plastic	68,30 €
Original pack 6 x 500 g			64,89/500 g

Wort Broth

for microbiology

For cultivation and enumeration of fungi, particularly of yeast.
Storage temp.: +20 °C
Application: Use 33 g for 1 l broth.

Formulation:

Malt extract	15 g/l
D-Maltose	12,5 g/l
Dextrine	2,5 g/l
Casein peptone	1 g/l
Dipotassium hydrogen phosphate	1 g/l
Ammonium chloride	1 g/l
pH value	4,8 ±0,2

5779.1	500 g	plastic	125,25 €
Original pack 6 x 500 g			118,99/500 g

Wort Agar (Base)

for microbiology

For cultivation and enumeration of yeasts.
Storage temp.: +20 °C
Application: Use 48,25 g for 1 l agar. Add 2,35 g (1,9 ml) glycerol.

Formulation:

Malt extract	15 g/l
Maltose	12,75 g/l
Dextrine	2,75 g/l
di-Potassium hydrogen phosphate	1 g/l
Ammonium chloride	1 g/l
Peptone	0,75 g/l
Agar	15 g/l
pH value	4,8 ±0,2

CL04.1	500 g	plastic	142,45 €
Original pack 6 x 500 g			135,33/500 g

XLD-Agar

Ph.Eur., for microbiology

For isolation of enteropathogenic bacteria, especially from the genera *Shigella* and *Salmonella*.

Agar medium K (Ph.Eur. 6.0), Xylose Lysine Desoxycholate Agar (Ph.Eur. 6.3, 7.0 and 8.0)

Storage temp.: +20 °C

Figure: *Salmonella typhimurium*
Application: Use 55,2 g for 1 l agar.

Guarantee analysis:

Xylose	3,5 g/l
Lactose monohydrate	7,5 g/l
L-Lysin	5 g/l
Saccharose	7,5 g/l
Sodium chloride (NaCl)	5 g/l
Yeast extract	3 g/l
Phenol red	0,08 g/l
Ammonium iron(III)citrate	0,8 g/l
Sodium deoxycholate	2,5 g/l
Sodium thiosulphate	6,8 g/l
Agar	13,5 g/l
pH value	7,4 ±0,2

X941.1	500 g	plastic	93,00 €
Original pack 6 x 500 g			88,35/500 g
X941.2	1 kg	plastic	160,20 €
Original pack 6 x 1 kg			152,19/1 kg

Yeast Extract Agar

DEV, EN ISO 6222, for microbiology

For the isolation and enumeration of microorganisms in general, e.g. bacteria, moulds, or yeast.
Particularly for count of microorganisms isolated from water samples.

Water Plate Count Agar, **WPCA**

Storage temp.: +20 °C

Application: Use 24 g for 1 l agar.

Guarantee analysis:

Tryptone	6 g/l
Yeast extract	3 g/l
Agar	15 g/l
pH value	7,2 ±0,2

CP63.1	500 g	plastic	77,95 €
Original pack 6 x 500 g			74,05/500 g

Yeast Glucose Agar (with chloroamphenicol)

for microbiology

Selective medium for enumeration of yeasts and mould in milk and dairy products.

YGC Agar

Storage temp.: +20 °C

Danger H340-H350

Application: Use 40,2 g for 1 l agar.

Formulation:

Yeast extract	5 g/l
Glucose	20 g/l
Chloroamphenicol	0,2 g/l
Agar	15 g/l
pH value	6,6 ±0,2

CL00.1	500 g	plastic	80,10 €
Original pack 6 x 500 g			76,10/500 g
CL00.2	1 kg	plastic	142,45 €
Original pack 6 x 1 kg			135,33/1 kg

Yersinia Selective Agar (Base)

ISO 10273, for microbiology

Selektive medium for isolation of *Yersinia*, particularly *Y. enterocolitica.*

CIN Agar, Yersinia Agar acc. to Schiemann

Storage temp.: +20 °C

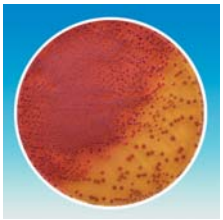


Figure: *Yersinia enterocolitica*
Application: Use 58 g for 1 l agar. After cooling add 2 vials (2x5 ml) reconstituted Yersinia Supplement (Art. No. 4880.1).

Guarantee analysis:

D-Mannitol	20 g/l
Gelatine peptone	17 g/l
Peptone mixture	3 g/l
Yeast extract	2 g/l
Sodium pyruvate	2 g/l
Sodium chloride	1 g/l
Sodium deoxycholate	0,5 g/l
Neutral red	0,03 g/l
Magnesium sulphate anhydrous	0,01 g/l
Crystal Violet	0,001 g/l
Agar	12,5 g/l
pH value	7,4 ±0,2

5780.1	500 g	plastic	102,70 €
Original pack 6 x 500 g			97,57/500 g

▶ Yersinia Supplement see page 1346

Additives

Ammonium iron(III) citrate solution

12,5 %, sterile, ready-to-use

Media supplement for detection of *Listeria monocytogenes*.

Ferric(III) ammonium citrate solution

Storage temp.: +20 °C

Ammonium iron (III) citrate (ferric ammonium (III) citrate) is used as additive in nutrient media for detection of Listeria species. Hydrolysis of esculin by *Listeria* species results in 6,7-dihydroxycoumarin which reacts with ferric ions producing blackening of the medium. Additionally, ferric ammonium citrate has been shown to improve the growth of *Listeria monocytogenes* (Cowart and Foster (1985) *J. Infect. Dis.* 151:721).
Application: One vial ferric ammonium (III) citrate solution (0.25 g in 2 ml) is added to 500 ml autoclaved Fraser Broth (Art. No. HP17) or Fraser Half Broth (Art. No. HP18). Mix carefully and store cooled for 2 weeks in maximum. Fraser Broth is used in the rapid detection of Listeria from food and environmental samples (Fraser and Sperber (1988) *J. Food Protect.* 51:762).
One box of 10 vials Ammonium iron(III) citrate solution is sufficient for 10 x 500 ml Fraser Broth.

Formulation per vial:

Ammonium iron(III)citrate.....0,25 g

3130.1	10 x 2 ml		plastic	38,20 €
3130.2	30 x 2 ml	new size	plastic	95,70 €

▶ Fraser media see page 1324

Bacillus cereus Supplement

lyophilised

Media supplement for selective isolation of *Bacillus cereus.*

Storage temp.: +4 °C

Application: One vial Bacillus cereus Supplement is reconstituted in 5 ml sterile distilled water, and is subsequently added to 450 ml autoclaved Mannitol Egg Yolk Polymyxin Agar (Base) (Art. No. 5765.1) plus 50 ml Egg Yolk Emulsion (Art. No. 2977.1).
One box of 10 vials Bacillus cereus Supplement is sufficient for 10 x 500 ml Mannitol Egg Yolk Polymyxin Agar.

Formulation:

Polymyxin B.....50 000 I.U.
per vial

4856.1	10 vials	glass	99,90 €

▶ Mannitol Egg Yolk Polymyxin Agar (Base) see page 1328

Campylobacter Preston Supplement

for microbiology

For selective isolation of *Campylobacter spp.*

Preston Supplement

Storage temp.: +4 °C

Danger H300-H341-H360D-H411

Application: One vial Campylobacter Preston Supplement is reconstituted in 5 ml sterile 1:1 mixture of acetone and demineralized water and is subsequently added to 500 ml autoclaved Campylobacter Selective Agar (Art. No. 8847.1) and 5-10 % defibrinated blood.
One box of 10 vials Campylobacter Preston Supplement is sufficient for 10 x 500 ml Campylobacter Selective Agar.

Formulation per vial:

Polymyxin B sulphate. ..... 2500 IU
Cycloheximide. ..... 50 mg
Rifampicin. ..... 5 mg
Trimetoprim. ..... 5 mg

8851.1	10 vials	glass	167,70 €

▶ Campylobacter Selective Agar (Base) see page 1318

Campylobacter Supplement

lyophilised

Media supplement for selective isolation of *Campylobacter jejuni, C. coli,* and *C. laridis.*

CCDA Supplement

Storage temp.: +4 °C

Danger H334-H317

Amphotericin reduces growth of yeasts and moulds, while Cefoperazone inhibits Enterobacteriaceae.
Application: One vial Campylobacter Supplement is reconstituted in 5 ml sterile distilled water, and is subsequently added to 500 ml autoclaved Campylobacter Agar, blood-free (Base) (Art. No. 5756.1).
One box of 10 vials Campylobacter Supplement is sufficient for 10 x 500 ml Campylobacter Agar, blood-free.

Formulation:

Cefoperazone. ..... 16 mg
Amphotericin B. ..... 5 mg
per vial

4857.1	10 vials	glass	145,15 €

▶ Campylobacter Agar, blood-free (Base) see page 1318

Clostridium perfringens Supplement

lyophilised

Media supplement for selective isolation of *Clostridium perfringens.*

Storage temp.: +4 °C

D-cycloserine largely inhibits the accompanying bacterial flora, hence providing selective growth of small and distinct colonies of *Clostridium perfringens.*
Application: One vial Clostridium perfringens Supplement (0.2 g) is reconstituted in 2 ml sterile, demineralized water and is subsequently added to 500 ml autoclaved TSC Agar (Base) (Art. No. CL51.1) or to 500 ml autoclaved m-CP Agar (Art. No. CL55.1).
One box of 10 vials Clostridium perfringens Supplement is sufficient for 10 x 500 ml TSC Agar or for 10 x 500 ml m-CP Agar.

Formulation per vial:

D-Cycloserine. ..... 0,2 g

CL52.1	10 vials	glass	203,20 €

▶ TSC Agar (Base) see page 1339

▶ m-CP Agar (Base) see page 1328

Egg Yolk Emulsion

sterile, stabilised, for microbiology

Media supplement for preparation of egg yolk agar for detection of microbial lecithinase activity.

Storage temp.: +4 °C

Egg Yolk Emulsion is used as supplement in nutrient agars for detection of lecithinase activity in microbial colonies. Herewith, bacterial species like *Bacillus cereus* and *Clostridium perfringens*, or *Staphylococcus aureus* may be identified. The lecithinase activity can be noted by formation of light, sometimes whitish halos surrounding the colonies. We recommend using TSC Agar (Base) (Art. No. CL51.1) or Mannitol Salt Agar (Art. No. CL81.1) for base agar.
Application: Customary concentration in medium: 5 %. Add after autoclaving.
100 ml Egg Yolk Emulsion is sufficient for 2 l agar medium.

Type analysis:

Colour	yellow
Egg yolk	30 %
Sterile saline sol.	70 %
Sodium azide	0,025 %

2977.1	100 ml	glass	41,40 €

▶ Mannitol Salt Agar see page 1328

▶ TSC Agar (Base) see page 1339

Egg Yolk Tellurite Emulsion

sterile, stabilised, for microbiology

Media supplement for preparation of egg yolk tellurite agar, for detection of *Staphylococcus aureus*.

Storage temp.: +4 °C

Egg Yolk Tellurite Emulsion is used as supplement in nutrient agars for detection of lecithinase activity and concurrent tellurite reduction in microbial colonies. Hence, *Staphylococcus aureus* may be identified by the dark grey to black staining of the colonies due to tellurite reduction, accompanied by lecithinase-caused formation of light, sometimes whitish halos surrounding the colonies.

We recommend using Bair Parker Agar (Base) (Art. No. X913.1) for base agar.
Application: Customary concentration in medium: 5 %.
Add after autoclaving.
100 ml Egg Yolk Tellurite Emulsion is sufficient for 2 l agar medium.

Type analysis:

Colour	yellow
Egg yolk	30 %
Potassium tellurite	1 %
Sterile saline sol.	70 %
Sodium azide	0,025 %

2978.1	100 ml	glass	44,65 €

▶ Baird Parker Agar (Base) see page 1316

Legionella GVPC Supplement

lyophilised

Media supplement for selective isolation of *Legionella.*

Storage temp.: +4 °C

Danger H301-H360D-H341-H412

The mixture of glycine and antibiotics largely inhibits the accompanying bacterial flora, hence providing selective growth of legionella.
Application: One vial Legionella GVPC Supplement is reconstituted in 5 ml sterile, demineralized water and is subsequently added to 500 ml autoclaved Legionella Agar (Art. No. CL48.1).
One box of 10 vials Legionella GVPC Supplement is sufficient for 10 x 500 ml Legionella Agar.

Formulation:

Glycine	1,5 g
Polymyxin B	~39 600 IU
Cycloheximide	0,04 g
Vancomycin	0,5 mg

per vial

CL50.1	10 vials	glass	169,35 €

Legionella Growth Supplement

lyophilised

Growth supplement for isolation of *Legionella.*

BCYE additive

Storage temp.: +4 °C

Danger H314-H302

Application: One vial Legionella Growth Supplement is reconstituted in 10 ml sterile, demineralized water and is subsequently added to 90 ml autoclaved Legionella Agar (Art. No. CL48.1). For selective isolation of legionella we recommend additional supplementation with Legionella GVPC Supplement (Art. No. CL50.1).
One box of 10 vials Legionella Growth Supplement is sufficient for 10 x 100 ml Legionella Agar.

Formulation:

ACES Buffer	1,0 g
Potassium hydroxide (KOH)	0,2 g
alpha-Ketoglutarate	0,1 g
L-Cysteine	0,04 g
Ferric pyrophosphate	0,025 g

per vial

CL49.1	10 vials	glass	177,40 €

▶ Legionella Agar (Base) see page 1326

▶ Membrane filtration units (Monitors) for detection of Legionells see Microbiology / Accessories!

ready-to-use

Listeria Chromo Lipase C Supplement

0,1 g/ml, sterile, ready-to-use

Media supplement for selective isolation of *Listeria*.

Storage temp.: +4 °C

Application: One vial Listeria Chromo Lipase C Supplement is added to 500 ml autoclaved Listeria chromogenic Agar (Art. No. 3008.1). For selective isolation of *Listeriae* we recommend additional supplementation with Listeria Chromo Selective Supplement (Art. No. 2947.1).
One box of 10 vials Listeria Chromo Lipase C Supplement is sufficient for 10 x 500 ml Listeria chromogenic Agar.

Formulation:

Phospholipase C substrate. ..... 1 g
per vial

2948.1	10 x 10 ml	glass	96,65 €

Listeria Chromo Selective Supplement

lyophilised

Media supplement for selective isolation of *Listeria*.

Storage temp.: +4 °C

Danger H300-H334-H317-H341-H360D-H411

Application: One vial Listeria Chromo Selective Supplement is reconstituted in 5 ml sterile distilled water and is subsequently added to 500 ml autoclaved Listeria chromogenic Agar (Art. No. 3008.1). For activation of the listerial phospholipase C we recommend additional supplementation with Listeria Chromo Lipase C Supplement (Art. No. 2948.1).
One box of 10 vials Listeria Chromo Selective Supplement is sufficient for 10 x 500 ml Listeria chromogenic Agar.

Formulation:

Cycloheximide. ..... 0,025 g
Polymyxin B sulphate. ..... 38500 I.E.
Nalidixic acid sodium salt. ..... 0,01 g
Ceftazidime (Fortam). ..... 0,01 g
per vial

2947.1	10 vials	glass	96,65 €

▶ Listeria chromogenic Agar (Base) see page 1326

▶ Kovacs' Reagent see page 1348

Listeria Oxford Supplement

lyophilised

Media supplement for selective isolation of *Listeria monocytogenes.*

Oxford Supplement

Storage temp.: +4 °C

Danger H300-H341-H360D-H411

Application: One vial Listeria-Oxford Supplement is reconstituted in 2 ml sterile distilled water, and is subsequently added to 500 ml autoclaved Oxford Listeria Agar (Base) (Art. No. 5767.1).
One box of 10 vials Listeria Oxford Supplement is sufficient for 10 x 500 ml Oxford Listeria Agar.

Formulation:

Cycloheximide. ..... 200 mg
Colistinsulphate. ..... 10 mg
Fosfomycin. ..... 5 mg
Acryflavine. ..... 2,5 mg
Cefotetan. ..... 1 mg
per vial

Acriflavinium hydrochloride. ..... 2,5 mg

5801.1	10 vials	glass	126,35 €

▶ Oxford Listeria Agar (Base) see page 1331

Listeria Palcam Supplement

lyophilised

Media supplement for selective isolation of *Listeria monocytogenes.*

Palcam Supplement

Storage temp.: +4 °C

Danger H334-H317

Application: One vial Listeria-Palcam Supplement is reconstituted in 2 ml sterile distilled water, and is subsequently added to 500 ml autoclaved Palcam Listeria Agar (Base) (Art. No. 5768.1).
One box of 10 vials Listeria Palcam Supplement is sufficient for 10 x 500 ml Palcam Listeria Agar.

Formulation:

Ceftazidime (Fortam). ..... 10 mg
Polymyxin B. ..... 5 mg
Acryflavine. ..... 2,5 mg
per vial

5803.1	10 vials	glass	91,95 €

▶ Palcam Listeria Agar (Base) see page 1332

MRSA Cefoxitin Supplement

lyophilised

Media supplement for selective detection of methicillin resistent *Staphylococcus aureus*.

Storage temp.: +4 °C

Cefoxitin inhibits growth of methicillin sensitive *Staphylococcus aureus* strains.

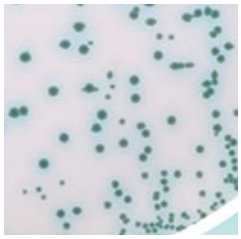


Figure: Detection of *Staphylococcus aureus* ATCC 43300 by MRSA chromogenic Agar (Art. No. 3026.1) plus MRSA Cefoxitin Supplement.

Application: One vial MRSA Cefoxitin Supplement is reconstituted in 5 ml sterile, distilled water, and is subsequently added to 500 ml solubilised MRSA chromogenic Agar (Base) (Art. No. 3026.1).
One box of 10 vials MRSA Cefoxitin Supplement is sufficient for 10 x 500 ml MRSA chromogenic Agar.

Formulation:

Cefoxitin. ..... 0,002 g
per vial

2975.1	10 vials	glass	67,65 €

▶ MRSA chromogenic Agar (Base) see page1329

RPF Supplement

lyophilised

Media supplement for identification and enumeration of *Staphylococcus aureus.*

Rabbit Plasma Fibrinogen Supplement

Storage temp.: +4 °C

Warning H302+H312+H332

Application: One vial RPF Supplement is reconstituted in 10 ml sterile distilled water, and is incubated for 10 mins. at room temperature until completely dissolved. Subsequently add to 90 ml autoclaved Baird Parker Agar (e.g. Art. No. X913.1).
One box of 10 vials RPF Supplement is sufficient for 10x 100 ml Baird Parker Agar.

Formulation:

Rabbit plasma. ..... 2,5 ml
Bovine fibrinogen. ..... 380 mg
Trypsin inhibitor. ..... 2,5 mg
Potassium tellurite. ..... 2,5 mg
per vial

6064.1	10 vials	glass	385,95 €

▶ Baird Parker Agar (Base) see page 1316

TTC-Supplement

lyophilised

Media supplement for identification of coliform enterobacteria.

2,3,5-Triphenyl-tetrazolium chloride, Red tetrazolium

Storage temp.: +4 °C

Warning H315-H319-H335

TTC is used as additive for microbiological nutrient media, in order to accelerate the identification of coliform enterobacteria, e.g. TTC Chapman Agar acc. to EN ISO 9308-1:2000 (Art. No. CP65.1).

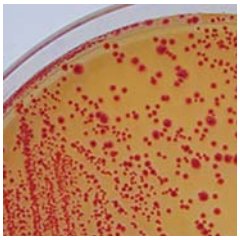


Figure: Detection of *E. coli* (wild type) by TTC Chapman Agar (Art. No. CP65.1) plus TTC supplement.

Application: One vial TTC-Supplement (50 mg) is reconstituted in 5 ml sterile, distilled water. Store solution at 4 °C for one week in maximum. Long-term storage in aliquots at -20 °C.
One box of 10 x 50 mg TTC-Supplement is sufficient for 20 l TTC Chapman Agar.

Guarantee analysis:

Triphenyltetrazolium chloride (per vial). ..... 50 mg

CP72.1	10 vials	glass	68,70 €

▶ TTC Chapman Agar (Base) see page 1340

Yersinia Supplement

lyophilised

Media supplement for selective isolation of *Yersinia enterocolitica*

CIN Supplement

Storage temp.: +4 °C

Danger H315-H317-H319-H334-H400-H410

Application: One vial Yersinia Supplement is reconstituted in 5 ml sterile distilled water, and is subsequently added to 500 ml autoclaved Yersinia Selective Agar (Base) (Art. No. 5780.1).
One box of 10 vials Yersinia Supplement is sufficient for 10 x 500 ml Yersinia Selective Agar.

Formulation:

Cefsulodin. ..... 7,5 mg
Novobiocin. ..... 1,25 mg
Irgasan. ..... 2 mg
per vial

4880.1	10 vials	glass	99,35 €

▶ Yersinia Selective Agar (Base) see page 1342

Further Additives

Product	Purity	Art. No.	Pack Qty.	€
Brilliant Green (C.I. 42040)	for microscopy	**0324.1**	25 g	16,70
		0324.2	100 g	36,45
5-Bromo-4-chloro-3-indoxyl-N-acetyl-β-D-glucosaminide	≥99,5 %, for biochemistry	**4149.1**	25 mg	46,15
		4149.2	100 mg	127,95
Bromocresol green	ACS	**T115.1**	1 g	15,60
Bromocresol Green sodium salt	p.a.	**KK18.1**	1 g	12,05
		KK18.2	5 g	31,10
Bromocresol purple	p.a., ACS	**0317.1**	5 g	19,25
		0317.2	25 g	60,10
Bromothymol blue	p.a., ACS	**T117.1**	5 g	22,40
Bromothymol blue sodium salt	p.a.	**KK19.1**	5 g	19,25
		KK19.2	10 g	29,60
Cholic acid sodium salt	≥99 %, for biochemistry	**3407.1**	50 g	54,75
o-Cresol red	p.a.	**KK15.1**	5 g	17,75
		KK15.2	10 g	27,85
		KK15.3	25 g	55,80
Crystal violet (C.I. 42555)	p.a., ACS	**T123.1**	25 g	24,65
Dextrin	for microbiology	**3488.1**	250 g	31,75
Esculin sesquihydrate	≥97,5 %, DAB, for biochemistry	**8704.1**	5 g	19,25
Fuchsine basic (C.I. 42510)	for microscopy	**3256.1**	50 g	55,80
Gelatine	platinum, extra pure, 240 Bloom	**4582.3**	500 g	28,95
		4582.1	1 kg	46,15
		4582.2	5 kg	166,65
D(+)-Glucose monohydrate	for microbiology	**6887.1**	1 kg	17,75
		6887.2	2,5 kg	36,45
		6887.5	25 kg	160,20
Glycerol	≥99,5 %, p.a., anhydrous	**3783.1**	1 l	48,95
		3783.3	1 l	52,90
		3783.2	2,5 l	87,65
		3783.4	2,5 l	95,60
IPTG	≥99 %, BioScience-Grade, dioxane free, animal free	**2316.1**	250 mg	18,85
		2316.2	1 g	40,35
		2316.3	5 g	113,45
		2316.4	25 g	392,40
		2316.5	100 g	901,95
Iron(II) sulphate heptahydrate	≥99 %, p.a., ACS	**P015.1**	500 g	22,05
		P015.2	1 kg	33,25
		P015.3	2,5 kg	69,80
		P015.5	25 kg	456,90
Lactose monohydrate	for microbiology	**6868.1**	1 kg	23,35
		6868.2	5 kg	78,40
		6868.3	50 kg	499,90
Methyl red (C.I. 13020)	p.a., ACS	**T120.1**	10 g	13,90
		T120.2	25 g	22,50
4-Methylumbelliferyl-N-acetyl-β-D-galactosaminide	≥98 %, for biochemistry	**4083.1**	100 mg	38,60
		4083.2	250 mg	68,30
		4083.3	500 mg	113,45
4-Methylumbelliferyl-α-D-glucopyranoside	≥99 %, for biochemistry	**4086.1**	100 mg	37,55
		4086.2	250 mg	66,15
4-Methylumbelliferyl-β-D-glucopyranoside	≥99 %, for biochemistry	**4093.1**	500 mg	39,70
		4093.2	1 g	67,65
		4093.3	2,5 g	132,15
4-Methylumbelliferyl phosphate	≥99 %, for biochemistry	**4103.1**	250 mg	31,10
		4103.2	1 g	91,30
Neutral red (C.I. 50040)	p.a.	**T122.1**	10 g	50,45
4-Nitrophenyl-N-acetyl-β-D-glucosaminide	≥99 %, for biochemistry	**4062.1**	100 mg	24,20
		4062.2	500 mg	71,50
		4062.3	1 g	132,80
4-Nitrophenyl-α-D-galactopyranoside	for biochemistry	**4063.1**	100 mg	19,25
		4063.2	500 mg	43,55
		4063.3	1 g	68,70
4-Nitrophenyl-β-D-galactopyranoside	≥98 %, for biochemistry	**4081.1**	1 g	28,95
		4081.2	2,5 g	68,30
		4081.3	5 g	126,85

Product	Purity	Art. No.	Pack Qty.	€
Phenol red	p.a., ACS	**T127.1**	5 g	13,90
Rose Bengale B (C.I. 45440)	for microscopy	**3162.1**	50 g	85,90
D(+)-Saccharose	≥99,5 %, p.a.	**4621.1**	1 kg	18,85
		4621.2	5 kg	78,40
		4621.5	25 kg	181,70
Sodium metabisulphite	≥97 %, p.a., ACS	**P755.1**	500 g	18,20
		P755.2	1 kg	27,85
		P755.5	25 kg	278,45
Sodium molybdate dihydrate	≥99,5 %, p.a.	**0274.1**	50 g	16,70
		0274.2	100 g	24,20
		0274.3	250 g	43,55
Sodium molybdate dihydrate	≥99,5 %, p.a.	**0274.4**	1 kg	166,65
Tetrazolium blue chloride	≥95 %, for biochemistry	**4176.1**	1 g	53,65
		4176.2	5 g	203,20
2,3,5-Triphenyltetrazolium chloride	≥98,5 %, p.a.	**KK13.1**	10 g	46,15
		KK13.2	50 g	190,85
X-β-Gal	≥99 %, BioScience-Grade	**2315.1**	100 mg	19,25
		2315.2	500 mg	53,65
		2315.3	1 g	101,60
		2315.4	5 g	349,40
X-Glc	≥98 %, for biochemistry	**8434.1**	100 mg	67,20
		8434.2	250 mg	133,20
		8434.3	500 mg	212,35
X-Glu	≥98 %, for biochemistry	**4041.1**	50 mg	35,40
		4041.2	100 mg	59,05
X-Glucuro CHAsalt	≥99 %, for biochemistry	**4056.1**	50 mg	34,85
		4056.2	100 mg	60,35
		4056.3	250 mg	121,50
		4056.4	1 g	424,65

For additional product data and safety information, see chapter Chemicals A-Z.

Identification of Microorganisms

Testing Reagents

Kovacs' Reagent

for microbiology

Media supplement for detection of microbial indole.
Indole Reagent
Storage temp.: +4 °C

Danger H226-H290-H302-H315-H318-H335-H336

Tryptophanase-positive microorganisms (e.g. *E. coli, S. faecalis, Proteus sp.*) that cleave tryptophane hereby release indole, which may be detected by reaction with dimethylamino benzaldehyde by forming a dark red dye. Microorganisms must be incubated in a glucose-free broth with high concentrations of tryptophane present. Kovacs' Reagent is added to 24-48 h old cultures in a concentration of 0.2 to 0.5 ml per 5 ml broth. A colour shift to dark red shows presence of indole, thus confirming the inoculating colony as being indole-/tryptophanase-positive.
Application: Customary concentration in medium: 4-10 %
100 ml Kovacs' Reagent is sufficient for approx. 2 l medium.

Type analysis:

Appearance. ..... yellowish, clear liquid
4-(Dimethylamino)benzaldehyde. ..... 50 g/l
1-Butanol. ..... 75 %
Hydrochloric acid (37 %). ..... 25 %
pH value. ..... >1

2950.1	100 ml	glass	41,85 €

▶ Tryptophane Culture Broth see page 1339

Reagents for Kovacs´s Indolreaction

Reagent	Purity	Art. No.	Pack Qty.	€
n-Butanol	≥99.5 %, p.a., ACS, ISO	**7171.2**	1 l	45,70
		7171.1	2,5 l	93,45
4-(Dimethylamino)-benzaldehyde	≥99 %, p.a.	**X867.1**	25 g	40,75
		X867.2	100 g	101,80
Isoamyl alcohol	≥98.5 %, p.a., ACS	**T870.1**	500 ml	37,55
		T870.2	1 l	70,65
		T870.3	2,5 l	160,20
Hydrochloric, acid fuming	p.a., ACS, ISO	**4625.1**	1 l	19,25
		4625.2	2,5 l	30,00

For additional product data and safety information, see chapter Chemicals A-Z.

ready-to-use

Rotitest® Oxidase strips

Rotitest® Bio Analysis

Rapid test system for detection of cytochrome oxidase in microorganisms.
Storage temp.: +4 °C

Rapid test system for detection of oxidase-positive microorganisms.
A green coloured area indicates the reaction zone, impregnated with detection reagent, at one end of the paper strip. The colony to be analysed is smeared onto this reaction zone. Within 15 seconds, a dark-blue to violet colouring indicates presence of oxidase-positive microorganisms.

The following microorganisms are typically oxidase-positive: *Helicobacter pylori, Vibrio cholerae, Campylobacter jejuni, Legionella pneumophila, Neisseria, Moraxella*, many *Pseudomonaceae* and *Diplococci*.
Many *Enterobacteriaceae* are typically oxidase-negative.

Type analysis:

Paper colour. ..... white
Labelling reaction area. ..... green
Colour shift to blue. ..... complies
Colour shift test germs. ..... complies

8469.1	100 pieces	tube	32,80 €

Microbiological Staining

Microbiological staining is mostly applied for identification of microorganisms during microscopic analysis. Due to their affinity to certain cell structures, acidic dyes or salts of basic aniline dyes are used frequently for contrastation of cells, differential staining, or accentuation of specific structures (flagella, spores, or capsules).

For detailed information on the products please see chapters Histology/Staining and Chemicals A-Z.

Solutions for Gram Staining

Classic Staining acc. to Gram for differentiation of microorganisms.

Product	Art. No.	Pack Qty.	€
Ethanol 96 %	**P075.1**	1 l	66,55
	P075.3	1 l	65,50
	P075.2	2,5 l	140,75
	P075.4	2,5 l	138,60
	P075.5	5 l	263,40
Ethanol 96 % denatured	**T171.1**	2,5 l	22,50
	T171.3	2,5 l	20,35
	T171.4	5 l	38,60
	T171.2	25 l	114,50
Carbolic fuchsine solution	**A130.2**	500 ml	20,35
	A130.1	1 l	32,15
Gram staining kit	**HP02.1**	1 kit	90,20
Gram's decolourising solution	**CN02.1**	500 ml	20,35
Iodine-potassium iodide solution acc. to Lugol	**N052.1**	250 ml	15,80
	N052.3	500 ml	22,05
	N052.2	1 l	27,45
Safranine solution	**CN01.1**	500 ml	30,00
Carbol gentian violet solution	**CN00.1**	500 ml	21,40
	CN00.2	1 l	30,65

For additional product data and safety information, see chapter Chemicals A-Z.

Solutions for Neisser Staining

Routine staining method, mainly used for identification of Coryne bacteria causing Diphtheria.

Dye	Art. No.	Pack Qty.	€
Neisser's solution I	**3463.1**	100 ml	18,20
	3463.2	500 ml	33,90
Neisser's solution II	**3464.1**	100 ml	18,20
	3464.2	500 ml	33,90
Neisser's solution III	**3466.1**	100 ml	18,20
	3466.2	500 ml	33,90

For additional product data and safety information, see chapter Chemicals A-Z.

Dyes for Spore Staining

Stains spores green and bacteria red or rose.

Product	Art. No.	Pack Qty.	€
Eosin Y (C.I. 45380)	**7089.1**	50 g	30,00
	7089.2	100 g	51,50
Safranin O (C.I. 50240)	**T129.1**	10 g	37,55
Malachite green oxalate (C.I. 42000)	**5895.2**	25 g	14,95
	5895.1	100 g	30,00

For additional product data and safety information, see chapter Chemicals A-Z.

Dyes for Staining of Bacteria

Product	Art. No.	Pack Qty.	€
Lactophenol blue solution	**3097.1**	100 ml	23,90
LOEFFLER's methylene blue solution	**AE64.1**	500 ml	22,80
	AE64.2	1 l	28,50
	AE64.3	2,5 l	59,05
Carbolic fuchsine solution	**A130.2**	500 ml	20,35
	A130.1	1 l	32,15
Sudan black B (C.I. 26150)	**0292.1**	10 g	21,20
Rose Bengale B (C.I. 45440)	**3162.1**	50 g	85,90
Alizarin red S (C.I. 58005)	**0348.1**	10 g	17,75
	0348.2	25 g	27,85
Crystal violet (C.I. 42555)	**T123.1**	25 g	24,65

For additional product data and safety information, see chapter Chemicals A-Z.

Autoinduction Media

NEW

Autoinduction broth for IPTG free protein expression in recombinant *E. coli*. Induces *lac* promoter driven expression. Autoinduction media result in high cell density and a protein expression rate several-fold as high as known from IPTG-induced processes. Hereby, protein expression is occurring spontaneously at a certain point in bacterial culture development, eliminating the need of monitoring the culture density or adding IPTG.

Store temp.: +20 °C

The principle of autoinduction media is based on carbon sources in the medium that are metabolized differentially to promote high density cell growth and automatically induce protein expression driven by *lac* promoters.

Autoinduction media contain lactose as well as a limited concentration of glucose as the carbon source. The Glucose is metabolized preferentially during cell proliferation, which prevents uptake of lactose until the glucose is depleted, usually in mid to late log phase. As the glucose is depleted, lactose can be taken up and is then converted by the enzyme ß-galactosidase to the inducer allolactose. Allolactose causes the release of the Lac repressor from its specific binding sites in the DNA, particularly *lac* operators, leading to the expression of *lac* promoter driven gene sequences. In *E. coli* of genotype DE3 it unblocks *T7lac* promoters and induces the *lac*UV5 driven expression of T7 RNA polymerase, resulting in the expression of T7 RNA polymerase target proteins.

LB Broth Autoinduct

for molecular biology

LB broth without trace elements, supplemented with the autoinduction mixture acc. to Studier (*Potein Expr Purif* 41, 2005).
LB Broth Autoinduct is based on the formulation according to Luria and Bertani (LB broth). It may be used for autoinduction of each *lac* promoter-driven, IPTG-inducible, protein expression in recombinant *E. coli*.
Application: Use 39,85 g for 1 l broth. Autoclavable (115 °C, 20 min).

Formulation:

Tryptone	10 g/l
Yeast extract	5 g/l
Lactose	2 g/l
Glucose	0,5 g/l
Salts acc. to Studier	17,35 g/l
pH value	7,0 ±0,1

9188.1	100 g	plastic	23,55 €
9188.2	250 g	plastic	46,80 €
9188.3	500 g	plastic	84,40 €
Original pack 6 x 500 g			80,18/500 g
9188.4	1 kg	plastic	156,85 €
Original pack 6 x 1 kg			149,01/1 kg
9188.5	2,5 kg	plastic	370,90 €

Super Broth Autoinduct

for molecular biology

Super Broth without trace elements, supplemented with the autoinduction mixture acc. to Studier (*Potein Expr Purif* 41, 2005).
A nutritious liquid medium formulated to promote the growth of *E. coli* cells. It may be used for autoinduction of each *lac* promoter-driven, IPTG-inducible, protein expression in recombinant *E. coli*. Super Broth Autoinduct results in a particularly high cell density and protein expression rate.
Application: Use 74,85 g for 1 l broth. Autoclavable (115 °C, 20 min).

Formulation:

Tryptone	35 g/l
Yeast extract	20 g/l
Lactose	2 g/l
Glucose	0,5 g/l
Salts acc. to Studier	17,35 g/l
pH value	7,0 ±0,1

9189.1	100 g	plastic	24,65 €
9189.2	250 g	plastic	48,40 €
9189.3	500 g	plastic	87,10 €
Original pack 6 x 500 g			82,75/500 g
9189.4	1 kg	plastic	163,40 €
Original pack 6 x 1 kg			155,23/1 kg
9189.5	2,5 kg	plastic	382,70 €

2x YT Broth Autoinduct

for molecular biology

2x YT broth without trace elements, supplemented with the autoinduction mixture acc. to Studier (*Potein Expr Purif* 41, 2005).
A nutritious liquid medium formulated to promote the growth of *E. coli* cells. It may be used for autoinduction of each *lac* promoter-driven, IPTG-inducible, protein expression in recombinant *E. coli*. 2x YT Broth Autoinduct results in higher cell density and protein expression rate than LB Broth Autoinduct.
Application: Use 45,85 g for 1 l broth. Autoclavable (115 °C, 20 min).

Formulation:

Tryptone	16 g/l
Yeast extract	10 g/l
Lactose	2 g/l
Glucose	0,5 g/l
Salts acc. to Studier	17,35 g/l
pH value	7,0 ±0,1

9187.1	100 g	plastic	24,20 €
9187.2	250 g	plastic	47,85 €
9187.3	500 g	plastic	85,50 €
Original pack 6 x 500 g			81,23/500 g
9187.4	1 kg	plastic	158,05 €
Original pack 6 x 1 kg			150,15/1 kg
9187.5	2,5 kg	plastic	376,25 €

Terrific Broth Autoinduct

for molecular biology

Terrific Broth without trace elements, supplemented with the autoinduction mixture acc. to Studier (*Potein Expr Purif* 41, 2005).
A nutritious liquid medium formulated to promote the growth of *E. coli* cells. It may be used for autoinduction of each *lac* promoter-driven, IPTG-inducible, protein expression in recombinant *E. coli*. Terrific Broth Autoinduct results in a particularly high cell density and protein expression rate.
Application: Use 55,55 g for 1 l broth. Autoclavable (115 °C, 20 min).

Formulation:

Tryptone	12 g/l
Yeast extract	24 g/l
Lactose	2 g/l
Glucose	0,5 g/l
Salts acc. to Studier	17,05 g/l
pH value	7,0 ±0,2

9191.1	100 g	plastic	24,20 €
9191.2	250 g	plastic	47,85 €
9191.3	500 g	plastic	85,50 €
Original pack 6 x 500 g			81,23/500 g
9191.4	1 kg	plastic	158,05 €
Original pack 6 x 1 kg			150,15/1 kg
9191.5	2,5 kg	plastic	376,25 €

Selective Media with Antibiotics

NEW

Store temp.: +20 °C

LB-Agar (Lennox) / Amp100

for molecular biology

For preparation of LB agar with 100 µg/ml ampicillin.

Ampicillin-LB Selective Agar

EUH208

Agar medium used for selection and selective cultivation of recombinant, ampicillin resistant *E. coli*. With low salt content acc. to Lennox.
The anhydrous powder contains ampicillin for an end concentration of 100 µg/ml.
Application: Use 35 g for 1 l agar. Boil for 1 min, do not autovclave.

Formulation:

Tryptone. ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 5 g/l
Ampicillin. ..... 0,1 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

8852.1	500 g	plastic	79,05 €
Original pack 6 x 500 g			75,10/500 g
8852.2	1 kg	plastic	150,00 €
Original pack 6 x 1 kg			142,50/1 kg
8852.3	2,5 kg	plastic	345,10 €

LB-Agar (Lennox) / Kana50

for molecular biology

For preparation of LB agar with 50 µg/ml kanamycin.

Kanamycin-LB Selective Agar

Agar medium used for selection and selective cultivation of recombinant, kanamycin resistant *E. coli*. With low salt content acc. to Lennox.
The anhydrous powder contains kanamycin for an end concentration of 50 µg/ml.
Application: Use 35 g for 1 l agar. Autoclavable (118 °C, 10 min).

Formulation:

Tryptone. ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 5 g/l
Kanamycin. ..... 0,05 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

8853.1	500 g	plastic	125,25 €
Original pack 6 x 500 g			118,99/500 g
8853.2	1 kg	plastic	241,90 €
Original pack 6 x 1 kg			229,81/1 kg

LB-Agar (Luria/Miller) / Kana50

for molecular biology

For preparation of LB agar with 50 µg/ml kanamycin.

Kanamycin-LB Selective Agar

Agar medium used for selection and selective cultivation of recombinant, kanamycin resistant *E. coli*. With high salt content acc. to Luria/Miller.
The anhydrous powder contains kanamycin for an end concentration of 50 µg/ml.
Application: Use 40 g for 1 l agar. Autoclavable (118 °C, 10 min).

Formulation:

Tryptone. ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 10 g/l
Kanamycin. ..... 0,05 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

8860.1	500 g	plastic	112,90 €
Original pack 6 x 500 g			107,26/500 g
8860.2	1 kg	plastic	215,00 €
Original pack 6 x 1 kg			204,25/1 kg

LB-Agar (Luria/Miller) / Amp50

for molecular biology

For preparation of LB agar with 50 µg/ml ampicillin.

Ampicillin-LB Selective Agar

EUH208

Agar medium used for selection and selective cultivation of recombinant, ampicillin resistant *E. coli*. With high salt content acc. to Luria/Miller.
The anhydrous powder contains ampicillin for an end concentration of 50 µg/ml
Application: Use 40 g for 1 l agar. Boil for 1 min, do not autoclave.

Formulation:

Tryptone. ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 10 g/l
Ampicillin. ..... 0,05 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

8858.1	500 g	plastic	71,50 €
Original pack 6 x 500 g			67,93/500 g
8858.2	1 kg	plastic	134,40 €
Original pack 6 x 1 kg			127,68/1 kg
8858.3	2,5 kg	plastic	310,70 €

LB-Agar (Luria/Miller) / Amp100

for molecular biology

For preparation of LB agar with 100 µg/ml ampicillin.

Ampicillin-LB Selective Agar

EUH208

Agar medium used for selection and selective cultivation of recombinant, ampicillin resistant *E. coli*. With high salt content acc. to Luria/Miller.
The anhydrous powder contains ampicillin for an end concentration of 100 µg/ml.
Application: Use 40 g for 1 l agar. Boil for 1 min, do not autoclave.

Formulation:

Tryptone. ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 10 g/l
Ampicillin. ..... 0,1 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

8855.1	500 g	plastic	68,30 €
Original pack 6 x 500 g			64,89/500 g
8855.2	1 kg	plastic	127,40 €
Original pack 6 x 1 kg			121,03/1 kg
8855.3	2,5 kg	plastic	295,65 €

LB-Agar (Luria/Miller) / Chloramph34

for molecular biology

For preparation of LB agar with 34 µg/ml chloroamphenicol.

Chloramphenicol-LB Selective Agar

Agar medium used for selection and selective cultivation of recombinant, chloroamphenicol resistant *E. coli*. With high salt content acc. to Luria/Miller.
The anhydrous powder contains chloroamphenicol for an end concentration of 34 µg/ml.
Application: Use 40 g for 1 l agar. Autoclavable (118 °C, 10 min).

Formulation:

Tryptone. ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 10 g/l
Chloroamphenicol. ..... 0,034 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

8861.1	500 g	plastic	66,15 €
Original pack 6 x 500 g			62,84/500 g
8861.2	1 kg	plastic	123,65 €
Original pack 6 x 1 kg			117,47/1 kg
8861.3	2,5 kg	plastic	284,90 €

Granulated Media

Store temp.: +20 °C

Benefits of granulated Media:
- Dust minimized
- High solubility
- Without additives

All nutrient media for molecular biology are according to the data given in Sambrook and Russell, *Cold Spring Harbour Laboratory Press*, Cold Spring Harbour, New York, 2001.

LB Broth (Lennox), granulated
granulated, for molecular biology

Standard formulation used for propagation and culturing of *E. coli*. Low salt content for high-copy plasmid proliferation and preparation, as well as for phage propagation under supplementation with magnesium chloride. Granulated, dust-minimized version with high solubility and superior homogeneity.
Application: Use 20 g for 1 l broth.

Formulation:

Tryptone.	10 g/l
Yeast extract.	5 g/l
Sodium chloride (NaCl).	5 g/l
pH value.	7,0 ±0,2
Granulation.	complies

6669.1	500 g		plastic	80,10 €
Original pack 6 x 500 g				76,10/500 g
6669.2	1 kg		plastic	141,40 €
Original pack 6 x 1 kg				134,33/1 kg
6669.3	2,5 kg	new size	plastic	314,45 €
6669.4	5 kg	new size	plastic	564,40 €

LB-Agar (Lennox), granulated
granulated, for molecular biology

Granulated, dust-minimized version of the Luria-Bertani Agar formulated acc. to Lennox; With high solubility and superior homogeneity.
Application: Use 35 g for 1 l agar.

Formulation:

Tryptone.	10 g/l
Yeast extract.	5 g/l
Sodium chloride (NaCl).	5 g/l
Agar-Agar.	15 g/l
pH value.	7,0 ±0,2
Granulation.	complies

6671.1	500 g		plastic	87,65 €
Original pack 6 x 500 g				83,27/500 g
6671.2	1 kg		plastic	166,10 €
Original pack 6 x 1 kg				157,80/1 kg
6671.3	2,5 kg		plastic	356,80 €

LB Broth (Luria/Miller), granulated
granulated, for molecular biology

Standard formulation used for propagation and culturing of *E. coli*.
Due to the high salt content particularly suited for bacterial proliferation prior to plasmid preparation. Granulated, dust-minimized version with high solubility and superior homogeneity.
Application: Use 25 g for 1 l broth.

Formulation:

Tryptone.	10 g/l
Yeast extract.	5 g/l
Sodium chloride (NaCl).	10 g/l
pH value.	7,0 ±0,2
Granulation.	complies

6673.1	500 g		plastic	72,60 €
Original pack 6 x 500 g				68,97/500 g
6673.2	1 kg		plastic	134,95 €
Original pack 6 x 1 kg				128,20/1 kg
6673.3	2,5 kg		plastic	295,65 €
6673.4	5 kg	BIG PACK	plastic	532,15 €

LB Agar (Luria/Miller), granulated
granulated, for molecular biology

Granulated, dust-minimized version of the Luria-Bertani Agar formulated acc. to Luria and Miller; With high solubility and superior homogeneity.
Application: Use 40 g for 1 l agar.

Formulation:

Tryptone.	10 g/l
Yeast extract.	5 g/l
Sodium chloride (NaCl).	10 g/l
Agar-Agar.	15 g/l
pH value.	7,0 ±0,2
Granulation.	complies

6675.1	500 g		plastic	75,80 €
Original pack 6 x 500 g				72,01/500 g
6675.2	1 kg		plastic	138,70 €
Original pack 6 x 1 kg				131,77/1 kg
6675.3	2,5 kg		plastic	299,95 €

2x YT Broth, granulated
granulated, for molecular biology

Nutritious medium for proliferation of *E. coli*, formulated in order to increase replication and yield of filamentous ssDNA bacteriophages (such as the M13 phage).
Granulated, dust-minimized version with high solubility and superior homogeneity.
Application: Use 31 g for 1 l broth.

Formulation:

Tryptone.	16 g/l
Yeast extract.	10 g/l
Sodium chloride (NaCl).	5 g/l
pH value.	7,0 ±0,2
Granulation.	complies

6676.1	500 g		plastic	91,30 €
Original pack 6 x 500 g				86,74/500 g
6676.2	1 kg		plastic	155,90 €
Original pack 6 x 1 kg				148,11/1 kg
6676.3	2,5 kg	new size	plastic	353,70 €

Standard Media for Genetic Engineering

Store temp.: +20 °C

All nutrient media for molecular biology are according to the data given in Sambrook and Russell, *Cold Spring Harbour Laboratory Press*, Cold Spring Harbour, New York, 2001.

Yeast-Nitrogen-Base (without Amino Acids)

for molecular biology

For yeast classification based on amino acid and carbohydrate requirements. **YNB Broth, YNB Medium**

Yeast Nitrogen Base (without amino acids) contains ammonium sulphate, all vitamins and all organic salts needed to cultivate yeasts, **except for the amino acids and carbohydrate sources**. By selective addition of single amino acids and sugars the yeast cells are tested for sugar assimilation and for their dependency on specific amino acids, hereby revealing parameters for their classification.
Application: Add 6,7 g for 100 ml broth for 10x stock solution. Use selected sugar/amino acid. Do not boil, do not autoclave! Sterilise by sterile filtration!

Formulation:

Ammonium sulphate	5,0 g/l
Potassium phosphate	1,0 g/l
Magnesium sulphate	0,5 g/l
Calcium chloride	0,1 g/l
Sodium chloride (NaCl)	0,1 g/l
Inositol	2,0 mg/l
Boric acid	0,5 mg/l
Niacin	0,4 mg/l
Thiamine hydrochloride	0,4 mg/l
Pyridoxin hydrochloride	0,4 mg/l
Calcium pantothenate	0,4 mg/l
Manganese sulphate	0,4 mg/l
Zinc sulphate	0,4 mg/l
P-Aminobenzoic acid	0,2 mg/l
Iron chloride	0,2 mg/l
Riboflavine	0,2 mg/l
Sodium molybdate	0,2 mg/l
Potassium iodide	0,1 mg/l
Copper sulphate	0,04 mg/l
Biotin	0,002 mg/l
Folic acid	0,002 mg/l
pH value	5,4 ±0,2

HP26.1	500 g	plastic	131,70 €
Original pack 6 x 500 g			125,12/500 g

▶ Amino Acids for drop-out mixtures see chapter Chemicals A-Z.

LB Broth (Lennox)

for molecular biology

Standard formulation used for propagation and culturing of *E. coli*. The salt content was adjusted to enable high-copy plasmid proliferation and preparation. Additionally, LB medium may be supplemented with magnesium chloride in order to gain an enriched broth for phage propagation.
Application: Use 20 g for 1 l broth.

Formulation:

Tryptone	10 g/l
Yeast extract	5 g/l
Sodium chloride (NaCl)	5 g/l
pH value	7,0 ±0,2

X964.1	500 g	plastic	53,25 €
Original pack 6 x 500 g			50,59/500 g
X964.2	1 kg	plastic	95,15 €
Original pack 6 x 1 kg			90,39/1 kg
X964.3	2,5 kg	plastic	216,65 €
X964.4	5 kg BIG PACK	plastic	370,90 €

LB Agar (Lennox)

for molecular biology

Application: Use 35 g for 1 l agar.

Formulation:

Tryptone	10 g/l
Yeast extract	5 g/l
Sodium chloride (NaCl)	5 g/l
Agar-Agar	15 g/l
pH value	7,0 ±0,2

X965.1	500 g	plastic	58,60 €
Original pack 6 x 500 g			55,67/500 g
X965.2	1 kg	plastic	109,55 €
Original pack 6 x 1 kg			104,07/1 kg
X965.3	2,5 kg	plastic	256,95 €

LB Broth (Luria/Miller)

for molecular biology

Standard medium for propagation of *E. coli*. Due to the high salt content, this classical formulation acc. to Luria and Bertani is superior when culturing cells for plasmid preparation.
Application: Use 25 g for 1 l broth.

Formulation:

Tryptone	10 g/l
Yeast extract	5 g/l
Sodium chloride (NaCl)	10 g/l
pH value	7,0 ±0,2

X968.1	500 g	plastic	46,80 €
Original pack 6 x 500 g			44,46/500 g
X968.2	1 kg	plastic	87,65 €
Original pack 6 x 1 kg			83,27/1 kg
X968.3	2,5 kg	plastic	188,70 €
X968.4	5 kg BIG PACK	plastic	342,95 €

LB Agar (Luria/Miller)

for molecular biology

Application: Use 40 g for 1 l agar.

Formulation:

Tryptone	10 g/l
Yeast extract	5 g/l
Sodium chloride (NaCl)	10 g/l
Agar-Agar	15 g/l
pH value	7,0 ±0,2

X969.1	500 g	plastic	50,00 €
Original pack 6 x 500 g			47,50/500 g
X969.2	1 kg	plastic	93,00 €
Original pack 6 x 1 kg			88,35/1 kg
X969.3	2,5 kg	plastic	206,95 €

▶ IPTG see page 1195

▶ X-ß-Gal see page 1195

LB-Broth

LB-Broth is a standard medium for maintanance and propagation of *E. coli*. The LB-series of media (**L**uria and **B**ertani) includes several formulations, which differ mainly in their salt contents.

Typical LB-Broth formulations are: Luria, Luria-Bertani, LennoxL, LennoxLB, Luria/Miller. For plasmid propagation, salt concentrations between 5 and 10 g/l are recommended.

NZCYM Broth
for molecular biology

A superior medium for increased yields of phage Lambda.
Application: Use 22 g for 1 l broth.

Formulation:

Casein, enzymatically digested.	10 g/l
Yeast extract.	5 g/l
Sodium chloride (NaCl).	5 g/l
Casamino Acids.	1 g/l
Magnesium sulphate ($MgSO_4$), anhydrous.	0,98 g/l
pH value.	7,0 ±0,2

X974.1	500 g	plastic	54,75 €
Original pack 6 x 500 g			52,01/500 g

NZYM Broth
for molecular biology

Designed for increased replication of phage Lambda.
Application: Use 21 g for 1 l broth.

Formulation:

Casein, enzymatically digested.	10 g/l
Yeast extract.	5 g/l
Sodium chloride (NaCl).	5 g/l
Magnesium sulphate ($MgSO_4$), anhydrous.	0,98 g/l
pH value.	7,0 ±0,2

X973.1	500 g	plastic	57,55 €
Original pack 6 x 500 g			54,67/500 g

NZYM- and NZCYM Broth

These media were designed for the propagation of **bacteriophage Lambda**. In order to encourage multi phage insertion into the host cell, supplementation with 0.2 % maltose is recommended (prepare a 20 % solution and add 1 ml per 100 ml of medium), which promotes expression of LamB (lambda receptor).

If maltose is added, the medium should not be used to create phage stocks, as binding of phage particles to membrane fragments will occur because of increased LamB density.

SOB Broth
for molecular biology

Enriched broth for propagation of *E. coli*, particularly suited for proliferation of competent cells after transformation. May be enriched to SOC-medium with 20 mM glucose.
Application: Use 26,64 g for 1 l broth.

Formulation:

Tryptone.	20 g/l
Yeast extract.	5 g/l
Magnesium chloride.	0,96 g/l
Sodium chloride (NaCl).	0,5 g/l
Potassium chloride (KCl).	0,186 g/l
pH value.	7,0 ±0,2

AE27.1	500 g	plastic	60,75 €
Original pack 6 x 500 g			57,71/500 g

SOB

Super **O**ptimal **B**roth (SOB) is a complex, nutritious nutrient medium which is used prior to and after transformation of *E. coli* bacteria. By adding 20 mM glucose it is enriched to SOC (**S**uper **O**ptimal Broth with **C**atabolite repression) which is optimal for coddling up of freshly transformed bacteria. Through this, SOC increases transformation efficiency. In order to avoid caramelisation, glucose may only be added after autoclaving. Acc. to D. Hanahan (1983) *J. Mol. Biol.* 166/4:557-580

Terrific Broth
for molecular biology

Terrific Broth is a nutricious medium for the culture and proliferation of *E. coli*. Compared to LB medium Terrific Broth supports higher cellular density, therefore increasing the yield during plasmid and protein preparations.
Application: Use 50,8 g for 1 l broth. Before autoclaving add 4 ml glycerol per litre medium.

Formulation:

Casein, enzymatically digested.	12 g/l
Yeast extract.	24 g/l
K_2HPO_4.	12,5 g/l
KH_2PO_4.	2,3 g/l
pH value.	7,2 ±0,2

X972.1	500 g	plastic	60,75 €
Original pack 6 x 500 g			57,71/500 g
X972.2	1 kg	plastic	107,40 €
Original pack 6 x 1 kg			102,03/1 kg
X972.3	2,5 kg	plastic	220,40 €

Terrific-Broth modified
for molecular biology

Nutricious medium for the culture and proliferation of *E. coli*. Terrific Broth supports high cellular density and is recommended for use during cultivation of bacteria for plasmid isolation or *in vitro* protein expression.
In the formulation of Terrific Broth modified, the phosphate content has been reduced, in order to prevent precipitation of insoluble salts during autoclaving.
Application: Use 47,6 g for 1 l broth. Before autoclaving add 4 ml glycerol per litre medium.

Formulation:

Casein, enzymatically digested.	12 g/l
Yeast extract.	24 g/l
K_2HPO_4.	9,4 g/l
KH_2PO_4.	2,2 g/l
pH value.	7,2 ±0,2

HP61.1	500 g	plastic	56,45 €
Original pack 6 x 500 g			53,63/500 g
HP61.2	1 kg	plastic	101,05 €
Original pack 6 x 1 kg			96,00/1 kg

Terrific Broth

Terrific Broth is a phosphate buffered, highly nutritious medium that is particularly used prior to plasmid isolation, in order to increase the yield. Compared with LB Broth, TB contains a nearly 5x elevated concentration of yeast extract, providing the required growth factors, vitamis and nucleotides. The phosphate buffer stabilises pH values. Hence, bacteria proliferate to high cell density, while lysation is slowed down.

The high phosphate concentration may lead to precipitation of insoluble magnesium- or calcium phosphates. After autoclaving, antibiotics, glycerine, dextrose etc. may be added for further enrichment of the broth.

YPD Broth
for molecular biology

For maintenance and propagation of *S. cerevisiae*.
Application: Use 50 g for 1 l broth.

Formulation:

Peptone.	20 g/l
Yeast extract.	10 g/l
Glucose.	20 g/l
pH value.	6,5 ±0,2

X970.1	500 g	plastic	55,40 €
Original pack 6 x 500 g			52,63/500 g
X970.2	1 kg	plastic	97,30 €
Original pack 6 x 1 kg			92,44/1 kg
X970.3	2,5 kg	plastic	223,10 €

YPD Agar
for molecular biology

Application: Use 65 g for 1 l agar.

Formulation:

Peptone. ..... 20 g/l
Yeast extract. ..... 10 g/l
Glucose. ..... 20 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 6,5 ±0,2

X971.1	500 g	plastic	70,85 €
Original pack 6 x 500 g			67,31/500 g
X971.2	1 kg	plastic	122,55 €
Original pack 6 x 1 kg			116,42/1 kg
X971.3	2,5 kg	plastic	284,35 €

YPD Medium

YPD is a rich medium for the maintenance and propagation of *S. cerevisiae*. It is suitable if selections for auxotrophies are not intended.

Glucose is included as a carbon source.

Wild type strains of *S. cerevisiae* show a doubling time of approx. 90 min in YPD.

2xYT Broth
for molecular biology

A nutritious liquid medium formulated to promote the growth of host cells *(E. coli)*, thereby encouraging increased replication and yield from filamentous ssDNA bacteriophages (such as the M13 phage).
Application: Use 31 g for 1 l broth.

Formulation:

Tryptone. ..... 16 g/l
Yeast extract. ..... 10 g/l
Sodium chloride (NaCl). ..... 5 g/l
pH value. ..... 7,0 ±0,2

X966.1	500 g	plastic	60,75 €
Original pack 6 x 500 g			57,71/500 g
X966.2	1 kg	plastic	104,85 €
Original pack 6 x 1 kg			99,61/1 kg
X966.3	2,5 kg	plastic	246,20 €

2xYT Agar
for molecular biology

Application: Use 46 g for 1 l agar.

Formulation:

Tryptone. ..... 16 g/l
Yeast extract. ..... 10 g/l
Sodium chloride (NaCl). ..... 5 g/l
Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

X967.1	500 g	plastic	66,15 €
Original pack 6 x 500 g			62,84/500 g

2x YT Media

Very nutricious medium for proliferation of M13 and other filamentous phages in *E. coli*. 2x YT Medium (**Y**east extract / **T**ryptone) contains big amounts of vitamins, amino acids, nucleic acids and other base components, allowing phages to propagate without weakening the host bacterium.

This medium may also be used for proliferation of recombinant *E. coli*.

▶ Granulated Nutrient Media see page 1352

Nutrient Media of vegetable origin

animal-free

Store temp.: +20 °C

- Free from animal components
- Product origin statement available on request
- Free from TSE/BSE

LB Broth (Lennox) vegetal
for molecular biology, animal-free

Standard formulation made from compounds of pure vegetable origin, used for propagation and culturing of *E. coli*. Low salt content for plasmid isolation. Supplemented with magnesium chloride also suitable for phage propagation.
Application: Use 20 g for 1 l broth.

Formulation:

Vegetable peptone . ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 5 g/l
pH value. ..... 7,0 ±0,2

0155.1	500 g	plastic	64,00 €
Original pack 6 x 500 g			60,80/500 g
0155.2	1 kg	plastic	114,50 €
Original pack 6 x 1 kg			108,78/1 kg

LB Agar (Lennox) vegetal
for molecular biology, animal-free

Standard formulation made from compounds of pure vegetable origin, used for propagation and culturing of *E. coli*.
Application: Use 35 g for 1 l agar.

Formulation:

Vegetable peptone . ..... 10 g/l
Yeast extract. ..... 5 g/l
Sodium chloride (NaCl). ..... 5 g/l
Agar-Agar. ..... 15 g/l
pH value. ..... 7,0 ±0,2

0159.1	500 g	plastic	74,10 €
Original pack 6 x 500 g			70,40/500 g
0159.2	1 kg	plastic	134,95 €
Original pack 6 x 1 kg			128,20/1 kg

Terrific Broth vegetal
for molecular biology, animal-free

Nutritious medium made from compounds of pure vegetable origin for culture and proliferation of *E. coli*. Terrific Broth supports very high cellular density, therefore increasing the yield during plasmid and protein preparations.
Application: Use 50,8 g for 1 l broth. Before autoclaving add 4 ml glycerol per litre medium.

Formulation:

Vegetable peptone . ..... 12 g/l
Yeast extract. ..... 24 g/l
K_2HPO_4. ..... 12,5 g/l
KH_2PO_4. ..... 2,3 g/l
pH value. ..... 7,2 ±0,2

0161.1	500 g	plastic	71,95 €
Original pack 6 x 500 g			68,35/500 g

Basic Reagents for Nutrient Media

High-quality compounds are vital for rapid growth and efficient selection of microorganisms. Peptones in particular are an easily accessible source of carbohydrates as well as nitrogen and amino acids. Yeast extracts additionally are very rich in vitamins, growth factors, and nucleic acids. The most common basic reagents for nutrient media have been assembled here.

Casein hydrolysate, bacteriological

for biochemistry, acidic hydrolysate

Casamino acids

Storage temp.: +20 °C

Manufactured by hydrolysation of casein by hydrochloric acid. Tryptophane-free. High-grade casein hydrolysate **with superior amino-nitrogen/total nitrogen ratio (AN/TN)**. Particularly suitable for sensitive assays and applications requiring high yields, like production of bacterial toxins or vaccines.

Type analysis:

Total nitrogen.....7,0-8,0 %
pH-value 4,5-6,0
Loss on drying. .....<6 %
Ratio AN/TN. .....56-93 %

A157.3	250 g	plastic	84,85 €
A157.1	500 g	plastic	130,10 €
Original pack 6 x 500 g			123,60/500 g
A157.2	1 kg	plastic	239,20 €
Original pack 6 x 1 kg			227,24/1 kg

Casein hydrolysate, standard

for molecular biology, acidic hydrolysate

Ingredient of molecular and microbiological nutrient media, vitamin-free.

Casamino acids

Storage temp.: +20 °C

Acidic hydrolysate of casein with low cystein and tryptophane content, free of vitamins. Excellent for the production of bacterial toxins and vaccins. **With standard amino-nitrogen/total nitrogen ratio (AN/TN).**

Type analysis:

Total nitrogen.....≥5,0 %
Amino nitrogen. .....≥3,5 %
Ratio AN/TN. .....≥56 %
Ash content.....≤45 %
pH value (2 % solution).....6,5-7,5

AE41.1	500 g	plastic	63,45 €
Original pack 6 x 500 g			60,28/500 g
AE41.2	1 kg	plastic	112,35 €
Original pack 6 x 1 kg			106,73/1 kg

Lactalbumin

for microbiology

Storage temp.: +20 °C

Lactalbumin is produced by enzymatic hydrolysis of milk whey. It consists of peptides, amino acids and carbohydrates, simple and complex. It is used in media for culturing of bacterial cells (e.g. lactobacilli), for tissue culture, production of vaccines and in fermentation procedures.

Type analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥4,8 %
Loss on drying. .....≤6 %
Ash. .....≤15 %
pH (2 % solution). 6,5-7,5

7597.1	250 g	plastic	68,30 €
7597.2	500 g	plastic	117,75 €
Original pack 6 x 500 g			111,86/500 g

Heart infusion

for microbiology

Storage temp.: +20 °C

Heart Infusion is an especially formulated preparation of dried infusion from bovine hearts retaining all the nutritive and growth stimulating properties of fresh tissues. It is a typical ingredient of Blood Agar, Brain-Heart-Infus Media etc.

Type analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥3 %
Loss on drying. .....≤6 %
Ash. .....≤15 %
pH (2 % solution). 6,5-7,5

7596.1	250 g	plastic	53,65 €
7596.2	500 g	plastic	91,30 €
Original pack 6 x 500 g			86,74/500 g

In the early days of bacteriology, so-called **"infusions"** (tissue extraction) were used in microbiological media. As simply manufactured and non-standardised natural products, "infusion" have a relatively low batch-to-batch constancy and vary both in composition and in nutrient content. However, they are still commonly used in several classic media (Art. No. 7596).

Malt extract, standard

powdered, for culture media

Storage temp.: +20 °C

Powdered malt extract for standard applications.
Malt extract possesses a very large amount of carbohydrates.
The medium, therefore, turns dark brown very quickly when overheated.

Type analysis:

Colour. ..... beige
Loss on drying. .....≤6,0 %
Reducing sugar. .....≥60,0 %
Ash. .....≤4,5 %
pH-value (3 % aqueous solution).....4,8-5,8

X976.1	500 g	plastic	31,10 €
Original pack 6 x 500 g			29,55/500 g
X976.2	1 kg	plastic	53,65 €
Original pack 6 x 1 kg			50,97/1 kg

Please note our **Technical Information Brochure** on the Internet next to the products:

Why Doesn't My Agar Gel?
Basics, tips & tricks

Sterilisation of media containing sugar

Media containing sugar or **malt extract**, particularly those with a low pH, must be sterilised with care. We recommend autoclaving at up to 118 °C for a maximum of 15 min. Please observe the guidelines given in the instructions for use.

The reasons are as follows:

a) Heating sugar in combination with amino acids (from peptone, meat extract, yeast extract, or similar) can result in **toxic Maillard reaction products** which may interfere with proliferation of micro-organisms.

b) Inclusion of different sugar molecules and sugar degradation products will cause premature chain termination and inhibit chain cross-linking. The **gelability of agars containing sugar** will thereby be reduced.

Malt extract, bacteriological

powdered, for microbiology

Additive to malt containing culture media and agars.

Storage temp.: +20 °C

High quality additive for nutrient media requiring a superior malt content. Optimally suited for bacteriological applications due to low pH value. Free of nitrite. Do not overheat!

Type analysis:

Colour	beige
Loss on drying	≤6 %
Maltose	~70 %
Total nitrogen (TN)	~1,3 %
Amino nitrogen	~0,4 %
Sulphated ash	≤3 %
pH-value (1,5 % sol.)	4,5-5,5

AE68.1	500 g	plastic	53,65 €
Original pack 6 x 500 g			50,97/500 g

Meat extract

powder, for nutrient media

Equates Lab-Lemco™

Storage temp.: +20 °C

High-grade nutrient media additive also ideal for supplementation of media for fermentation studies.

Guarantee analysis:

Total nitrogen (as N)	≥10 %
Loss on drying	≤6 %
Ash	≤16 %
pH (2 % solution)	7,0 ±0,5

X975.1	500 g	plastic	115,60 €
Original pack 6 x 500 g			109,82/500 g
X975.2	1 kg	plastic	213,95 €
Original pack 6 x 1 kg			203,25/1 kg

Meat extract paste

paste, for nutrient media

Storage temp.: +20 °C

High-grade paste made of slightly proteolytic meat.

Guarantee analysis:

Dry substance	≥78 %
Ash (dry substance)	≤30 %
Creatinine content	6,5-6,9 %
In H_2O insoluble matter	≤1,5 %
NaCl	≤7 %
Copper (Cu)	≤0,0006 %
Zinc (Zn)	≤0,0001 %
Microbiological assay	complies

5770.1	250 g	plastic	60,10 €
5770.2	1 kg	plastic	192,45 €
Original pack 6 x 1 kg			182,83/1 kg

NZamine

for molecular biology

Component of nutrition media for molecular biological assays, particularly LB Broth.

Storage temp.: +20 °C

Highly nutritive peptone, produced by pancreatic digest of Casein under distinct conditions. Best source of nitrogen and amino acids in nutrient media for molecular biological assays, particularly broth acc. to Luria/Bertani (LB).

Guarantee analysis:

Total nitrogen	≥10 %
Amino nitrogen	≥3,9 %
Loss on drying	≤6 %
Ash	≤15 %
pH value (2 % solution)	7,0 ±0,5

CP76.2	250 g	plastic	42,90 €
CP76.1	500 g	plastic	67,20 €
Original pack 6 x 500 g			63,84/500 g

Ox Bile, bacteriological

for microbiology

Storage temp.: +20 °C

Ox Bile is produced by a low dehydration process of bovine liver. It is a mixture of free and conjugated bile salts. It works as a selective agent for bile-tolerant microorganisms in culture media; gram positive bacteria are inhibited.

Type analysis:

Cholic acid	≥45 %
Loss on drying	≤6 %
pH (2 % solution)	6,0-8,5
Solubility (2 % solution)	clear

7595.1	250 g	plastic	114,50 €
7595.2	500 g	plastic	203,20 €
Original pack 6 x 500 g			193,04/500 g

Peptone ex casein

tryptic digest, for microbiology

Storage temp.: +20 °C

Produced by proteolytic digestion of casein with trypsin-rich pancreas extract. Low-cost peptone that is used as an additive to nutrient media in the production of toxins, vaccins, enzymes and further biological products.

Type analysis:

Total nitrogen	≥12,5 %
Amino nitrogen	≥3,0 %
Loss on drying	≤6 %
Ash	≤16 %
pH-value	6,5-7,5

8986.1	500 g	plastic	71,50 €
Original pack 6 x 500 g			67,93/500 g
8986.2	1 kg	plastic	127,40 €
Original pack 6 x 1 kg			121,03/1 kg
8986.3	2,5 kg	plastic	282,20 €
8986.4	5 kg BIG PACK	plastic	499,90 €

Peptone ex gelatin

pancreatic digest, for microbiology

Storage temp.: +20 °C

Peptone produced from porcine skin by digestion with pancreatic extract. Gelatin pepton is low in fermentable carbohydrates, and is used in culture media especially for non-fastidious microorganisms and for fermentation studies.

Type analysis:

Total nitrogen	≥10 %
Amino nitrogen	≥2,7 %
Loss on drying	≤6 %
Ash	≤15 %
pH value (2 % solution)	7,0 ±0,5

HP99.1	500 g	plastic	64,40 €
Original pack 6 x 500 g			61,18/500 g

Peptone ex meat

peptic digest, for microbiology

Storage temp.: +20 °C

Extremely high-grade peptone, particularly nutritive. Peptone from meat is gained from animal tissue by peptic digestion. It is used as a biological nutrient for tissue cultures, fermentations and for the production of vaccines.

Type analysis:

Total nitrogen.....≥12,0 %
Amino nitrogen. .....2,0-3,1 %
Loss on drying. .....≤5 %
Ash. .....≤20 %
pH-value 6,5-7,5
Solubility (2 % solution).....clear

2366.1	250 g	plastic	51,50 €
2366.3	500 g	plastic	95,60 €
Original pack 6 x 500 g			90,82/500 g
2366.2	1 kg	plastic	182,25 €
Original pack 6 x 1 kg			173,14/1 kg
2366.4	2,5 kg	plastic	353,70 €

Peptone ex soya (animal-free/GMO-free)

animal-free and GMO-free, papainic digest, for microbiology

Storage temp.: +20 °C

Soya peptone (animal-free/GMO-free) is extracted by papainic digestion from soybean flour from non-genetically modified plants. Moreover, strict production guidelines guarantee that it is free from all animal substances, even TSE/BSE. Peptone ex soja (animal-free/GVO-free) complies with EG regulations 1829/2003 and 1830/2003. The corresponding certificates are available upon request.
Peptone ex soya is particularly characterized by its broad nutrient spectrum and high vitamin content. It is suitable for application in microbiology, tissue culture and fermentation.

Type analysis:

Total nitrogen.....≥7 %
Amino nitrogen. .....≥2,2 %
Loss on drying. .....≤6 %
Animal-free. .....complies
GMO-free. .....complies
pH-value (5 % solution). 6,5-7,5

2832.1	250 g	plastic	51,50 €
2832.2	500 g	plastic	84,40 €
Original pack 6 x 500 g			80,18/500 g
2832.3	1 kg	plastic	155,35 €
Original pack 6 x 1 kg			147,58/1 kg

The term **peptone** is used for all proteins digested by acid or enzymes. In addition, the source (e. g. 8986.1: Peptone ex Casein) and the digesting compound should be given (e. g. "tryptic"). Source of nitrogen and amino acids.

Tryptone is manufactured by digestion of casein with pancreas extract (pancreatic digest). Tryptone is rich in tryptophane, and an ideal source of nitrogen and amino acids used in a number of microbiological nutrient media (Art. No. 8952 and 6681).

NZamine also is manufactured by pancreatic digestion of casein. Being similar to tryptone it is often used as source of nitrogen and amino acids in nutrient media for bacterial growth in molecular biology (Art. No. CP76).

Proteose peptone is formed by hydrolytic cleavage of proteins from animal tissue, more complete that which occurs for peptones in general, but not strong enough to form single amino acids. Proteose peptone is rich for peptides with high molecular weight, beeing a high-grade component of microbiological nutrient media (Art. No. HP32).

Casamino acids originate from hydolysis of casein by acid. This compound is used as source of nitrogen and amino acids when completely hydrolysed protein is required, e. g. in proliferation assays or during production of vaccines and toxins (Art. No. AE41, A157).

Peptone ex soya

papainic digest, for microbiology

Storage temp.: +20 °C

Particularly broad nutrient spectrum and high content of carbohydrates and vitamins. Peptone from soya beans is gained from papainic digestion of soya bean flour and used for culture media, for fermentation and for the production of vaccines.

Type analysis:

Total nitrogen.....≥9,0 %
Amino nitrogen. .....≥2,5 %
Loss on drying. .....≤6 %
Ash. .....≤21,0 %
pH-value (5 % solution). 6,5-7,5

2365.1	250 g	plastic	36,05 €
2365.3	500 g	plastic	60,10 €
Original pack 6 x 500 g			57,10/500 g
2365.2	1 kg	plastic	115,60 €
Original pack 6 x 1 kg			109,82/1 kg
2365.4	2,5 kg	plastic	213,95 €

Polypeptone

for microbiology

Storage temp.: +20 °C

Specially designed mixture of casein peptone and meat peptone. Polypeptone may be used as a rich source for vitamins, carbon and amino acids in many microbiological culture media formulations. For several microorganisms it is known to stimulate proliferation better than the individual petones.

Type analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥3,7 %
Loss on drying. .....≤6 %
Ash. .....≤15 %
pH (2 % solution). 6,5-7,5

2903.1	250 g	plastic	47,20 €
2903.2	500 g	plastic	88,05 €
Original pack 6 x 500 g			83,65/500 g
2903.3	1 kg	plastic	167,70 €
Original pack 6 x 1 kg			159,32/1 kg

Proteose Peptone

for microbiology

Rich component of microbiological nutrition media, particularly used for production of toxins and vaccines. From enzymatic digestion of animal tissue.

Storage temp.: +20 °C

Highly nutritious source for the growth of a wide range of fastidious microorganisms or when bacteria have to be well fed. Best suited for the production of vaccines, antibiotics, and other substances like enzymes, ideal for starter cultures and well usable for bacterial stocks. Proteose peptone has been used for, e.g., the production of Diphteria toxin, *Pneumococcus* toxin and the toxins from *Clostridium botulinum* and *Cl. perfringens*, as well as for culture of *Neisseria, Haemophilus, Salmonella, Corynebacterium* and *Staphylococcus*.

Guarantee analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥3,4 %
Loss on drying. .....≤6 %
Ash. .....≤10 %
pH value (2 % solution).....7,0 ±0,5

HP32.1	500 g	plastic	84,95 €
Original pack 6 x 500 g			80,70/500 g

Starch, soluble

soluble

Oxidized corn starch

$(C_6H_{10}O_5)_n$

M $(162,14)_n$ g/mol

Important compound of many nutrient media for cultivation of fastidious microorganisms in general, and *Clostridia* in particular. Please solubilise the starch in very few cold water prior to addition to the medium.

4701.1	1 kg	plastic	21,75 €
Original pack 6 x 1 kg			20,66/1 kg
4701.2	5 kg BIG PACK	plastic	73,00 €

Tryptone/Peptone ex casein

pancreatic digest, for microbiology

Similar to NZamine

Storage temp.: +20 °C

Rich in short-chained peptides and amino acids, including trytophane. Essential ingredient of many nutrient media like LB, 2YT. Produced by pancreatic digestion of casein. It is used as an additive to nutrient media in the production of toxins, vaccins, enzymes and further biological products.

Type analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥3,9 %
Loss on drying. .....≤6 %
Ash. .....≤15 %
pH (2 % solution). 6,5-7,5

8952.1	250 g	plastic	47,85 €
8952.3	500 g	plastic	83,75 €
Original pack 6 x 500 g			79,56/500 g
8952.2	1 kg	plastic	145,15 €
Original pack 6 x 1 kg			137,89/1 kg
8952.4	2,5 kg	plastic	317,15 €
8952.5	5 kg BIG PACK	plastic	547,20 €

Tryptone/Peptone ex casein, granulated

granulated, pancreatic digest, for microbiology

Similar to NZamine

Storage temp.: +20 °C

Granulated, dust-minimized casein peptone made by pancreatic digestion. Rich in short-chained peptides and amino acids, including tryptophane. Essential ingredient of many nutrient media like, for instance, LB, 2YT and others.

Type analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥3,9 %
Loss on drying. .....≤6 %
Ash. .....≤15 %
pH (2 % solution). 6,5-7,5
Granulation. .....complies

6681.1	250 g	plastic	60,10 €
6681.2	500 g	plastic	103,75 €
Original pack 6 x 500 g			98,56/500 g
6681.3	1 kg	plastic	182,25 €
Original pack 6 x 1 kg			173,14/1 kg
6681.4	2,5 kg	plastic	356,90 €
6681.5	5 kg BIG PACK	plastic	671,90 €

Yeast Extract

powdered, for bacteriology

Storage temp.: +20 °C

Water-soluble. Produced through aqueous extraction of autolysed brewer´s yeast. High content of vitamins. Ideal, therefore, in many standard nutrient media, e.g. LB-medium as for vitamins, carbohydrates, and amino acids.

Guarantee analysis:

Total nitrogen.....≥8 %
Amino nitrogen. .....4,8-6,3 %
Ratio AN/TN. 41-60
Loss on drying. .....≤6 %
Ash. .....≤18 %
pH value. 6,4-7,4
Solubility (2 % solution). ..... clear

2363.1	250 g	plastic	39,70 €
2363.3	500 g	plastic	73,00 €
Original pack 6 x 500 g			69,35/500 g
2363.2	1 kg	plastic	140,30 €
Original pack 6 x 1 kg			133,29/1 kg
2363.4	2,5 kg	plastic	260,70 €
2363.5	5 kg BIG PACK	plastic	471,95 €

Yeast Extract, micro-granulated

micro-granulated, for bacteriology

Storage temp.: +20 °C

Micro-granulated, water soluble extract of selected autolysed yeast cells. Easy to handle and dust-reduced.

Fig.: Close-up

Yeast extract is used as a rich source for vitamins, carbon and amino acids in many microbiological culture media formulations. Rich in B-vitamines and growth factors.

Type analysis:

Total nitrogen.....≥10 %
Amino nitrogen. .....≥4,5 %
Dry substance.....≥94 %
Ash. .....≤16 %
pH (2 % solution). 6,8-7,2

2904.1	250 g	plastic	45,05 €
2904.2	500 g	plastic	83,35 €
Original pack 6 x 500 g			79,18/500 g
2904.3	1 kg	plastic	165,05 €
Original pack 6 x 1 kg			156,80/1 kg
2904.4	2,5 kg	plastic	295,65 €
2904.5	5 kg BIG PACK	plastic	536,45 €

Agar

Agar-Agar, Kobe I

Kobe I, powdered, for microbiology

Standard-Agar for application in culture media for molecular biology (e.g. LB medium) and microbiology.

Storage temp.: +20 °C

Type analysis:

Gel strength (1,5 % gel). ....≥1000 g/cm²
Gelling temperature. ....35-42 °C
Moisture. ....≤15 %
pH-value 5,0-8,0
Ash. ....≤1,5 %

5210.1	250 g	plastic	34,95 €
5210.3	500 g	plastic	59,05 €
Original pack 6 x 500 g			56,10/500 g
5210.2	1 kg	plastic	111,70 €
Original pack 6 x 1 kg			106,12/1 kg
5210.4	2,5 kg	plastic	235,45 €
5210.5	5 kg BIG PACK	plastic	418,20 €

Agar types

The designation Agar **Kobe I** derives from the geographical origin of the agar, which is the Japanese city of Kobe on the main island of Honshu. In former times, when agar was still traded in strips, threads or squares, agar was graded into three main quality groups:

Kobe I - top quality, pure white
Korea I - slightly inferior quality, slightly yellowish to light beige
China - inferior quality, yellow-beige

These terms and the associated differences in quality are now obsolete - for some time now, agar of consistent quality has been available from all parts of Asia. However, for reasons unknown, the designation Kobe I is used today to describe ground agar of very high quality which is used as a microbiological standard agar.

BioScience Agar forms clear gels and is of high purity without any residues that could hinder growth of transformed - and therefore stressed - GMOs. Hence, it is particularly recommended for production of agar plates for bioengeneering. **BioScience Agar** is used as gelating agent in our *Anhydrous Nutrient Media for Molecular Biology*.

In addition, the designation **bacteriological agar** has become an established definition for ultra-pure agar, which represents a preliminary stage of purified agarose and is manufactured for special microbiological applications.

Danish agar, also known as Furcelleran, is a saccharide-enriched **carrageenan** extracted from the red algae *Furcellaria fastgiata*.

Instructions:

Culture-Plates: 15 g/l medium;
approx. 30-35 ml medium is required for a 90 mm culture plate.
Top-Agar: 7 g/l medium.
The solution should be autoclaved for 20 min and the preparation carefully swayed to distribute the agar evenly. Cool the agar down to 50 °C before adding the antibiotic. Sway the agar solution again before casting the plates.
Any air bubbles on the surface of the culture plates can be removed with a bunsen burner flame. Once the agar has hardened, the plates should be stored top-down at 4 °C.

▶ Self-adhesive labels for Petri dishes, see page 1375

Agar-Agar, bacteriological

for bacteriology, extremely pure quality

Ideal for immunodiffusion and electrophoresis and as a medium for tissue and cell cultures, bacteriology and mycology.

Storage temp.: +20 °C

Qualitatively high-grade Agar which is clearly superior to bacteriological Agar in its purity. Forms very clear gels.
Essentially free of impurities that could interfere with other products in culture media formulation. Free of bacterial inhibitors.
Recommended in media to be used for the determination of susceptibility of microorganisms to antibiotics or drugs.

Guarantee analysis:

Electroendosmosis (EEO). ....≤0,450
Water content. ....≤12 %
Ash. ....≤1,6 %
Gel strength (1,5 % Nikan). ....500-1200 g/cm²
Gelling temperature (1,5 % gel). ....34-38 °C
Melting temperature (1.5 % gel). ....85-90 °C
Turbidity (1.5 % solution). ....≤10 NTU
Absorption (450 nm). ....≤0,100
pH (1,5 % gel) before autoclaving. 5,0-7,0
Resistance (1 % suspension). ....≥20000 Ohm

2266.1	250 g	plastic	98,80 €
2266.3	500 g	plastic	169,75 €
Original pack 6 x 500 g			161,26/500 g
2266.2	1 kg	plastic	306,40 €
Original pack 6 x 1 kg			291,08/1 kg
2266.4	2,5 kg	plastic	650,40 €

Agar-Agar, plant

Genetic engineering quality, for plants

For plant propagation and plant cell culture.

Storage temp.: +20 °C

High-pure agar recommended for propagation of ornamental and economic plant species, as for *in vitro* genetic engineering in plant research and commercial applications. The high gel strength of the agar allows usage at low concentrations of about 0.5 %. Forms very clear and transparent gels.

Guarantee analysis:

Water content. ....<18 %
Ash. ....3,0 ±0,5 %
Gel strength (1,5 % Nikan). ....≥1000 g/cm²
pH (1,5 % gel) before autoclaving. ....7,2 ±0,4
pH (1,5 % gel) after autoclaving. ....7,0 ±0,4
Gelling temperature. ....34 ±2 °C
Melting temperature. ....92 ±2 °C
Turbidity (1,5 % gel). ....≤25 NTU

4807.1	250 g	plastic	69,80 €
4807.2	500 g	plastic	116,00 €
Original pack 6 x 500 g			110,20/500 g
4807.3	1 kg	plastic	192,45 €
Original pack 6 x 1 kg			182,83/1 kg
4807.4	2,5 kg	plastic	385,95 €

Agar-Agar, BioScience

BioScience-Grade, powdered

Agar of high purity for all culture media used in molecular- and microbiology. Recommended for plating in genetic engineering (GMOs).

Storage temp.: +20 °C

Highly pure Agar-Agar, essentially free of impurities that could hinder bacterial growth. Forms very clear gels.
Particularly recommended for preparation of culture plates used for plating of recombinant bacteria (GMOs) during genetic engineering.

Guarantee analysis:

Water content. ....≤10 %
Ash. ....≤4,5 %
Gel strength (1,5 % Nikan). ....800-1100 g/cm²
Gelling temperature (1,5 % gel). ....35 ±3 °C
Melting temperature (1.5 % gel). ....85 ±5 °C
Turbidity (1.5 % solution). ....≤12 NTU
Absorption (450 nm). ....≤0,200
pH (1,5 % gel) before autoclaving. ....7,0 ±0,4

6494.1	250 g	plastic	44,00 €
6494.2	500 g	plastic	76,25 €
Original pack 6 x 500 g			72,44/500 g
6494.3	1 kg	plastic	139,65 €
Original pack 6 x 1 kg			132,67/1 kg
6494.4	2,5 kg	plastic	295,65 €

Agar-Agar, BioScience, granulated

BioScience-Grade, granulated

Agar of high purity for all culture media used in molecular- and microbiology. Recommended for plating in genetic engineering (GMOs).

Storage temp.: +20 °C

Granulated, dust-minimized Agar-Agar.
Essentially free of impurities that could hinder bacterial growth. Forming very clear gels.
Particularly recommended for preparation of culture plates used for plating of recombinant bacteria (GMOs) during genetic engineering.

Guarantee analysis:

Water content. ....≤10 %
Ash. ....≤4,5 %
Gel strength (1,5 % Nikan). ....800-1100 g/cm²
Gelling temperature (1,5 % gel). ....35 ±3 °C
Melting temperature (1.5 % gel). ....85 ±5 °C
Turbidity (1.5 % solution). ....≤12 NTU
Adsorption (450 nm). ....≤0,200
pH (1,5 % gel) before autoclaving. ....7,2 ±0,4
Granulation. ....complies

1347.1	250 g	plastic	57,55 €
1347.2	500 g	plastic	98,80 €
Original pack 6 x 500 g			93,86/500 g
1347.3	1 kg	plastic	182,65 €
Original pack 6 x 1 kg			173,52/1 kg
1347.4	2,5 kg	plastic	389,05 €

Carrageenans

Carrageenans are agar-related hydrocolloids consisting of esters of galactose and anhydro-galactose polysaccarides and forming particularly clear gels. In order to polymerise, carrageenans require cations, while gel strength may be altered by addition of $MgCl_2$ or KCl.

Agar-Agar, danish

Standardised Carrageenan mixture, sugar-containing, powdered

Mixture of highly pured Carrageen extracts. For gelling of watery liquids like, e.g. media for cultivation of plants, and for special microbiological applications. Saccharated.

Storage temp.: +20 °C

Each lot of this Carrageenan mixture is standardised with sugars and KCl to the gel strength noted in the type analysis.

Type analysis:

Appearance. .... cream-coloured powder
Moisture. ....<12 %
Sulphate (as SO_4, dry substance). ....15-40 %
Gel strength (1,5 % sol.). ....~400-500 g/cm²
Viscosity (1,5 % sol., 75 °C). ....≥0,005 Pas
pH-value (1,5 % sol.). 7,0-10,5
Arsenic (As). ....≤0,0003 %
Lead (Pb). ....≤0,0005 %
Cadmium (Cd). ....≤0,0002 %
Mercury (Hg). ....≤0,0001 %
Methanol, ethanol, isopropanol. ....≤1 %
Ash insoluble in 1 % H_2SO_4 (dry substance). ....≤2 %
Standardized by mono- or disaccharides and KCl

4508.1	1 kg		plastic	67,65 €
Original pack 6 x 1 kg				64,27/1 kg
4508.2	5 kg	BIG PACK	plastic	295,65 €

Please Note:

Being extracts from natural products, the properties (e.g. gelling behaviour, salt content) may vary from lot to lot. Further information on analysis data see Chemicals A-Z.

Carrageenan, kappa

acc. to FAO/WHO, EEC, FCC, highly pure

Strongly gelling Carrageenan of kappa type. Forms gels of high gel strength. For gelling of watery liquids like e.g. culture media for plants or animals. Manufactured from cultured and controlled sea weeds.

Carrageenan E407

Carrageenans are agar-related hydrocolloids consisting of esters of galactose and anhydrogalactose polysaccarides. Kappa Carrageenan is obtained by alkaline extraction from red algae (*Rhodophyceae*) of the order *Gigartinales*, purified by filtration and recovered by KCl precipitation. In ionic solutions, heat-solubilized kappa Carrageenan self-assembles into helical structures and gels during cooling, the gel parameters depending on the ions present: Potassium ions form rigid gels, calcium gels are strong but more flexibel.

Guarantee analysis:

Appearance. ....white-pale tan
Gel strength (1,5 %, aqueous). ....1200-1800 g/cm²
Particle size (99 %). ....<0,25 mm
Loss on drying. ....<12 %
Arsenic (As). ....<3 ppm
Lead (Pb). ....<5 ppm
Cadmium (Cd). ....<2 ppm
Mercury (Hg). ....<1 ppm
Heavy metals. ....<20 ppm
pH value. 7,0-11,0
Microbiological Analysis. ....complies
Contains KCl

3059.1	25 g	plastic	21,00 €
3059.2	100 g	plastic	53,65 €
3059.3	500 g	plastic	186,00 €
Original pack 6 x 500 g			176,70/500 g

Carrageenan, iota

acc. to FAO/WHO, EEC, FCC, highly pure

Weakly gelating Carrageenan of iota type. Forms soft gels. For gelling of watery liquids like culture media for plants or animals in general, and for gelling of dairy products in particular. Manufactured from cultured and controlled sea weeds.

Carrageenan E407

Carrageenans are agar-related hydrocolloids consisting of esters of galactose and anhydrogalactose polysaccarides. Iota Carrageenan is obtained by alkaline extraction from red algae (*Rhodophyceae*) of the order *Gigartinales*, purified by filtration and recovered by alcoholic precipitation.
In solutions containing calcium ions, heat-solubilised iota Carrageenan self-assembles into helical structures and gels during cooling.

Guarantee analysis:

Appearance. ....white-pale tan
Viscosity (in milk). ....2000-3500 mPa s
Particle size (98 %). ....<0,149 mm
Loss on drying. ....<12 %
Arsenic (As). ....<3 ppm
Lead (Pb). ....<5 ppm
Cadmium (Cd). ....<2 ppm
Mercury (Hg). ....<1 ppm
Heavy metals. ....<20 ppm
pH value. 7,0-11,0
Microbiological Analysis. ....complies

3675.1	25 g	plastic	21,00 €
3675.2	100 g	plastic	53,65 €
3675.3	500 g	plastic	186,00 €
Original pack 6 x 500 g			176,70/500 g

GELRITE®

Gelling agent for microbiological culture media

Alternative to Agar

Storage temp.: +20 °C

GELRITE® is a highly-purified, natural heteropolysaccharide which forms stable, agar-like gels when exposed to soluble salts. Compared to agar however, only about half the amount is required.
GELRITE® has been specially developed as a gelling agent for microbiological culture media. It can however, replace agar in other applications, too. Polymerisation of GELRITE® is enhanced in the presence of (bivalent) kations. It is therefore supplemented by $MgCl_2$ if a solid gel structure is required. Elevated salt concentrations increase gelling temperature (e.g. 500 mM Na^+ to approx. 68 °C with 1 % GELRITE®). When using very high salt concentrations like e.g. seawater, gelling capacity may be significantly reduced.

Chemical composition:
Linear polysaccharide comprising of O-acetylate glycuronic acid, glucose and rhamnose units.

Advantages of GELRITE® compared to Agar:

- consistent product quality
- almost 100 % batch-to-batch conformity
- forms remarkably clear gels
- reduces preparation time as gels form faster
- remains stable even at high temperatures and is therefore also ideal for thermophilic microorganisms; gels can withstand repeated autoclaving without any changes to gel strength
- indicates no toxic contaminations (e.g. through phenols, as found in agar)
- is chemically inert against most media additives
- is resistant to enzymatic degradation
- is non-toxic (no signs of toxicity in rats exposed to a dose of 5.000 mg/kg)
- is very economical to use

Type analysis:

Gel strength. ....400-700 g/cm²
Loss on drying. ....≤15,0 %

0039.1	500 g	plastic	240,30 €
Original pack 6 x 500 g			228,29/500 g
0039.2	1 kg	plastic	389,70 €
Original pack 6 x 1 kg			370,22/1 kg

Media preparation with GELRITE®

Dissolve the corresponding amounts of media additive, GELRITE® and $MgCl_2 \cdot 6\ H_2O$ in 1 litre of distilled water. Autoclave mixture for 15 min at +120 °C.
Cool to 60 °C and pour the medium into Petri dishes.

Examples:

Medium	GELRITE®	$MgCl_2 \cdot 6\ H_2O$
Bismuth sulphite	10.0 g/l	0.75 g/l
Brillant green	9.0 g/l	0.75 g/l
Eosin methylene blue	7.5 g/l	0.75 g/l
Triple Iron Sugar	6.0 g/l	0.75 g/l
MacConkey	7.0 g/l	0.75 g/l
Nutrient broth	8.0 g/l	0.75 g/l
Plant agar	2.0 g/l	-
Salmonella Shigella	5.5 g/l	-
Seawater (High Salt solution)	not recommended	-

Antibiotics/Antimycotics

Reliable quality for microbiology, molecular biology and cell culture.

Denoted concentrations of working solutions are guiding values and have to be established for each application and cell type.

Actinomycin D

≥95 %, for biochemistry

Peptide antibiotic. Pure actinomycin C_1.

Actinomycin IV, Actinomycin C_1, Dactinomycin

$C_{62}H_{86}N_{12}O_{16}$ • M 1255,5 g/mol • Storage temp.: +4 °C

Danger H300

Specific inhibitor of DNA-dependent RNA-synthesis. Inhibition is caused by intercalation in dsDNA and, therefore, is not specific for procaryotic cells. Standard application is the preparation of cDNA. Actinomycin D is cytostatic, toxic and sensitive to light. Stock solution should be kept in a bottle covered with foil.
Stock solution 10 mg/ml in DMSO or methanol.
Storage of stock solution: -20 °C
Working concentration: 50 µg/ml

8969.1	5 mg	glass	71,50 €

Amphotericin B

≥850 I.U./mg, for biochemistry

Broad-range fungicide, polyene.

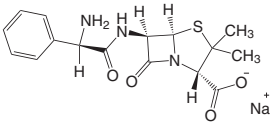
Fungizon

$C_{47}H_{73}NO_{17}$ • M 924,10 g/mol • Storage temp.: +4 °C

Warning H315-H319-H335

Alteration of cell membrane permeability by attachment to sterols.
High concentration causes pore formation in cell membranes in general.
Amphotericin A: ≤0,4 %
Stock solution: 40 mg/ml in DMSO
Storage of stock solution: -20 °C
Working concentration: ≥3 µg/ml

0246.1	50 mg	glass	20,10 €
0246.2	250 mg	glass	63,45 €
0246.3	500 mg	glass	114,95 €



Ampicillin

≥91 %, CELLPURE®

β-lactam antibiotic. Semi synthetic penicillin.
For cell culture and biochemistry.

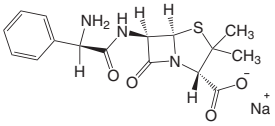
D-α-Aminobenzylpenicillin sodium salt

$C_{16}H_{18}N_3NaO_4S$ • M 371,39 g/mol • Storage temp.: +4 °C

Danger H334-H317

Inhibits cell wall biosynthesis in growing bacteria.
Endotoxins: <0.15 E.U./mg
Stock solution: 50 mg/ml in H_2O
Storage of stock solution: -20 °C, aliquoted
Working concentration in LB-plates or media: 50-100 µg/ml.
Important:
Solubilised ampicillin loses approx. 65 % activity after 7 days at +4 °C

HP62.1	10 g	plastic	41,85 €
HP62.2	50 g	plastic	155,35 €



Ampicillin

≥97 %, for molecular biology and biochemistry

β-lactam antibiotic. Semi synthetic penicillin.

D-α-Aminobenzylpenicillin sodium salt

$C_{16}H_{18}N_3NaO_4S$ • M 371,39 g/mol • Storage temp.: +4 °C

Danger H334-H317

Inhibits cell wall biosynthesis in growing bacteria.
Stock solution: 50 mg/ml in H_2O
Storage of stock solution: -20 °C, aliquoted
Working concentration in LB-plates or media: 50-100 µg/ml.
Important:
Solubilised ampicillin loses approx. 65 % activity after 7 days at +4 °C

K029.1	10 g		plastic	20,65 €
K029.4	25 g	new size	plastic	39,25 €
K029.5	50 g	new size	plastic	67,75 €
K029.2	100 g		plastic	114,50 €
K029.3	250 g	BIG PACK	plastic	246,20 €

▶ IPTG and X-ß-Gal see chapter Life Science - Molecular biology page 1195

Bacitracin

≥60 IU/mg, Ph.Eur., for biochemistry

Peptide antibiotic and protease inhibitor.

$C_{66}H_{103}N_{17}O_{16}S$ • M 1422,72 g/mol • Storage temp.: +4 °C

Inhibits cell wall biosynthesis in gram-positive bacteria and *Neisseria* by interaction with murein biosynthesis.
Also used as protease-inhibitor for inhibition of the gluthatione-insuline-transhydrogenase or some endopeptidases.
Stock solution: 100-1000 mg/ml in H_2O or ethanol
Storage of stock solution at -20 °C
Working concentration: 0.1-1 mg/ml (0.07-0.7 mM)
Bacitracin is very stable in a pH range of 4-5, but is rapidly inactivated in pH of over 5 at room temperature.
Do not use at a pH of over 8.

5655.1	5 g	glass	48,95 €
5655.2	25 g	plastic	207,40 €

Blasticidin

≥98 %, for biochemistry

Nucleoside antibiotic. Blasticidin S hydrochloride

$C_{17}H_{26}N_8O_5 \cdot HCl$ • M 458,90 g/mol • Storage temp.: +4 °C

Danger H300

Inhibits protein biosynthesis in pro- and eukaryotes by blocking of formation of peptide bonds. Selection marker for cells transfected with *brs* or *BSD* resistance genes.
Stock solution: 50 mg/ml in H_2O, PBS or HEPES
Storage of stock solution at -20 °C.
Working concentration: 3-100 µg/ml

CP14.1	10 mg	plastic	64,20 €
CP14.2	25 mg	plastic	127,95 €

▶ More physical and chemical details on antibiotics see chapter Chemicals A-Z.

Carbenicillin

≥98 %, for biochemistry

β-lactam antibiotic, semi synthetic penicillin

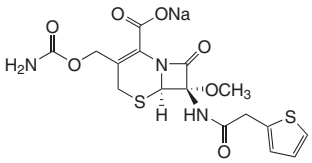
α-Carboxybenzyl penicillin disodium salt

$C_{17}H_{16}N_2O_6SNa_2$ • M 422,4 g/mol • Storage temp.: +4 °C

Danger H334-H317

Carbenicillin inhibits cell wall biosynthesis in bacteria. Compared to ampicilline, carbenicillin is more resistant to hydrolysis by β-lactamase.
Stock solution: 50 mg/ml in 50 % ethanol / 50 % water
Working concentration: 20-60 µg/ml

6344.1	1 g	glass	26,35 €
6344.2	5 g	plastic	60,10 €
6344.3	25 g	plastic	274,15 €



Cefoxitin

≥98 %, for biochemistry

Cephalosporin-antibiotic

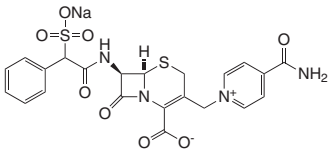
Cefoxitin sodium salt

$C_{16}H_{16}N_3NaO_7S_2$ • M 449,43 g/mol • Storage temp.: +4 °C

Danger H334-H335-H315-H319-H317

Semi-synthetic second generation cephalosporin derivate. Cefoxitin interferes with peptidoglycan layer composition during cell wall synthesis and is effective against a broad spectrum of gram-positive bacteria. Its effectivity against gram-negative bacteria is lower. Also active against anaerobic bacteria. Zone of inhibition analysis with Cefoxitin is used to detect methicilin resistance. Stable against cleavage by β-lactamase. Sensitive to light and temperature!
Stock solution: 100 mg/ml in water
Store stock solution in the dark at -20 °C (durability 30 weeks)
Working concentration: 2-100 µg/ml

4156.1	250 mg	glass	47,85 €
4156.2	500 mg	glass	76,90 €



Cefsulodin

≥97 %, for biochemistry

Cephalosporin-antibiotic

Cefomonil, Pseudocef

Cefsulodin sodium salt

$C_{22}H_{19}N_4O_8S_2Na$ • M 554,53 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H334-H335-H315-H319-H317

Semi-synthetic third generation cephalosporin derivate. Cefsulodin interferes with peptidoglycan layer composition during cell wall synthesis and is effective against a broad spectrum of gram-positive and gram-negative bacteria. Also active against anaerobes. Stable against cleavage by β-lactamase. Sensitive to light and temperature!
Stock solution: 20 mg/ml in water
Store stock solution in the dark at -20 °C
Working concentration: 2-20 µg/ml

4014.1	100 mg	glass	47,85 €
4014.2	250 mg	glass	83,75 €

Chloroamphenicol

≥98,5 %, Ph.Eur., for biochemistry

Bacteriostatic antibiotic

Chloromycetin

$C_{11}H_{12}Cl_2N_2O_5$ • M 323,15 g/mol • Storage temp.: +20 °C

Danger H350-H361

Broad application range against gram-negative and gram-positive bacteria. Bacteriostatic effect by inhibiting bacterial protein biosynthesis.
Light-sensitive. Store in the dark!
Stock solution: 34 mg/ml in ethanol
Storage of stock solution at -20 °C in the dark
Working concentration:
For plasmid amplification: 170 µg/ml
For selection of resistant bacteria: 10-30 µg/ml
For culture plates: 10-30 µg/ml (storage at +4 °C for 1-5 days)

3886.2	25 g		plastic	17,75 €
3886.1	50 g		plastic	29,60 €
3886.3	100 g	BIG PACK	plastic	48,40 €

Colistin

≥19000 IU/mg, for biochemistry

Bacteriostatic antibiotic, peptide antibiotic

Polymyxin E_1-disulphate, Colistinsulphate

$C_{45}H_{85}N_{13}O_{10} \cdot H_2SO_4$ • M 1066,32 g/mol • Storage temp.: +4 °C

Danger H301

Effectual against proliferating and non-proliferating gram-negative bacteria. Coupling to bacterial lipopolysaccharides results in permeabilisation of cell membranes.
Stock solution: 1-10 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 2-200 µg/ml

CN31.1	100 mg	glass	23,15 €
CN31.2	250 mg	glass	46,15 €
CN31.3	1 g	glass	71,50 €

Cycloheximide

≥96 %, for biochemistry

Glutarimid antibiotiotic, fungicidal

Naramycin A, Actidione

$C_{15}H_{23}NO_4$ • M 281,36 g/mol

Danger H300-H360D-H341-H411

Antibiotic isolated from *Streptomyces griseus*. Its main biological activity is translation inhibition in eukaryotes by binding to the 60S subunit of the ribosomes. Cycloheximide inhibits binding of Aminoacyl-tRNA to the ribosomes, Peptidyltransferase, detachment of deacylated tRNA, and translocation of Aminoacyl-tRNA, resulting in cell growth arrest and apoptotic cell death. Not effective against bacteria.
Cycloheximide is widely used for selection of cycloheximide-resistant strains of yeast and fungi, for inhibition of eukaryotic contaminants in bacterial microbiology, for controlled inhibition of protein synthesis in cell culture and for detection of short-lived proteins, and for apoptosis induction or facilitation of apoptosis induction by death receptors.
Stock solution: 10 mg/ml in H_2O or acetone
Storage of stock solution at -20 °C
Working concentration: 1-10 µg/ml
Note: Inactivated at basic pH values. Heat- and acid stabile. No inactivation after 15 mins. 95 °C in pH 7.0.

8682.1	1 g	glass	34,95 €
8682.3	5 g	glass	138,70 €
8682.4	10 g	glass	239,20 €

D-Cycloserine

≥90 %, for biochemistry

Bacteriostatic antibiotic

Oxamycin, D-4-Amino-3-isoxazolidinone

$C_3H_6N_2O_2$ • M 102,09 g/mol

Storage temp.: +4 °C

Bacteriostatic against gram negative and gram positive bacteria and some protozoans by inhibition of synthesis of the cell wall.
Stock solution: 10-100 mg/ml in H_2O and 96 % ethanol
Stability of stock solution: Neutral or acidic solutions are unstable. Sodium carbonate buffered solutions (pH 10) may be stored at +4 °C for approx. 7 days without loosing activity.
Recommended storage of stock solution at -20 °C (6 months).
Working concentration: 20-100 µg/ml
Note: Optimum of activity at pH 6.4-7.4.
It is recommended to prepare fresh solutions each time for use.

CN37.1	1 g	glass	22,50 €
CN37.2	5 g	plastic	49,35 €
CN37.3	10 g	plastic	92,35 €

Erythromycin

≥93 %, for biochemistry

Macrolide antibiotic

$C_{37}H_{67}NO_{13}$ • M 733,95 g/mol • Storage temp.: +4 °C

Erythromycin is a macrolide antibiotic (macrocyclic lactone antibiotic) which is produced from an actinomycete strain (*Saccharopolyspora erythraea*, formerly known as *Streptomyces erythraeus*). Its spectrum of activity is similar to but broader than that of penicillin, which means that erythromycin is also very effective against bacteria such as legionella or mycoplasma. Erythromycin binds to the bacterial 70s rRNA, interferes with the aminoacyl translocation and consequently inhibits biosynthesis. It is used in microbiological fungal culture to prevent bacterial growth and as a selection marker for selection on bacteria with an erythromycin resistance-mediating gene cassette (*erm*).
Stock solution: 10 mg/ml in ethanol
Store stock solution at -20 °C (2 months)
Working concentration: 0.1-5 µg/ml
pH-optimum at 8.5. Only stable for approx. 24 hours at pH-range 7 to 7.5. Extremely unstable below pH 6.0

4166.1	5 g	glass	26,80 €
4166.2	10 g	glass	43,75 €

Geldanamycin

≥98 %, for biochemistry

HSP90 inhibitor, tyrosin kinase inhibitor. Benzoquinone ansamycin antibiotic. Binds specifically to the heat shock protein HSP90.

$C_{29}H_{40}N_2O_9$ • M 560,64 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

The specific binding of geldanamycin to heat shock protein 90 (HSP90) and its ER homologue GP96 leads to inhibition of the chaperone, results in degradation of Hsp90 substrates and, subsequently, to deregulation of central cell mechanisms - cell cycle, cell proliferation, apoptosis/cell vitality. Geldanamycin arrests cells in G_2 phase, thus interfering with angiogenesis and oncogenesis. Due to its antitumor potential it may be used as antibiotic against several eucaryotic carcinogenic cell lines. Additionally, geldanamycin is used as inhibitor of tyrosin-kinase and during analysis of several other physiological regulatory mechanisms.
Stock solution: 1000x in DMSO or methanol
Storage of stock solution at -20 °C, max. 2 weeks at 4 °C
Working concentration: 1-10 µg/ml
Photo sensitive! Store protected from light.

HN71.1	1 mg	glass	61,85 €
HN71.2	5 mg	glass	152,55 €
HN71.3	10 mg	glass	218,80 €

Geneticin (G418)

≥650 U/mg, for biochemistry

Aminoglycoside antibiotic

Antibiotic G418, Geneticin disulphate, G418 sulphate

$C_{20}H_{40}N_4O_{10} \cdot 2\ H_2SO_4$ • M 692,70 g/mol • Storage temp.: +4 °C

Danger H334-H317

Inhibits protein biosynthesis by binding to ribosomes, particularly to eukaryotic 80S ribosomes. Through interference with the tRNA docking process, sequence errors appear and the elongating peptide chain is truncated. Geneticin disulphate unspecifically effects all cells, and is highly toxic for eukaryotic cells. Resistance is mediated by the bacterial enzyme aminoglycoside-3-phosphotransferase.
Application: Selection of transfected eukaryotic cells
Resistance gene: *Neomycin*
Stock solution: 10-50 mg/ml in H_2O or culture medium
Storage of stock solution: -20 °C
Working concentration: 50-1000 µg/ml, has to be established for each cell type

0239.1	250 mg	glass	33,25 €
0239.2	500 mg	glass	42,90 €
0239.3	1 g	glass	79,45 €
0239.4	10 g	glass	557,95 €

Geneticin (G418)-solution

ready-to-use S

50 mg/ml, CELLPURE®

Aminoglycoside antibiotic.
For cell culture, biochemistry and molecular biology.

Aqueous G418 sulphate solution, G418 solution,

Geneticin disulphate (G418)-solution

$C_{20}H_{40}N_4O_{10} \cdot 2\ H_2SO_4$ • M 692,70 g/mol • Storage temp.: +4 °C

Danger H334-H317

Inhibits protein biosynthesis by binding to ribosomes, particularly to eukaryotic 80S ribosomes. Through interference with the tRNA docking process, sequence errors appear and the elongating peptide chain is truncated. Geneticin disulphate unspecifically effects all cells, and is highly toxic for eukaryotic cells. Resistance is mediated by the bacterial enzyme aminoglycoside-3-phosphotransferase.
Application: Selection of transfected eukaryotic cells
Resistance gene: *Neomycin*
Endotoxins: <10 E.U./ml
Stock solution, specifically suitable for cell culturing
Working concentration: 50-1000 µg/ml, has to be determined for each cell type.

CP11.1	10 ml	plastic	63,35 €
CP11.2	20 ml	plastic	82,25 €
CP11.3	100 ml	plastic	302,10 €

▶ Roti®-CELL media for cell culture see new chapter Cell Biology!

Geneticin (G418)-solution

50 mg/ml, BioScience-Grade, sterile

Aminoglycoside antibiotic.
For cell culture, biochemistry and molecular biology.
Aqueous G418 sulphate solution, G418 solution,
Geneticin disulphate (G418)-solution
$C_{20}H_{40}N_4O_{10} \cdot 2\ H_2SO_4$ • M 692,70 g/mol • Storage temp.: +4 °C

Danger H334-H317

Inhibits protein biosynthesis by binding to ribosomes, particularly to eukaryotic 80S ribosomes. Through interference with the tRNA docking process, sequence errors appear and the elongating peptide chain is truncated. Geneticin disulphate unspecifically effects all cells, and is highly toxic for eukaryotic cells. Resistance is mediated by the bacterial enzyme aminoglycoside-3-phosphotransferase.
Application: Selection of transfected eukaryotic cells
Resistance gene: *neomycin*.
Sterile stock solution, suitable for cell culturing, as well as for biochemical and biomolecular assays.
Extracted from *Micromonospora rhodorangea*.
Working concentration: 50-1000 µg/ml, has to be determined for each cell type.

2039.1	10 ml	plastic	57,20 €
2039.2	20 ml	plastic	74,75 €
2039.3	100 ml	plastic	281,15 €

Gentamycin

≥590 I.U./mg, for biochemistry

Aminoglycoside antibiotic
Gentamicin sulphate
$C_{19\text{-}21}H_{39\text{-}43}N_5O_7 \cdot 2{,}5\ H_2SO_4$ • M 694,75-723,75 g/mol
Storage temp.: +4 °C

Danger H334-H317

Inhibits protein biosynthesis through binding to ribosomal 50S subunits.
Effectual against gram-positive and -negative bacteria.
Stock solution: 10-20 mg/ml in H_2O or formamide.
Storage of stock solution: -20 °C.
Working concentration: 15-50 µg/ml.
Extracted from *Micromonospora purpurea*.

0233.1	1 g	glass	10,25 €
0233.2	5 g	glass	19,60 €
0233.3	10 g	glass	30,00 €
0233.4	25 g	glass	57,95 €

Gentamycin solution

50 mg/ml, CELLPURE®

Aminoglycoside antibiotic. For cell culture and biochemistry.
Aqueous gentamycin sulphate solution
$C_{19\text{-}21}H_{39\text{-}43}N_5O_7 \cdot 2{,}5\ H_2SO_4$ • M 694,75-723,75 g/mol
Storage temp.: +4 °C

Danger H334-H317

Inhibits protein biosynthesis through binding to ribosomal 50S subunits.
Effectual against gram-positive and -negative bacteria.
Endotoxins: ≤10 E.U./ml
Stock solution, specifically suitable for cell culturing.
Working concentration: 15-50 µg/ml
Extracted from *Micromonospora purpurea*.

HN09.1	20 ml	plastic	81,20 €
HN09.2	100 ml	plastic	306,40 €

Gentamycin solution

50 mg/ml, BioScience-Grade, sterile

Aminoglycoside antibiotic. For cell culture and biochemistry.
Aqueous gentamycin sulphate solution
$C_{19\text{-}21}H_{39\text{-}43}N_5O_7 \cdot 2{,}5\ H_2SO_4$ • M 694,75-723,75 g/mol
Storage temp.: +4 °C

Danger H334-H317

Inhibits protein biosynthesis through binding to ribosomal 50S subunits.
Effectual against gram-positive and -negative bacteria.
Sterile stock solution, suitable for cell culturing and biochemical assays.
Working concentration: 15-50 µg/ml

2475.1	20 ml	plastic	80,55 €
2475.2	100 ml	plastic	289,20 €

Please note our **Technical Information Brochure** on the Internet next to the products:

Antibiotics
Overview and recommendations for application

Hygromycin B

>950 µg/mg, for biochemistry

Aminoglycoside antibiotic.

$C_{20}H_{37}N_3O_{13}$ • M 527,53 g/mol • Storage temp.: +4 °C

Danger H300+H310+H330-H318-H334-H317

Inhibits protein biosynthesis in pro- and eukaryotes by altering translocation during ribosomal chain elongation, therefore resulting in frame reading errors and abortion of chain elongation. Selection marker for *hph* transfected cells.
Stock solution: 50-400 mg/ml in H_2O or PBS.
Storage of stock solution at -20 °C.
Working concentration: 20-1000 µg/ml.

CP13.1	250 mg	glass	54,30 €
CP13.2	500 mg	glass	94,50 €
CP13.3	1 g	glass	166,65 €
CP13.4	5 g	glass	568,70 €

Hygromycin B solution

50 mg/ml, BioScience-Grade, sterile

ready-to-use S

Aminoglycoside antibiotic. For cell culture, biochemistry, molecular biology and microbiology. **In a septum bottle.**

Hygromycin B solution **in PBS**

$C_{20}H_{37}N_3O_{13}$ • M 527,53 g/mol • Storage temp.: +4 °C

Danger H301-H310+H330-H318-H334-H317

Inhibits protein biosynthesis in pro- and eukaryotes by blocking translocation, therefore resulting in frame reading errors and abortion of chain elongation. Selection marker for *hph* transfected cells.
Sterile stock solution, suitable for cell culturing and microbiology, as well as for biochemical and biomolecular assays.
Extracted from *Streptomyces hygroscopicus*.
Working concentration: 20-1000 µg/ml

1287.1	10 ml	glass	92,35 €
1287.2	20 ml	glass	139,65 €

Hygromycin B solution

50 mg/ml, CELLPURE®

ready-to-use S

Aminoglycoside antibiotic.
For cell culture, biochemistry, molecular biology and microbiology.

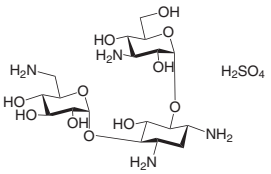
Aqueous hygromycin B solution

$C_{20}H_{37}N_3O_{13}$ • M 527,53 g/mol • Storage temp.: +4 °C

Danger H301-H310+H330-H318-H334-H317

Inhibits protein biosynthesis in pro- and eukaryotes by blocking translocation, therefore resulting in frame reading errors and abortion of chain elongation. Selection marker for *hph* transfected cells.
Endotoxins: <10 E.U./ml
Stock solution, specifically suitable for cell culturing.
Working concentration: 20-1000 µg/ml

CP12.1	10 ml	plastic	107,40 €
CP12.2	20 ml	plastic	184,90 €



Kanamycin

≥750 I.U./mg, for biochemistry

Bacteriostatic antibiotic

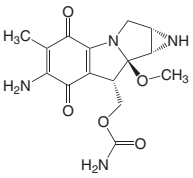
Kanamycin sulphate

$C_{18}H_{36}N_4O_{11} \cdot H_2SO_4$ • M 582,58 g/mol • Storage temp.: +20 °C

Danger H360D

Kanamycin inhibits protein biosynthesis and is effective against gram-negative and gram-positive bacteria.
Easily water-soluble, stable powder.
Main component: Kanamycin A
Stock solution: 10 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 100 µg/ml

T832.1	5 g		plastic	19,90 €
T832.2	25 g		plastic	54,75 €
T832.3	50 g		plastic	90,20 €
T832.4	100 g	BIG PACK	plastic	149,45 €



Mitomycin C

≥98 %, for biochemistry

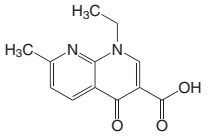
Mitosis inhibitor

$C_{15}H_{18}N_4O_5$ • M 334,30 g/mol • Storage temp.: +4 °C

Danger H300-H351

Covalent linkage to DNA. Causes cross-linking of complementary DNA-strands and strand breakage. Mitomycin C is unstable at low pH-value. Mitomycin C should always be stored away from light.
Stock solution: 1 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: variable (1 µg/ml up to 100 µg/ml)

4150.1	2 mg	glass	71,95 €



Nalidixic acid

≥99 %, for biochemistry

Quinolon antibiotiotic

1,4-Dihydro-1-ethyl-7-methyl-1,8-naphthyridin-4-on-3-carbolic acid

$C_{12}H_{12}N_2O_3$ • M 232,23 g/mol • Storage temp.: +20 °C

Danger H334-H317

Inhibits proliferation of gram-negative bacteria and coccae by inhibition of topoisomerase II (gyrase) and, therefore, of DNA replication.
Also effective against mycoplasms.
Stock solution: 10 mg/ml in chloroform or toluol
Storage of stock solution: -20 °C
Working concentration: 2-200 µg/ml

CN32.1	10 g	plastic	15,60 €
CN32.2	25 g	plastic	30,00 €
CN32.3	100 g BIG PACK	plastic	91,95 €

Neomycin

≥600 I.U./mg, for biochemistry

Inhibitor for protein biosynthesis, aminoglycoside antibiotic.

Neomycin sulphate

$C_{23}H_{46}N_6O_{13} \cdot 3\ H_2SO_4$ • Storage temp.: +4 °C

Danger H317-H334

Antibiotic from *Streptomyces fradiae* which inhibits bacterial protein synthesis in a broad range of procaryotes (even in dormant germs). Inhibition of protein biosynthesis through binding to ribosomal 30S subunits.
Resistance: Neomycin resistance
Main component: Neomycin B
Stock solution: e.g. 100 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: variable

8668.1	10 g	plastic	13,15 €
8668.2	100 g BIG PACK	plastic	60,10 €

Nourseothricin

≥85 %, for biochemistry and microbiology

Broad-band antibiotic and antimycotic of viruses, bacteria and fungi.

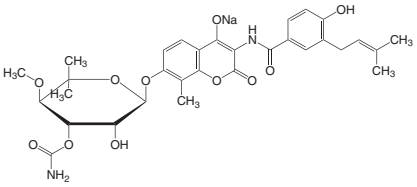
Streptothricine, Nourseothricin dihydrogen sulphate

Storage temp.: +4 °C

Warning H302-H315-H319-H335

Antibiotic of the streptothricine family, effective against a broad spectrum of viruses, bacteria and fungi. Used as selection antibiotic for genetically modified bacteria, yeasts, filamentous fungi, protozoa and plants.
Nourseothricin inhibits biosynthesis and induces miscoding. Resistance is mediated by the *sat1* encoded N-acetyltransferase, which inactivates nourseothricin by acetylation of the β-amino group of the β-lysin.
Streptothricine F: n=1 (MW 599.59), Streptothricine D: n=3 (MW 857.95)
Stock solution: 100 mg/ml in water
Storage of stock solution at -20 °C
Working concentration: ca. 100 µg/ml
Recommendation: One package Nourseothricin should be solubilized in whole and the stock solution should be frozen in aliquots. By removing the overlaying argon during weighing, the stability of the lyophilsate is reduced.

3011.1	25 mg	plastic	38,60 €
3011.2	100 mg	plastic	89,80 €
3011.3	1 g	plastic	461,20 €



Novobiocin

≥850 µg/mg, for biochemistry

Bacteriostatic antibiotic, HSP90 inhibitor.

Novobiocin sodium salt

$C_{31}H_{35}N_2NaO_{11}$ • M 634,62 g/mol • Storage temp.: +4 °C

Warning H319-H317

Reduces growth of gram-positive bacteria by inhibition of initiation of DNA-synthesis via binding to ATP-binding sites of gyrase and topoisomerase. Novobiocin also interacts with the C-terminal ATP-binding site of HSP90, hence inhibiting its Chaperon quality.
Also well suited as additive to microbiological nutrient media. Adding 40 mg/l Novobiocin during selective detection of coliform bacteria on Brilliant Green Bile broth (Art. No. CL06.1) efficiently reduces the growth of attendant flora (Alcaide et al., 1982, *J. Appl. Bact.* 53:143-6).
Stock solution: 100 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: variable

0247.1	1 g	glass	26,55 €
0247.2	5 g	glass	107,40 €
0247.3	10 g	glass	147,85 €

Nystatin

≥4400 I.U./mg, for biochemistry

Broad-range fungizide, polyene.

Mycostatin, Fungicidin

Nystatin dihydrate

$C_{47}H_{75}NO_{17} \cdot 2\ H_2O$ • M 962,14 g/mol • Storage temp.: +4 °C

Alteration of cell membrane permeability by attachment to sterols.
High concentration causes pore formation in cell membranes in general.
Stock solution: 50 mg/ml in DMSO or DMF
Storage of stock solution: -20 °C
Working concentration: 2-50 µg/ml

0241.1	5 g	glass	33,25 €
0241.2	10 g	glass	55,80 €

Safety data sheets
can be found on the Internet next to the product description.

Pen/Strep-PreMix

CELLPURE®

For elimination and prevention of bacterial contamination in cell culture.

Danger H334-H302+H332-H317

Antibiotic compound of penicillin, streptomycin and stabilising sodium chloride for application in cell culture. The premixed powder is extremely stable during storage at room temperature and, due to the excellent solubility of the reagents in pyrogen-free water (e.g. Art. No. 3255.1), it can be mixed quickly to a 100x stock solution.

Penicillin inhibits cell wall biosynthesis in Gram-positive bacteria. Streptomycin produces the antibiotic effect in Gram-negative bacteria through inhibition of the translation.
The dissolved antibiotics are stable for approx. 3 days at 37 °C.
The final concentration of the 100x stock solution is:
Penicillin: 10.000 I.U. / ml
Streptomycin: 10 mg / ml
Sodium chloride: 0.9 %
Endotoxin content per vial: ≤210 I.U. complies ≤4.2 I.U. / ml

Application: The pack contains 2 vials with premixed powder for 2 times 50 ml 100x stock solution. 50 ml of the 100x stock solution can be obtained directly by adding 49.2 ml pyrogen-free water (Art. No. 3255).
We recommend application in a 1:100 dilution.
The stock solution mix (100 ml) is sufficient for 10 l medium.
Storage of stock solution: in 1-10 ml aliquots at -20 °C.
Comes with original seal.

HP10.1	powder mix for 100 ml	plastic	57,95 €

Penicillin G potassium salt

≥1550 U/mg, CELLPURE®

β-Lactam antibiotic. For cell culture and biochemistry.
Benzylpenicillin potassium salt
$C_{16}H_{17}KN_2O_4S$ • M 372,48 g/mol • Storage temp.: +4 °C

Danger H334-H317

Endotoxins: ≤0.25 E.U./mg
Inhibits cell wall biosynthesis in gram-positive bacteria by irreversible interaction with transpeptidase.
Application equivalent to Penicillin G sodium salt.
Preferable when addition of sodium is to be avoided.
Stock solution: 10-100 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 20-100 µg/ml

HP49.1	1 g	plastic	18,10 €
HP49.2	10 g	plastic	34,30 €
HP49.3	25 g	plastic	67,20 €

Penicillin G potassium salt

~1600 U/mg, for biochemistry

β-Lactam antibiotic
Benzylpenicillin potassium salt
$C_{16}H_{17}KN_2O_4S$ • M 372,48 g/mol • Storage temp.: +4 °C

Danger H334-H317

Inhibits cell wall biosynthesis in gram-positive bacteria by irreversible interaction with transpeptidase.
Application equivalent to Penicillin G sodium salt.
Preferable when addition of sodium is to be avoided.
Stock solution: 10-100 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 20-100 µg/ml

CN29.1	10 g	plastic	18,10 €
CN29.2	25 g	plastic	27,85 €
CN29.3	100 g BIG PACK	plastic	73,65 €

Penicillin G sodium salt

≥1550 U/mg, CELLPURE®

β-Lactam antibiotic. For cell culture and biochemistry.
Benzylpenicillin sodium salt
$C_{16}H_{17}N_2NaO_4S$ • M 356,37 g/mol • Storage temp.: +4 °C

Danger H334-H317

Endotoxins: ≤0.25 E.U./mg
Inhibits cell wall biosynthesis in gram-positive bacteria by irreversible interaction with transpeptidase.
Application equivalent to Penicillin G potassium salt.
Preferable when addition of potassium is to be avoided.
Stock solution: 10-100 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 20-100 µg/ml

HP48.1	1 g	plastic	14,95 €
HP48.2	10 g	plastic	30,65 €
HP48.3	25 g	plastic	60,75 €

Penicillin G sodium salt

≥96 %, for biochemistry

β-Lactam antibiotic
Benzylpenicillin sodium salt
$C_{16}H_{17}N_2NaO_4S$
M 356,37 g/mol
Storage temp.: +4 °C

Danger H334-H317

Inhibits cell wall biosynthesis in gram-positive bacteria by irreversible interaction with transpeptidase.
Application equivalent to Penicillin G potassium salt.
Preferable when addition of potassium is to be avoided.
Stock solution: 10-100 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 20-100 µg/ml

CN28.1	10 g	plastic	16,35 €
CN28.2	25 g	plastic	27,45 €
CN28.3	100 g BIG PACK	plastic	76,90 €

Polymyxin B

≥80 %, for biochemistry

Bacteriostatic antibiotic, peptide antibiotic

Aerosporin, Polymyxin B sulphate

$C_{55}H_{96}N_{16}O_{13} \cdot 2\ H_2SO_4$ • M 1385,63 g/mol • Storage temp.: +4 °C

Warning H302

Effectual against proliferating and non-proliferating gram-negative bacteria. Coupling to bacterial lipopolysaccharides results in permeabilisation of cell membranes.
Stock solution: 10-20 mg/ml in H_2O or methanol
Storage of stock solution: -20 °C
Working concentration: 5-500 ng/ml
Extracted from strains of *Bacillus polymyxa*.

0235.1	1 g	glass	43,55 €
0235.2	5 g	glass	177,95 €
0235.3	10 g	glass	321,45 €

Puromycin

≥99 %, for biochemistry

Inhibitor of proteine biosynthesis, aminonucleoside antibiotic.

Purimycin, Puromycin dihydrochloride

$C_{22}H_{29}N_7O_5 \cdot 2\ HCl$ • M 544,44 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Warning H302

Inhibits protein biosynthesis by premature release of the nascent polypeptide chain. Functions as analogon to amino acyl-tRNA molecules.
Stock solution: 10-100 mg/ml in H_2O or HEPES
Storage of stock solution: -20 °C
Working solution: 1-50 µg/ml

0240.1	5 mg	glass	18,10 €
0240.2	10 mg	glass	28,50 €
0240.3	25 mg	glass	62,25 €
0240.4	50 mg	glass	114,50 €

Radicicol

≥98 %, for biochemistry

Strong HSP90 inhibitor, macrolactone antibiotic.
Binds specifically to the heat shock protein HSP90.

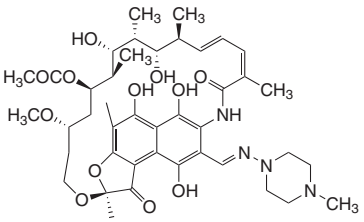
$C_{18}H_{17}ClO_6$ • M 364,79 g/mol

Storage temp.: -20 °C • Transport temp.: room temp.

Danger H301-H315-H319-H335

The strong specific binding of radicicol to heat shock protein 90 (HSP90) leads to deregulation of its target mechanisms: cell cycle, cell proliferation, apoptosis/cell vitality. Also binds to yeast HSP90, *E.coli* HtpG and TRAP-1. Antifungal effects are probably caused by inactivation of chitin synthase in fungal cells.
Stock solution: 10 mg/ml (27 mM) in ethanol or DMSO
Storage of stock solution at -20 °C, max. 2 weeks at 4 °C
Working concentration: 5-300 µM
Photo sensitive! Store protected from light.

HN72.1	1 mg	glass	87,00 €
HN72.2	5 mg	glass	349,40 €
HN72.3	10 mg	glass	536,45 €



Rifampicin

≥90 %, for biochemistry

Bacteriostatic antibiotic

3-(4-Methylpiperazinyliminomethyl)rifamycin SV

$C_{43}H_{58}N_4O_{12}$ • M 822,94 g/mol • Storage temp.: +4 °C

Warning H302-H315-H319-H335

Rifampicin inhibits bacterial DNA-dependent RNA-polymerase and consequently prevents transcription. Its spectrum of activity is strictly bacterial (the eukaryotic DNA-dependent RNA-polymerase can only be inhibited at extremely high concentrations) and rifampicin is particularly very effective against mycobacteria. Enterbacteria, acinetobacteria and pseudomonades are resistant against rifampicin. The resistance-mediating genes can be applied as selection markers in molecular biology. Light-sensitive. Store in the dark!
Stock solution: 100 mg/ml in DMSO, 15 mg/ml in methanol, 1 mg/ml in water (pH 7.3)
Store stock solution at -20 °C, is stable for approx. 2 weeks in DMSO when stored in the dark at 4 °C
Working concentration: 20-200 µg/ml
Art. No. 4163.3: A stock solution with a concentration of 100 mg/ml can be prepared directly by adding 5 ml DMSO.

4163.1	500 mg	glass	28,95 €
4163.3	500 mg (in a 10 ml glass bottle)		36,05 €
4163.2	1 g	glass	50,00 €

Streptomycin

≥720 I.U./mg, CELLPURE®

Bacteriostatic antibiotic. For cell culture and biochemistry.

Streptomycin sulphate

$C_{42}H_{84}N_{14}O_{36}S_3$ • M 1457,38 g/mol • Storage temp.: +20 °C

Warning H302-H361

Effectual against mycobacteria, many gram-negative cocci and gram-negative bacteria in general. Results in translation errors by interaction with ribosomal 30S subunits.
Streptomycin B: ≤3,0 %
Endotoxins: ≤0.25 E.U./mg
Stock solution: 10-50 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 10-100 µg/ml

HP66.1	10 g	glass	25,70 €
HP66.2	25 g	glass	37,55 €
HP66.3	50 g	glass	60,75 €

Streptomycin

>720 I.U./mg, for biochemistry

Bacteriostatic antibiotic

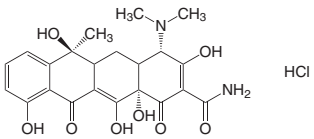
Streptomycin sulphate

$C_{42}H_{84}N_{14}O_{36}S_3$ • M 1457,38 g/mol • Storage temp.: +20 °C

Warning H302-H361

Effectual against mycobacteria, many gram-negative cocci and gram-negative bacteria in general. Results in translation errors by interaction with ribosomal 30S subunits.
Stock solution: 10-50 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 10-100 µg/ml

0236.1	10 g	glass	18,85 €
0236.2	25 g	glass	29,60 €
0236.3	50 g	glass	53,65 €



Tetracycline

≥900 µg/mg, CELLPURE®

Bacteriostatic antibiotic. For cell culture, molecular biology and biochemistry.

Achromycin hydrochloride, Tetracycline hydrochloride

$C_{22}H_{25}Cl\ N_2O_8$ • M 480,90 g/mol • Storage temp.: +20 °C

Warning H361-H319

Effectual against gram-positive and -negative bacteria. Inhibits bacterial protein biosynthesis by coupling to amino acyl-tRNA. Modern application: Activation or inhibition of gene expression through tetracyclin-regulated promotor systems *in vitro* and *in vivo*. Light-sensitive.
Endotoxins: ≤0.5 E.U./mg
Stock solution: 10-20 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 10-50 µg/ml

HP63.1	10 g	glass	22,05 €
HP63.2	50 g	glass	77,95 €

Tetracycline

≥900 µg/mg, for biochemistry and molecular biology

Bacteriostatic antibiotic

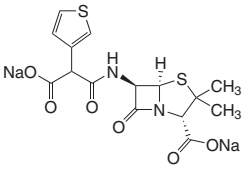
Achromycin hydrochloride, Tetracycline hydrochloride

$C_{22}H_{25}Cl\ N_2O_8$ • M 480,90 g/mol • Storage temp.: +20 °C

Warning H361-H319

Effectual against gram-positive and -negative bacteria. Inhibits bacterial protein biosynthesis by coupling to amino acyl-tRNA. Modern application: Activation or inhibition of gene expression through tetracyclin-regulated promotor systems *in vitro* and *in vivo*. Light-sensitive.
Stock solution: 10-20 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: 10-50 µg/ml

0237.1	25 g		glass	27,85 €
0237.2	50 g		glass	47,20 €
0237.3	100 g	BIG PACK	glass	82,70 €



Ticarcillin

≥90 %, for biochemistry

β-Lactam antibiotic, Ticarcillin disodium salt

α-Carboxy-α-3-thienylmethylpenicillin disodium salt, Ticarcillin · 2 Na

$C_{15}H_{14}N_2Na_2O_6S_2$ • M 428,4 g/mol • Storage temp.: +4 °C

Danger H334-H335-H315-H319-H317

Ticarcillin belongs to the carboxy penicillin family, the only difference to carbenicillin being a group of a side chain. It is inactivated through β-lactamase. Ticarcillin inhibits bacterial cell wall synthesis by inhibiting the transpeptidase.
Stock solution: 100 mg/ml in water
Store stock solution at -20 °C
Working concentration: 25-250 µg/ml
The stock solution should be cooled immediately as its activity decreases quickly and ticarcillin may precipitate.

4161.1	500 mg	glass	36,05 €
4161.2	1 g	glass	60,10 €

Vancomycin

≥900 U./mg, CELLPURE®

Bacteriostatic antibiotic. For cell culture and biochemistry.

Glycopeptide antibiotic, Vancomycin hydrochloride

$C_{66}H_{75}Cl_2N_9O_{24}$ · HCl • M 1485,73 g/mol • Storage temp.: +4 °C

Warning H317

Inhibits bacterial cell cleavage through binding to cell membrane pre-stages.
Endotoxins: ≤0.33 E.U./mg
Stock solution: e.g. 100 mg/ml in H_2O
Storage of stock solution: -20 °C
Working concentration: variable

0242.1	250 mg	glass	30,65 €
0242.2	500 mg	glass	50,00 €
0242.3	1 g	glass	89,80 €

The History of Antibiotics

In the history of mankind there have always been highly developed cultures who have possessed remarkable knowledge. For example, surgeons in the ancient world and Middle Ages placed mouldy rags on wounds to prevent infection.

First observations of antibiotic effects in modern times were made by the French chemist Louis Pasteur in the 19th century, who discovered that certain bacteria could kill anthrax germs. The German bacteriologist Rudolf von Emmerich isolated the antibiotic medium pyocyan (cholera and diptheria) around 1900 and in 1910 experiments carried out by the German doctor and chemist Paul Ehrlich led to the development of salvarsan (syphillis and tropical diseases).

Penicillin was discovered by accident in 1928 by Alexander Fleming in *Penicillium notatum* mould fungus cultures when he observed that in laboratory cultures *P. notatum* inhibited the growth of vicinal bacteria colonies. Streptomycin followed in 1943.

The first antibiotics were isolates from bacteria cultures. The preparations used nowadays, however, are almost exclusively of chemical origin, which has enabled specialisation and optimisation.

Cryo-Conservation

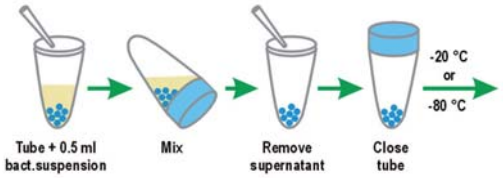
Roti®-Store cryo vials

Sterile. Suitable for freezing all types of microorganisms, including recombinant bacteria.
Storage temp.: +4 °C

- Preparation of cryogenic cultures
- Safe storage
- Simple recultivation

Roti®-Store cryo vials are ideal for preparing freezing stocks from different microorganisms, even DMSO-sensitive organisms. The stocks are protected by a special cryo medium during freezing.
Optimally suited for cryopreservation of recombinant bacteria in genetic engineering.
Store at -80 °C or in liquid nitrogen.
Short-term storage for a few days at -20 °C is possible.
Also suitable for conservation of marine microorganisms, even during field work (Siebert *et al.*, *Appl. Environ. Microbiol.* 2004 (70) 5912-5).
∅ 11 mm, length 47 mm.

Instructions:
To freeze, pipette and mix 0.5 ml fresh culture solution into a Roti®-Store cryo vial. Remove the supernatant and freeze the vial. To recultivate, take one of the glass pellets and inoculate the desired culture medium.



One cryo vial contains 25 glass pellets suitable for 25 recultivations per cryogenic culture.

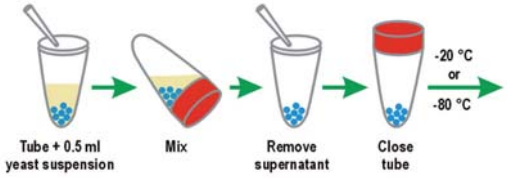
P730.1	50 vials, with 25 glass globules each	99,45 €
P730.2	250 vials, with 25 glass globules each	471,95 €

Instructions for use
can be found on the Internet next to the product description.

Roti®-Store yeast cryo vials

Sterile. Ideal for freezing yeast and monocellular moulds.
Storage temp.: +4 °C

Roti®-Store yeast cryo vials contain a special yeast cryo medium, developed for safe storage of yeasts such as *Saccaromyces cerevisiae* or *Candida albicans*.
Cryo-conversation has been succesfully tested for *S. cerevisiae*, *C. albicans*, *C. sake*, *C. tropicals*, *Zygosaccharomyces rouxii*, *Dekkera bruxellensis* and *Malesezzia furfur*.



Long-term storage at -80 °C or in liquid nitrogen, short-term storage for a few days at -20 °C is possible.
Suitable for preparing 50 different cryo-cultures and for up to 25 recultivations per cryogenic culture.
∅ 11 mm, length 47 mm.

X983.1	50 cryo vials, with 25 glass globules each	123,65 €

Glycerol

ROTIPURAN® ≥99,5 %, p.a., anhydrous
1,2,3-Propanetriol
$C_3H_8O_3$
M 92,09 g/mol

This anhydrous glycerol is used for the storage and concentration of enzymes and other samples at low temperatures. It is also used for the purification of bacteriophages and other biological molecules by a glycerol step gradient.
Due to its high density it is often a component of electrophoresis loading buffers.

3783.1	1 l	plastic	48,95 €
Original pack 6 x 1 l			46,50/1 l
3783.3	1 l	glass	52,90 €
Original pack 6 x 1 l			50,26/1 l
3783.2	2,5 l	plastic	87,65 €
Original pack 4 x 2,5 l			83,27/2,5 l
3783.4	2,5 l	glass	95,60 €
Original pack 4 x 2,5 l			90,82/2,5 l
3783.5	5 l	plastic	134,95 €
Original pack 2 x 5 l			128,20/5 l
3783.6	10 l	plastic	209,65 €

Accessories

Microbiological Monitors

Albet® LabScience, made by Hahnemühle
Sterile. For colony counting, for microbiological testing of pharmaceuticals, cosmetics, food, beverages, water and other liquids.

- Available with black or white gridded membrane
- Ready to use - can be adapted to a filtering flask or a multi-branch unit by adapter
- Ideal for routine analysis with a high number of samples

With a gridded cellulose nitrate membrane filter (ø 47 mm, pore size 0,45 µm) and cellulose pad. Monitors with cellulose nitrate membranes assure effective retention with high flow rates and optimum colony growth. Just remove the 100 ml funnel to convert to a Petri dish. 50 monitors per pack, sterile and individually packaged, incl. 5 sterile packaged adapters.

Membrane filter	Pore size (µm)	Volume (ml)	Art. No.	Pack Qty.	€
Cellulose nitrate, ø 47 mm, black, gridded	0,45	100	**7761.1**	50 pieces	192,45
Cellulose nitrate, ø 47 mm, white, gridded	0,45	100	**7762.1**	50 pieces	192,45

Replicator stamp

The replicator stamp enables the transfer of bacterial or yeast colonies from one culture medium plate to another. To duplicate the colony plates, fix one of the sterile tissues on the stamp with the aluminium ring. Then press the top side of the colony plate gently onto velvety surface of the stamp. Use a new plate to produce the duplication.

The replicator stamp is made of PVC. Height: 69 mm, ∅: 81 mm. Size of one tissue: 15 x 15 cm. It is suitable for max. 100 mm ∅ petri dishes.

The stamps can be disinfected with ethanol.

Art. No.	Pack Qty.	€
X994.1	Stamp + aluminium ring + 12 autoclavable tissues	164,50
X995.1	36 autoclavable tissues	164,50

Replicator stamp

Replicator stamp for transfer of bacterial or yeast colonies from one culture medium plate to another. Stamp with fixationring in yellow or silver coloured. 12 autoclavable transfer tissues are included. Transfer tissues may also be bought separately in colours blue, red, and beige (for brightly coloured colonies).

In order to duplicate the colony plates, fix one of the sterile tissues on the stamp with the aluminium ring (see figure). Then press the top side of the original colony plate gently onto the stamp. For cloning press a fresh plate onto the inoculated tissue surface.

Applicable for petri dishes of 90 to 100 mm diameter. The replicator stamp is made of PVC. Height: 72 mm, diameter: 81 mm. Fixation rings are made from coated aluminium. Transfer tissues are made from an autoclavable cotton-polyester mix. Size of one tissue: 15 x 15 cm. The stamps can be disinfected with ethanol (sanitisation).

Art. No.	Pack Qty.	€
4708.1	Stamp + aluminium ring (yellow) + 12 autoclavable tissues (blue)	138,70
4709.1	Stamp + aluminium ring (silver) + 12 autoclavable tissues (blue)	138,70

Accessories:

4670.1	36 autoclavable transfer tissues (blue)	121,50
4688.1	36 autoclavable transfer tissues (red)	121,50
4698.1	36 autoclavable transfer tissues (beige)	121,50

DipSlide Incubator EM4

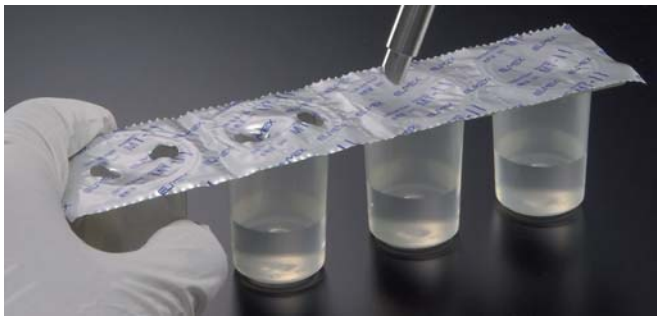
Small, lightweight incubator especially designed for DipSlides. With removable, transparent cover for quick loading and unloading of DipSlides. Very easy to use, even for untrained personal. A rack and a control thermometer is included. Without rack also suitable for incubation of petri- and contact dishes.

Technical specifications:

Capacity	23 DipSlides
Temperature range	ambient to 44 °C
Volume	4 l
Inner dimensions (W x H x D)	180 x 125 x 180 mm
Outer dimensions (W x H x D)	230 x 180 x 230 mm
Weight	1,5 kg
Mains connection	220 V, 25 W

Art. No.	Pack Qty.	€
KK43.1	1	719,20

▶ Other small incubators see page 931



Compact Dry Dilution Rack

ELMEX for microbiology

For preparation of dilution series of microbiological samples. **Sterile PBS.**

Storage temp.: +20 °C

Sterile buffer solution in racks for easy preparation of dilution series for microbiological assays.

Each rack consist of 4 wells with 9 mls phosphate buffered saline each. By transferring 1 ml, 10-fold dilution series are very easily prepared. Each well is sealed by an aluminium foil, and may be separated from the others at a perforation line. Using the Compact Dry Opener (Art. No. 4825.1) a hole may be pierced into the lid, providing access for pipetting.
128 wells in 32 racks of 4 separable wells each.

Type analysis:

Appearance of solution. ..... limpid to light yellow
Turbidity ..... clear
Content NaCl. ..... 0,85 ±0,1 %
Sterility ..... complies
pH value. ..... 7,1±0,5

4823.1	128 wells	box	144,95 €

Compact Dry Dilution Rack MRD

ELMEX for microbiology

For preparation of dilution series of microbiological samples. Sterile nutrient broth.

Maximum Recovery Solution in racks

Storage temp.: +20 °C

Ready-made nutrient broth in racks for easy preparation of dilution series for microbiological assays.
Each rack consist of 4 wells with 9 mls of Maximum Recovery Solution each (Art. No. 5766).
128 wells in 32 racks of 4 separable wells each.

Type analysis:

Appearance of solution. ..... light beige
Turbidity ..... clear
Peptone. ..... 1,0 g/l
NaCl. ..... 8,5 ±0,5 g/l
Sterility ..... complies
pH value. ..... 7,1 ±0,5

1096.1	128 wells	box	171,90 €

Compact Dry Swab

NISSUI for microbiology

All-in-one set of swab and nutrient broth for microbiological sampling of surfaces.

Storage temp.: +20 °C

Sterile all-in-one system for sampling in the microbiological field of work. Suitable for analysis of foods and feeds, in pharmaceutical areas, as well as for hygiene monitoring, and for exclusion of contaminations.
Compact Dry Swabs made by NISSUI are particularly easy to apply, and may also be used by laymen. In order to test a surface, the respective area is wiped with the sterile cotton swab. After returning the swab into the tube, the germs are released into the nutrient broth by agitation. The amount of 1 ml medium has been optimised for inoculation of nutrient agar plates in general, also making this swab most compatible with Compact Dry plates.

Compact Dry Swabs are particularly suitable for sampling at difficult-to-access areas or when working on site. The sample taken may be transported inside the swab. Storage at room temperature as well as easy application makes them a very versatile tool in microbiology.

Contains 1 ml **Peptone Water, buffered**

Type analysis:

Appearance nutrient broth. ..... light yellow
Turbidity ..... clear
Sterility ..... complies
pH value. 6,8-7,2

4809.1	40 swabs	box	93,00 €
4809.2	240 swabs	box	482,70 €

ready-to-use

S

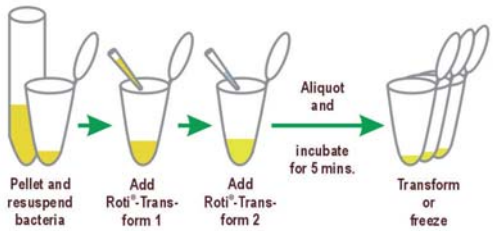
Roti®-Transform

Sterile. For preparation of competent *E. coli*.
Storage temp.: -20 °C • Transport temp.: room temp.

- Flexible selection of strains
- Effective, simple and fast
- Adequate for 500 transformations

Roti®-Transform
Roti®-Transform is a simple, effective and fast method of producing competent *E. coli* in three steps. The competent cells may be used directly for transformation or may be frozen for later transformations. Transformation efficiency is 5 x 10^5 to 1 x 10^6 colonies per µg DNA.

Protocol:
1. Resuspend cells in fresh, cold LB-medium
2. Add Roti®-Transform 1
3. Add Roti®-Transform 2 and incubate for 5 minutes on ice



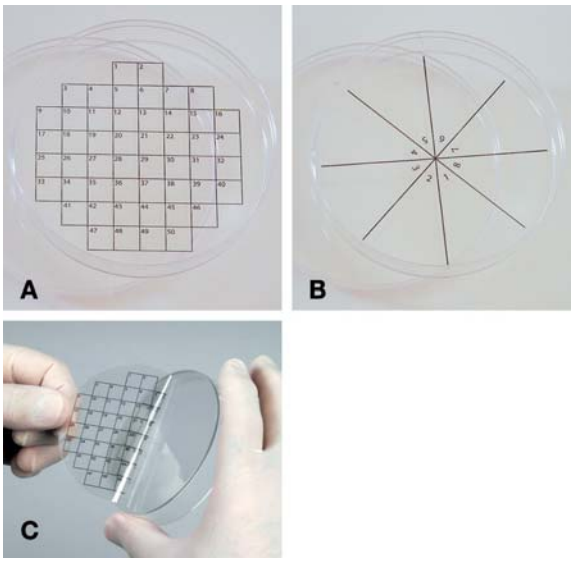
Long-term Storage of the Kit at -20 °C.

Storage for use:
Reagent 1: Short-term storage may be done at 4 °C.
For long-term storage of over 14 days we recommend a storage temperature of -20 °C.
Reagent 2: Storage at 4 °C.

Roti®-Transform consists of 45 ml Roti®-Transform 1 (Art. No. P041) and 5 ml Roti®-Transform 2 (Art. No. P042). One kit is sufficient for producing competent *E. coli* for 500 transformations.
Contents of this Kit may not be bought separately.

P043.1	1 kit	58,60 €

Instructions for use
can be found on the Internet next to the product description.



PetriSticker™

Pre-cut circular self-adhesive foils for easy and accurate labelling of 90 mm agar plates. With well legible numbers and partitions designed in two layouts and many variants. The foil is simply fixed to the bottom outside of an agar plate and the labelling is legible from the top.

Area of Sqare Grids

Art. No.	No. of arrays	Size of each array (mm x mm)	Area of each arrays (cm^2)
AE87	32	12 x 12	1,44
AE88	50	8,5 x 8,5	0,72
AE89	70	7 x 7	0,49
AE90	100	6 x 6	0,36

The following products are depicted in figure
A: Art. No. AE88.1 (square grid)
B: Art. No. AE96.1 (pie cut)

Type	No. of arrays	Art. No.	Pack Qty.	€
Square grid	32	**AE87.1**	36	27,45
Square grid	50	**AE88.1**	36	27,45
Square grid	70	**AE89.1**	36	27,45
Square grid	100	**AE90.1**	36	27,45
Pie cut	6	**AE95.1**	36	27,45
Pie cut	8	**AE96.1**	36	27,45
Pie cut	12	**AE97.1**	36	27,45
Pie cut	16	**AE98.1**	36	27,45

▶ A wide range of accessories for microbiology is available from page 267

Histology/ Microscopy

Clearing Agents	Xylene Alternatives	1377
	Xylene	1379
	Ethanol/Isopropanol	1379
Reagents	General Reagents	1380
	Reagents for Decalcification	1381
	Blocking Reagents	1382
	Buffer Salts	1382
Fixing Agents	Formaldehyde/Formalin	1383
	Fixing Agents for Cytology	1385
	Glutaraldehyde	1386
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Embedding	Paraffins	1387
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Accessories for Microscopy		
	Oils for Microscopy	1412
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	Specimen Protection Roti®-Seal	1413
	Adhesion Slides	1413

Xylene Alternatives

- Adequate replacement for xylene
- Miscible with IPA, butanol, ethanol
- Application as clearing agent and dewaxing medium

Roticlear ECO Plus on base of high-boiling, aliphatic esters

The new xylene alternative for histological and cytological working procedures. Roticlear® ECO Plus is classified as **non-hazardous**.

NEW

ready-to-use

Roticlear® ECO Plus
for histology

Non-hazardous solvent. For removal of paraffin residues on surfaces. Suitable for paraffin embedding and dewaxing of histological sections. Alternative product for xylene.
Storage temp.: +15 °C to +30 °C

- Mixture of aliphatic, high-boiling esters
- Contains no hazardous substances
- Minimal natural odour
- No allergenic effect

Roticlear® ECO Plus consists of a mixture of aliphatic, high-boiling esters (320 °C to 360 °C) with good solvent properties. The solution contains no hazardous substances and is fully biodegradeable. It can be mixed with IPA, butanol and ethanol. Paraffins dissolve particularly well at temperatures from 25 to 60 °C.
Roticlear® ECO Plus is successfully used in histology as a xylene substitute, and specifically for paraffin embedding and for dewaxing histological sections. It is also suitable for use in automatic machines. There is no need for changing working procedures.
Due to the high boiling point Roticlear® ECO Plus is not suited as clearing agent for hydrophobic mounting of specimens. We recommend using a hydrophilic mounting medium or another xylene alternative (Roti-Histol, 6640 / Roticlear, A538) together with the appropriate hydrophobic mounting medium.

6476.1	1 l	glass	43,55 €
Original pack 6 x 1 l			41,37/1 l
6476.2	2,5 l	glass	93,55 €
Original pack 4 x 2,5 l			88,87/2,5 l

Please note our **Technical Information Brochure** on the Internet next to the products:

Xylene Alternatives
Roti®-Histol and Roticlear®

Xylene Alternatives - Summary

Product	Purity	Art. No.	Pack Qty.	Pack.	€
Acetic acid n-butyl ester	≥99,5 %, p.a., ACS	**P036.1**	1 l	glass	41,40
		P036.2	2,5 l	glass	90,85
Acetic acid ethyl ester	≥99,5 %, p.a., ACS, ISO	**6784.1**	1 l	glass	30,35
		6784.3	1 l	plastic	29,25
		6784.2	2,5 l	glass	55,80
		6784.4	2,5 l	plastic	54,30
		6784.5	5 l	plastic	89,80
Acetone	≥99,7 %, Ph.Eur., extra pure	**CP40.1**	1 l	glass	19,90
		CP40.2	2,5 l	glass	44,00
		CP40.3	2,5 l	plastic	39,25
		CP40.4	5 l	plastic	53,65
		CP40.5	10 l	tinplate	95,15
		CP40.6	25 l	tinplate	192,45
Ammonia solution 25 %	≥25 %, p.a.	**6774.1**	1 l	glass	19,90
		6774.2	2,5 l	glass	31,10
		6774.3	5 l	plastic	44,65
Benzoic acid methyl ester	≥99 %, for histology and microscopy	**6944.1**	1 l	glass	53,65
		6944.2	2,5 l	glass	109,55
		6944.4	25 kg	tinplate	493,45
1-Butanol	≥99,5 %, p.a.	**7171.2**	1 l	glass	45,70
		7171.1	2,5 l	glass	93,45
Decahydronaphthalene	≥98 % for synthesis	**4438.1**	1 l	glass	26,35
		4438.3	2,5 l	glass	51,10
		4438.2	10 l	tinplate	164,50
Diethyl ether	≥99,5 % (≤50 ppm H_2O), stab.	**AE04.1**	1 l	glass	41,85
N,N-Dimethylformamide (DMF)	≥99,8 %, p.a., ACS, ISO	**T921.3**	250 ml	glass	17,10
		T921.1	1 l	glass	33,00
		T921.2	2,5 l	glass	59,70
1,4-Dioxane	≥99,5 %, p.a., ACS, ISO	**4626.4**	100 ml	glass	11,75
		4626.3	500 ml	glass	32,80
		4626.1	1 l	glass	56,90
		4626.2	2,5 l	glass	118,80
		4626.6	25 l	tinplate	923,45
Oil of cedar wood	for microscopy	**5308.1**	100 ml	glass	14,55
Petroleum ether 40-60 °C	p.a., ACS, ISO	**T173.1**	1 l	glass	31,10
		T173.2	2,5 l	glass	58,60
		T173.3	5 l	alum.	97,75
		T173.5	25 l	tinplate	306,40
Roticlear®	for histology	**A538.1**	1 l	glass	14,95
		A538.5	2,5 l	glass	27,65
		A538.2	10 l	tinplate	81,60
		A538.3	25 l	tinplate	166,65
		A538.4	200 l	barrel	704,15
Roticlear® ECO Plus NEW	for histology	**6476.1**	1 l	glass	43,55
		6476.2	2,5 l	glass	93,55
Roti®-Histol	for histology	**6640.1**	1 l	glass	26,55
		6640.4	2,5 l	glass	51,50
		6640.2	10 l	tinplate	150,40
		6640.5	5 l	alum.	84,95
		6640.3	22 kg	tinplate	360,15
Tetrahydrofuran	≥99,9 % (≤50 ppm H_2O)	**AE07.1**	1 l	glass	44,00
Toluene	≥99,5 %, p.a., ACS, ISO	**7115.1**	1 l	glass	34,30
		7115.2	2,5 l	glass	67,65
Trichloromethane/ Chloroform	≥99 %, p.a.	**3313.4**	100 ml	glass	14,95
		3313.1	1 l	glass	38,60
		3313.2	2,5 l	glass	79,05
		3313.5	25 l	tinplate	418,20
Water	hypotonic, sterile, free from pyrogen	**3255.1**	1 l	plastic	8,40

For additional product data and safety information, see chapter Chemicals A-Z.

Roti®-Histol on base of limonene

The alternative solvent for histology and cytology. Excellent for all histological hand work. Replaces clearing agents like xylene or toluol without the need for changing working procedures.

Roti®-Histol

ready-to-use

for histology

Clearing agent on base of limonene. For dewaxing histological sections. Alternative product for xylene.

Danger H304-H226-H400-H410-H315-H317

Roti®-Histol is a natural product, manufactured from untreated orange peel. It consists of 96-98 % limonene, a terpene with a characteristic odour of lemon or orange.
Roti®-Histol replaces current clearing agents without the need for changing working procedures. **No harmful vapours!** It can be mixed with IPA, butanol, ethanol and all standard embedding media.

Clearing with Roti®-Histol prevents tissue samples from hardening and brittleness. It is particularly suitable for manual work which usually exposes the user to solvent vapours in high concentrations.

Roti®-Histol produces excellent results with **Roti®-Histokitt** mounting medium **(Art. No. 6638)** and special paraffins such as Roti®-Plast (Art. No. 6642).

Please contact us for your free sample!

6640.1	1 l		glass	26,55 €
Original pack 6 x 1 l				25,22/1 l
6640.4	2,5 l		glass	51,50 €
Original pack 4 x 2,5 l				48,93/2,5 l
6640.2	10 l		tinplate	150,40 €
6640.5	5 l		aluminium	84,95 €
Original pack 2 x 5 l				80,70/5 l
6640.3	22 kg	BIG PACK	tinplate	360,15 €

Our Tip:
You can use a pipe wrench to open the solvent canister 10 l and 25 l. However, it's much easier and simpler with our **barrel and keg key** (Art. No. 0398).

Roticlear® on base of aliphatic hydrocarbons

The alternative product for use in histology and cytology. Roticlear® is a special formulation to replace toluene, xylene and trichloromethane. Excellent for dewaxing histological sections.

Roticlear®

ready-to-use

for histology

Clearing agent of aliphatic hydrocarbons, practically free from aromatic compounds. For dewaxing histological sections. Alternative product for xylene.

Danger H226-H304-H336-H412-EUH066

Roticlear® consists of different aliphatic hydrocarbons with only little own odour. It is **practically free from aromatic compounds** (≤0,005 %) and can be mixed with IPA, butanol, ethanol and acetone.

Roticlear® can be used like xylene. The absorption capacity for paraffin is even better than that known from xylene. Therefore, water baths for removing the paraffin need not to be changed so frequently. Due to a short evaporation period, Roticlear® enables fast and effective working.

Roticlear® produces excellent results with **Roti®-Mount (Art. No. HP68)**. After clearing with Roticlear® the sample can be embedded in Roti®-Mount immediately.

Roticlear® can be used in automates without any difficulty.

Please contact us for your free sample!

A538.1	1 l		glass	14,95 €
Original pack 6 x 1 l				14,20/1 l
A538.5	2,5 l		glass	27,65 €
Original pack 4 x 2,5 l				26,27/2,5 l
A538.2	10 l		tinplate	81,60 €
A538.3	25 l		tinplate	166,65 €
A538.4	200 l	BIG PACK	barrel	704,15 €

Safety data sheets
can be found on the Internet next to the product description.

Xylene Alternatives compared to Xylene

	Roticlear® ECO Plus	Roti®-Histol	Roticlear®
Composition	mixture of different aliphatic, high-boiling esters	natural product from limonene	mixture of different hydrocarbons, aromatic compounds ≤0.005 %
Classification as hazardous substance	no	yes	yes
Odour	nearly odourless	like oranges	slightly like benzine
Vapours	not harmful	not harmful	not harmful, may cause drowsiness
Flash point (°C)	180 °C	50 °C - flammable	25 °C - flammable
Boiling Range	>320 °C	177 °C	139 °C - 164 °C
Effects to skin	may cause skin dryness or cracking	irritating, may cause sensitisation	may cause skin dryness or cracking
Storage	in well sealed glass bottles, **no plastic bottles**	in well-sealed glass bottles, **no plastic bottles**	in well-sealed glass bottles
Shelf life	minimum 2 years	minimum 1 years	minimum 3 years
Use	manual and automatical applications	particulary suitable for manual applications	manual and automatical applications
Immunhistochemical applications	suitable	suitable	suitable
Paraffin embedding	suitable	suitable	suitable
Dewaxing	suitable	suitable	suitable - better absorption capacity for paraffin than xylene
Mounting	not suitable	suitable - evaporates more slowly than xylene	suitable - short evaporation period
Mounting medium (compatibility tested)	-	**Roti®-Histokitt (Art. No. 6638)**	**Roti®-Mount (Art. No. HP68)**
Further possible mounting media	-	Entellan, Eukitt, DePex	Entellan

Xylene

Xylene is the typical solvent in histology. ROTH xylenes have been used very successfully in histology for dewaxing histological sections and as clearing agent.

Xylene can be used together with **Roti®-Histokitt II mounting medium (Art. No. T160)** and ROTH paraffins such as Roti®-Plast special paraffin (Art. No. 6642).

Xylene - Summary

Product	Purity	Art. No.	Pack Qty.	€
Xylene (isomers)	≥99 %, p.a., ACS, ISO	**4436.1**	1 l	35,40
		4436.2	2,5 l	76,90
Xylene (isomers)	≥98,5 %, Ph.Helv., extra pure	**CN80.1**	1 l	24,95
		CN80.2	2,5 l	45,05
		CN80.3	10 l	120,95
		CN80.4	25 l	235,45
Xylene (isomers)	>98 %, pure, for histology	**9713.1**	1 l	23,55
		9713.3	2,5 l	43,55
		9713.2	10 l	112,35
		9713.4	25 l	208,55
Xylene (isomers)	≥97 %, for synthesis	**2662.1**	1 l	18,85
		2662.2	2,5 l	28,95
		2662.3	10 l	80,55
		2662.4	25 l	167,20

For additional product data and safety information, see chapter Chemicals A-Z.

Please note:
Xylene can only dissolve a limited amount of paraffin, it should therefore be changed frequently. Please also note that the solubilizing process is often very slow at low temperatures. We recommend working in a warming cupboard at 25 to 30 °C.

Xylene Alternatives compared to Xylene

	Xylene
Composition	aromatic hydrocarbon
Classification as hazardous substance	yes
Odour	characteristic
Vapours	harmful
Flash point (°C)	25 °C - flammable
Boiling Range	137 °C - 143 °C
Effects to skin	irritating, harmful
Storage	in well-sealed glass bottles
Shelf life	minimum 3 years
Use	manual and automatical applications
Immunhistochemical applications	suitable
Paraffin embedding	suitable
Dewaxing	suitable
Mounting	suitable
Mounting medium (compatibility tested)	**Roti®-Histokitt II (Art. No. T160)**
Further possible mounting media	Entellan *et al.*

Alcohols

Variously usable in histology: for hydration and dehydration (series of alcohol), for fixation, as an ingredient of staining solution etc.

Alcohols - Summary

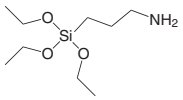
Product	Purity	Art. No.	Pack Qty.	Pack.	€
Ethanol	≥99,8 %, p.a.	**9065.1**	1 l	glass	76,25
		9065.3	1 l	plastic	75,15
		9065.2	2,5 l	glass	153,65
		9065.4	2,5 l	plastic	151,50
		9065.5	5 l	plastic	274,15
		9065.6	25 l	tinplate	956,75
Ethanol	≥99,5 %, Ph.Eur., extra pure	**5054.1**	1 l	glass	68,30
		5054.3	1 l	plastic	67,20
		5054.2	2,5 l	glass	140,75
		5054.4	2,5 l	plastic	139,25
		5054.5	5 l	plastic	268,25
		5054.6	25 l	tinplate	912,70
Ethanol denatured	≥99,8 %, with ~1 % MEK	**K928.5**	1 l	plastic	12,40
		K928.1	2,5 l	glass	26,80
		K928.3	2,5 l	plastic	25,30
		K928.4	5 l	plastic	45,05
		K928.6	10 l	tinplate	77,95
		K928.2	25 l	tinplate	150,40
Ethanol 96 %	96 %, Ph.Eur., extra pure	**P075.1**	1 l	glass	66,55
		P075.3	1 l	plastic	65,50
		P075.2	2,5 l	glass	140,75
		P075.4	2,5 l	plastic	138,60
		P075.5	5 l	plastic	263,40
Ethanol 96 % denatured	≥96 %, with 1 % MEK	**T171.5**	1 l	plastic	11,30
		T171.1	2,5 l	glass	22,50
		T171.3	2,5 l	plastic	20,35
		T171.4	5 l	plastic	38,60
		T171.2	25 l	tinplate	114,50
Ethanol 70 %	≥70 %, p.a.	**T868.1**	1 l	plastic	51,50
		T868.2	2,5 l	plastic	114,50
		T868.3	5 l	plastic	218,80
Ethanol 70 % denatured	≥70 %, with approx. 1 % MEK	**T913.1**	1 l	plastic	10,90
		T913.2	2,5 l	plastic	19,25
		T913.3	5 l	plastic	32,60
2-Propanol	≥99,8 %, p.a., ACS, ISO	**6752.1**	1 l	glass	22,80
		6752.3	1 l	plastic	21,75
		6752.2	2,5 l	glass	51,10
		6752.4	2,5 l	plastic	49,35
		6752.5	5 l	plastic	76,90
		6752.6	25 l	tinplate	220,40

For additional product data and safety information, see chapter Chemicals A-Z.

Isopropanol as clearing agent
Isopropanol is well suited as clearing agent for paraffin-embedding, because it is compatible to melted paraffin: After dehydrating with isopropanol the sample is incubated in a mixture of isopropanol abs. and paraffin (1:1) at approx. 60 °C. After a further incubation step with pure paraffin, the sample is embedded as usual. This method is particularly suitable to smooth organs. Since embedding can start immediately after alcohol step, the working process is shortened significantly.

General Reagents

Essential helpers for routine histological work such as fixing, embedding, staining and so on.



APES

≥98 %, for GC
Silylation reagent
γ-Aminopropyltriethoxysilane, 3-Aminopropyltriethoxysilane
$C_9H_{23}NO_3Si$
M 221,37 g/mol

Danger H314-H302

APES is used for silanising microscope slides causing better adherence of cut to slide.

2328.2	100 g	glass	55,80 €
2328.1	25 g	glass	19,60 €

Chloral hydrate

≥99,5 %, Ph.Eur., BP, USP
Trichloroacetaldehyde monohydrate
$C_2H_3Cl_3O_2$
M 165,40 g/mol

Danger H301-H315-H319

In botany chloralhydrate is used as clearing agent and for removing cell content of plant samples.

K318.2	2,5 kg	plastic	428,95 €
K318.1	500 g	plastic	100,95 €
Original pack 6 x 500 g			95,90/500 g
K318.3	100 g	plastic	24,65 €

HCl-ethanol solution 3 %

for histology

ready-to-use

Differentiating solution for histological staining
Hydrochloric acid in ethanol

Danger H225

Solution of 3 % hydrochloric acid in ethanol 70 %. After staining tissues are rinsed with HCl-ethanol solution to remove excessive stain. This decolourisation is selective for certain tissue structures retain the stain better than others (differentiation). HCl-ethanol solution is used for regressive hemalum staining, but also for detection of mycobacteria.

Type analysis:

Appearance. ..... clear, colourless
Density (20 °C). 0,896-0,900

6477.1	500 ml	plastic	15,60 €
6477.2	1 l	plastic	27,45 €
Original pack 6 x 1 l			26,08/1 l
6477.3	5 l	plastic	96,65 €
Original pack 2 x 5 l			91,82/5 l

General Reagents - Summary

Product	Purity	Art. No.	Pack Qty.	€
γ-Aminopropyltriethoxysilane	≥98 %, for GC	**2328.1**	25 g	19,60
		2328.2	100 g	55,80
Ammonium iron(II) sulphate hexahydrate	≥99 %, p.a., ISO	**P728.1**	500 g	24,95
		P728.2	1 kg	42,15
		P728.3	2,5 kg	95,60
Ammonium iron(III) sulphate dodecahydrate	≥98,5 %, p.a., ACS, ISO	**P734.1**	500 g	27,65
		P734.2	1 kg	47,20
		P734.3	2,5 kg	99,90
Chloral hydrate	≥99,5 %, Ph.Eur., BP, USP	**K318.3**	100 g	24,65
		K318.1	500 g	100,95
		K318.2	2,5 kg	428,95
Dimethyl sulphoxide	≥99,8 %, p.a.	**4720.4**	100 ml	15,30
		4720.2	500 ml	27,10
		4720.1	1 l	45,70
		4720.3	2,5 l	94,10
HCl-ethanol solution 3 %	for histology	**6477.1**	500 ml	15,60
		6477.2	1 l	27,45
		6477.3	5 l	96,65
Hydrogen peroxide 30 %	p.a., ISO, stabilized	**8070.2**	250 ml	19,05
		8070.4	500 ml	25,05
		8070.1	1 l	36,05
		8070.3	2,5 l	61,85
Hydroquinone	≥99 %, p.a.	**3586.1**	100 g	12,40
		3586.2	250 g	18,20
		3586.3	1 kg	53,25
Lithium carbonate	≥99 %, p.a., ACS	**3995.1**	250 g	60,75
		3995.2	500 g	107,40
Phloroglucinol dihydrate	≥98 %	**7662.1**	50 g	59,05
Potassium aluminium sulphate dodecahydrate	≥98 %, p.a., ACS	**P724.2**	500 g	23,55
		P724.1	1 kg	42,50
		P724.3	2,5 kg	90,85
Potassium hexacyanoferrate(II) trihydrate	≥99 %, p.a., ACS, ISO	**P745.1**	500 g	57,55
		P745.2	1 kg	102,05
		P745.3	2,5 kg	228,45
Potassium hexacyanoferrate(III)	≥99 %, p.a., ACS	**P746.3**	100 g	20,35
		P746.1	500 g	64,40
		P746.2	1 kg	117,20
Potassium hydroxide	≥85 %, p.a., pellets	**6751.3**	250 g	14,95
		6751.1	1 kg	24,65
		6751.2	5 kg	84,40
		6751.5	25 kg	256,95
Silver nitrate	≥99 %, Ph.Eur., extra pure	**9370.4**	10 g	25,70
		9370.1	50 g	90,20
		9370.2	250 g	370,90
		9370.3	1 kg	1396,45
Sodium chloride	≥99 %, Ph.Eur., USP	**P029.1**	500 g	10,65
		P029.2	1 kg	12,80
		P029.3	5 kg	39,25
		P029.5	25 kg	123,65
Sodium hydroxide	≥98 %, Ph.Eur., USP, BP, in pellets	**P031.1**	500 g	14,55
		P031.2	1 kg	23,55
		P031.3	5 kg	85,50
Sodium metabisulphite	≥97 %, p.a., ACS	**P755.1**	500 g	18,20
		P755.2	1 kg	27,85
		P755.5	25 kg	278,45
Tetrachloroauric(III) acid trihydrate	≥99,5 %, p.a., yellow	**3867.1**	1 g	124,20
		3867.2	5 g	504,20

For additional product data and safety information, see chapter Chemicals A-Z.

Reagents for Decalcification

Tissues containing solid material such as bones or keratin are to be decalcified before paraffin embedding. Usually the specimens are treated with acids of different concentrations and mixtures.

An especially gentle method is decalcification with EDTA solution.

Decalcifier soft

for histology

ready-to-use

Decalcifier solution on base of EDTA.
Used for gentle decalcification of bones and other calcified tissues.
The solution is also suitable for immunological applications.

Danger H290-H314-H373

The solution contains 25 % EDTA. The process of decalcification takes more time than acid decalcification (see Decalcifier standard, Art. No. 6483), e.g. bone biopsies need approx. 3-4 days. The procedure can be accelerated by using a magnetic stirrer. The decalcification takes place in a weakly basic milieu. Nucleic acids and enzymes are not affected; therefore, the solution is also suitable for immunological applications.

Type analysis:

Appearance. ..... clear, colourless
pH (20 °C). 7-9

6484.2	1 l	plastic	33,25 €
Original pack 6 x 1 l			31,59/1 l
6484.1	500 ml	plastic	22,25 €

Decalcifier standard

for histology

ready-to-use

Acid-based dacalcifier. Contains trichloracetic acid and formalin.
Used for acid decalcification of bones and other calcified tissues.

Danger H314-H335-H350-H411-EUH208

The solution contains trichloroacetic acid and formalin and, therefore, has also fixing qualities. Nevertheless, we recommend sufficient fixing of specimens before decalcifying for trichloroacetic acid may cause morphological changes in unfixed tissue. The length of the decalcification process depends on the specimen's size and type. Little bones (diameter a few mm) need 1-2 days for complete decalcification.
The decalcifier standard is not suitable for immunological applications.
We recommend our Decalcifier soft (Art. No. 6484) on base of EDTA.

Type analysis:

Appearance. ..... clear, colourless
pH (20 °C). ..... 0,9 ±0,3

6483.2	1 l	plastic	33,25 €
Original pack 6 x 1 l			31,59/1 l
6483.1	500 ml	plastic	22,25 €

Reagents for Decalcification - Summary

Product	Purity	Art. No.	Pack Qty.	€
Acetic acid 100 %	100 %, p.a.	**3738.1**	1 l	22,50
		3738.4	1 l	21,40
		3738.2	2,5 l	48,95
		3738.5	2,5 l	46,15
		3738.3	10 l	115,60
Decalcifier soft	for histology	**6484.1**	500 ml	22,25
		6484.2	1 l	33,25
Decalcifier standard	for histology	**6483.1**	500 ml	22,25
		6483.2	1 l	33,25
Ethylenediamine tetraacetic acid disodium salt dihydrate	≥99 %, p.a., ACS	**8043.3**	100 g	19,90
		8043.1	250 g	31,75
		8043.2	1 kg	93,00
		8043.4	5 kg	342,95
		8043.5	25 kg	762,20
Formic acid 98 %	≥98 %, p.a., ACS	**4724.3**	500 ml	18,20
		4724.1	1 l	31,10
		4724.2	2,5 l	66,15
Hydrochloric acid fuming 37 %	37 %, p.a., ACS, ISO	**4625.1**	1 l	19,25
		4625.2	2,5 l	30,00
Nitric acid 65 %	≥65 %, p.a., ISO	**4989.3**	250 ml	17,75
		4989.1	1 l	27,45
		4989.2	2,5 l	54,30
Trichloroacetic acid	≥99 %, p.a.	**8789.2**	500 g	50,00
		8789.1	1 kg	85,50
Trichloroacetic acid	≥99 %, Ph.Eur, extra pure	**3744.2**	500 g	48,30
		3744.1	1 kg	82,25

For additional product data and safety information, see chapter Chemicals A-Z.

Instructions for use
can be found on the Internet next to the product description.

Blocking Reagents

In immunohistological assays it is necessary to block non-specific antibody binding sites or other unspecific protein-protein-interactions.
For that purpose ROTH offers protein-containing and protein free blocking reagents.

Albumins/BSA

Product	Purity	Art. No.	Pack Qty.	€
Albumin, IgG free	>98 %, IgG-free, for biochemistry and molecular biology	**3737.1**	10 g	50,45
		3737.2	50 g	139,65
		3737.3	200 g	418,20
		3737.4	500 g	865,40
Albumin Fraction V	≥98 %, powdered, for molecular biology	**8076.1**	10 g	24,55
		8076.2	50 g	77,95
		8076.4	200 g	268,25
		8076.3	500 g	600,95
		8076.5	1 kg	1037,40
Albumin, nuclease-free	>99 %, nuclease-free, for molecular biology	**8895.1**	10 mg	28,95
		8895.2	100 mg	156,45
Albumin Fraction V, biotin-free	≥98 %, biotin-free, for molecular biology	**0163.1**	10 g	31,10
		0163.2	50 g	96,25
		0163.4	200 g	332,20
		0163.3	500 g	751,45
Albumin Fraction V, very low endotoxin	>98 %, very low endotoxin, CELLPURE®	**CP77.1**	10 g	131,05
		CP77.2	50 g	514,95
Albumin Fraction V, endotoxin-tested	>98 %, low endotoxin, CELLPURE®	**CP84.1**	10 g	32,15
		CP84.2	50 g	98,80
		CP84.3	500 g	794,45
Albumin Fraction V, fatty acid-free	≥95 %, fatty acid-free, for molecular biology	**0052.1**	1 g	17,10
		0052.2	10 g	89,15
		0052.3	50 g	353,70
Albumin Fraction V, pH 5,2	>97 %, powdered, for protein analysis	**2834.1**	10 g	36,45
		2834.2	50 g	117,75
		2834.3	200 g	375,20
		2834.4	500 g	772,95
Albumin Fraction V, protease-free	≥98 %, for molecular biology	**T844.1**	10 g	50,45
		T844.2	50 g	116,00
		T844.4	200 g	381,65
		T844.3	500 g	794,45
Albumin Fraction V, US-Origin	≥98 %, powdered, for molecular biology and biochemistry	**3854.1**	10 g	27,85
		3854.2	50 g	84,40
		3854.3	200 g	289,20
		3854.4	500 g	643,95
		3854.5	1 kg	1073,95

For additional product data and safety information, see chapter Chemicals A-Z.

Roti®-ImmunoBlock

ready-to-use, 10x conc.

Protein free blocking reagent for immunocytological assays.

Roti®-ImmunoBlock is an innovative blocking reagent on a polymer base without detergents and proteins.
This particular composition provides the following advantages:

- No contamination of your detection system through foreign proteins, reducing background and false-positive signals
- Specific binding signals are preserved whilst non-specific interaction is impeded, increasing the signal-to-noise ratio
- Ready-to-use solution for fast and easy applications

T144.1	250 ml	glass	42,90 €

▶ Detailed information on albumins see page 1238

▶ Additional blocking reagents see page 1254

Buffer Salts

A number of laboratory buffers such as PBS, SSC, TBS, BSA-TBS AP-buffer, citrate-buffer, etc are required for histological work.

Buffer Salts - Summary

Product	Purity	Art. No.	Pack Qty.	€
Cacodylic acid sodium salt trihydrate	≥98 %	**5169.3**	10 g	20,35
		5169.1	50 g	56,90
		5169.2	250 g	188,15
Citric acid monohydrate	≥99,5 %, p.a., ACS, ISO	**3958.2**	500 g	17,75
		3958.1	1 kg	27,85
		3958.3	2,5 kg	51,10
		3958.4	5 kg	94,50
		3958.5	25 kg	327,90
Ethylenediamine tetraacetic acid disodium salt dihydrate	≥99 %, p.a., ACS	**8043.3**	100 g	19,90
		8043.1	250 g	31,75
		8043.2	1 kg	93,00
		8043.4	5 kg	342,95
		8043.5	25 kg	762,20
HEPES	≥99,5 %, p.a.	**9105.2**	100 g	31,10
		9105.4	500 g	128,90
		9105.3	1 kg	212,35
		9105.6	2,5 kg	428,95
		9105.5	5 kg	815,95
PIPES	≥99 %	**9156.1**	25 g	18,10
		9156.2	100 g	51,50
		9156.3	250 g	113,45
		9156.4	500 g	193,50
Potassium chloride	≥99,5 %, p.a., ACS, ISO	**6781.3**	500 g	16,70
		6781.1	1 kg	23,35
		6781.2	5 kg	94,10
		6781.5	25 kg	364,45
Potassium dihydrogen phosphate	≥99 %, p.a., ACS	**3904.2**	250 g	16,70
		3904.1	1 kg	48,30
		3904.3	5 kg	196,65
		3904.5	25 kg	815,95
di-Potassium hydrogen phosphate trihydrate	≥99 %, p.a.	**6878.2**	250 g	18,50
		6878.1	1 kg	43,55
		6878.3	2,5 kg	87,00
tri-Sodium citrate dihydrate	≥99 %, p.a., ACS	**3580.4**	250 g	18,85
		3580.3	500 g	24,65
		3580.1	1 kg	39,70
		3580.2	5 kg	170,95
		3580.5	25 kg	407,45
Sodium dihydrogen phosphate dihydrate	≥99 %, p.a.	**T879.1**	500 g	21,40
		T879.2	1 kg	32,15
		T879.3	2,5 kg	66,55
		T879.5	25 kg	557,95
di-Sodium hydrogen phosphate dihydrate	≥99,5 %, p.a.	**4984.2**	500 g	24,20
		4984.1	1 kg	41,40
		4984.3	2,5 kg	88,05
TRIS	≥99,9 %, p.a.	**4855.1**	500 g	48,05
		4855.2	1 kg	83,75
		4855.3	5 kg	348,85
		4855.4	10 kg	661,15
TRIS hydrochloride	≥99 %, p.a.	**9090.1**	50 g	13,15
		9090.2	500 g	81,60
		9090.3	1 kg	120,95
		9090.5	2,5 kg	258,00
		9090.4	5 kg	493,45

For additional product data and safety information, see chapter Chemicals A-Z.

▶ Ready-to-use solutions PBS and TBS see page 1260

Fixing Agents

ready-to-use

Formalin-free Fixing Solution

An adequate substitute for formalin on base of hexamethylene tetramine. Roti®-Histofix ECO Plus is classified as non-hazardous.

NEW

Roti®-Histofix ECO Plus

Fixing agent without formalin

For fixing of histological specimens. Formalin substitute.
Storage temp.: +20 °C

- Formaldehyde-free, non-toxic fixative
- Good fixation properties
- pH 4,5 -5,0
- No denaturing effect, e.g. shrinkage or crosslinking
- Adequate substitute for formaldehyde

Roti®-Histofix ECO Plus is a ready-to-use, aqueous solution on base of hexamethylene tetramine. The solution has as similar good fixation properties as formaldehyde, but is, unlike formaldehyde, classified as non-toxic. The original morphology of the tissue is preserved during the fixation process. The protein molecules are cross-linked in a reversible way, their structures are preserved. That is especially important for antigen-antibody reactions. Samples are - in contrary to other fixative media - free of artefacts such as shrinkage of tissue or irreversible protein crosslinking. The solution is therefore ideal for immunohistochemistry. All conventional staining processes can be carried out following fixation.
Roti®-Histofix ECO Plus has an indicator dye and is scented for better identification (< 1ppm).

Type analysis:

Appearance. ..... clear, reddish liquid
Odour. ..... pleasantly aromatic

8907.1	500 ml	plastic	12,80 €
8907.2	2,5 l	plastic	42,50 €
Original pack 4 x 2,5 l			40,38/2,5 l
8907.3	5 l	plastic	79,05 €
Original pack 2 x 5 l			75,10/5 l

▶ Drain cocks see chapter Labware - Pumps, Pipettors & Sampling.

Do not store formaldehyde solutions below +15 °C!

Experience shows that low temperatures support polymerisation to paraformaldehyde. Small amounts of solids (fine precipitation) can be filtered off, the formaldehyde solution is still fully functional. In case of major amounts of solids, however, the solution should be discarded, for the concentration of formaldehyde is too much reduced.

Ready-to-use Formaldehyde Solutions

ready-to-use

Roti®-Histofix solutions are **stabilised formaldehyde solutions**. The added phosphate buffer (pH 7) neutralises formic acid formed by oxidation of formaldehyde during storage. Furthermore, a small amount of methanol is added to protect against polymerisation.

Roti®-Histofix 4 %, prefilled containers

acid free (pH 7), phosphate-buffered formaldehyde solution 4 %

Fixative for histology, prefilled in screw cap containers.
Stabilised with methanol.
Storage temp.: +15-25 °C

Danger H350-H341-H302-H317

Neutral buffered formaldehyde solution (pH 7), prefilled in screw cap containers, packaged in a cardboard shipping box. The containers are hazard labelled, date and name of the patient can be added.

- Specimen can be added directly
- Sample is securely packaged and ready for shipment within a short time
- Reduced health risk for user because no diluting and decanting of concentrated formaldehyde solution is necessary
- Time saving, containers are ready-to-use

Technical specifications:

Dimension containers	20 ml	100 ml
Diameter bottom (mm)	27	43
Diameter cap (mm)	31	48
Height with cap (mm)	48	88

Type analysis:

Appearance. ..... clear, colourless solution
Assay (formaldehyde). ..... 4,0 %
pH value. ..... 7,0 ±0,5
Stabilised with methanol

3105.1	100 x 10 ml (in 20 ml-container)	carton	75,15 €
3105.2	54 x 50 ml (in 100 ml-container)	carton	51,50 €

Our Tip:

Our **10-l and 30-l standard canisters** with **drain cocks** (Art. No. 5666.2) enable easy and simple withdrawal.

Roti®-Histofix 4 %

acid free (pH 7), phosphate-buffered formaldehyde solution 4 %
Fixative for histology, stabilized with methanol.
Storage temp.: +15-25 °C

Danger H350-H341-H302-H317

For better sampling of liquid we offer suitable draincocks for the 10 l and 30 l standard canisters (Art. No. 5666.2).

P087.4	500 ml	plastic	9,60 €
P087.5	2,5 l	plastic	15,30 €
Original pack 4 x 2,5 l			14,54/2,5 l
P087.3	5 l	plastic	24,20 €
Original pack 2 x 5 l			22,99/5 l
P087.1	10 l	plastic	44,65 €
P087.2	30 l BIG PACK	plastic	117,20 €

Roti®-Histofix 4,5 %

acid free (pH 7), phosphate-buffered formaldehyde solution 4,5 %
Fixative for histology, stabilized with methanol.
Storage temp.: +15-25 °C

Danger H302-H317-H341-H350

For better sampling of liquid we offer suitable draincocks for the 10 l and 30 l standard canisters (Art. No. 5666.2).

2213.4	500 ml	plastic	10,25 €
2213.5	2,5 l	plastic	17,45 €
Original pack 4 x 2,5 l			16,58/2,5 l
2213.3	5 l	plastic	25,70 €
Original pack 2 x 5 l			24,42/5 l
2213.1	10 l	plastic	45,90 €
2213.2	30 l BIG PACK	plastic	115,60 €

Roti®-Histofix 10 %

acid free (pH 7), phosphate-buffered formaldehyde solution 10 %
Fixative for histology, stabilized with methanol.
Storage temp.: +15-25 °C

Danger H302+H312+H332-H315-H317-H319-H335-H341-H350

For better sampling of liquid we offer suitable draincocks for the 10 l and 30 l standard canisters (Art. No. 5666.2).

A146.4	500 ml	plastic	11,50 €
A146.5	2,5 l	plastic	23,15 €
Original pack 4 x 2,5 l			21,99/2,5 l
A146.3	5 l	plastic	39,25 €
Original pack 2 x 5 l			37,29/5 l
A146.1	10 l	plastic	62,90 €
A146.2	30 l BIG PACK	plastic	155,90 €

Concentrated Formaldehyde Solutions/Formol/Formalin

Standard Solutions

The formaldehyde solutions are stabilised with approx. 10 % methanol.

Product	Purity	Art. No.	Pack Qty.	€
Formaldehyde solution 37 %	ROTIPURAN® 37 %, p.a., ACS	**4979.1**	1 l	24,65
		4979.2	2,5 l	45,70
		4979.3	5 l	61,20
Formaldehyde solution 37 %	≥37 %, Ph.Eur., BP, USP	**CP10.1**	1 l	16,35
		CP10.2	2,5 l	28,95
		CP10.3	5 l	41,40
		CP10.4	10 l	62,25
Formaldehyde solution 37 %	≥37 %, for synthesis	**7398.1**	1 l	13,15
		7398.4	2,5 l	21,20
		7398.2	10 l	44,00
		7398.3	30 l	100,95
Formaldehyde solution 35 %	≥35 % DAB, for histology	**4980.1**	1 l	14,95
		4980.2	5 l	34,95
		4980.4	10 l	55,40
		4980.3	30 l	109,55

For additional product data and safety information, see chapter Chemicals A-Z.

Special Solutions

Formaldehyde solution 30 %, methanol-free

30 %
Formol, Formalin
CH_2O
M 30,03 g/mol
Storage temp.: >+15 °C

Danger H301+H311+H331-H314-H317-H341-H350-H335

The solution is nearly free from methanol (≤1,5 %). It is used for sensitive assays e.g. enzyme histochemical assays. Do not store solution below 15 °C.

4235.1	1 l	plastic	11,50 €
Original pack 6 x 1 l			10,93/1 l
4235.2	5 l	plastic	27,85 €
Original pack 2 x 5 l			26,46/5 l
4235.3	10 l	plastic	39,25 €
4235.4	30 l BIG PACK	plastic	93,45 €

Formaldehyde solution, non-acidic

≥37 %, for histology
Stabilized with methanol and calcium carbonate.
Formol, Formalin
Storage temp.: >+15 °C

Danger
H301+H311+H331-H341-H350-H314-H317-H370-H335

Stabilised with calcium carbonate (acid-binding solids) and methanol (8-12 %). If required, filter before use. Do not store solution below 15 °C.

P733.1	1 l	plastic	16,70 €
Original pack 6 x 1 l			15,87/1 l
P733.2	2,5 l	plastic	30,00 €
Original pack 4 x 2,5 l			28,50/2,5 l
P733.3	30 l BIG PACK	plastic	112,80 €

Paraformaldehyde

Paraformaldehyde is a formaldehyde polymer.
It is used for applications requiring a formaldehyde solution without stabilising additives.

Paraformaldehyde

extra pure, DAC
Fixative
Polyoxymethylene
$(CH_2O)_n$
Storage temp.: +4-15 °C

Warning H228-H351-H302+H332-H315-H319-H317-H335

Paraformaldehyde is a formaldehyde polymer. It is used for applications requiring a formaldehyde solution without stabilising additives.
Store product below 15 °C.

0335.1	250 g	plastic	13,45 €
0335.2	500 g	plastic	16,70 €
Original pack 6 x 500 g			15,87/500 g
0335.3	1 kg	plastic	21,40 €
Original pack 6 x 1 kg			20,33/1 kg
0335.4	5 kg	plastic	80,55 €

To prepare a 4 % paraformaldhyde solution:
Mix 4 g of paraformaldehyde into 60 ml distilled water (milky liquid), heat with frequent agitation to 60 °C. Add drop wise 1N NaOH, at pH 7 the solution becomes clear. Add distilled water until the volume reaches 100 ml then let it cool down. The solution is to be used immediately, because it is not stable at room temperature. Store in aliquots at -20 °C, is stable for approx. 6 months.

Fixing Agents for Cytology

ready-to-use

Roti®-Fix spray fixative

for cytology
For fixation of samples from cytological material.

Danger H225

Cytological smears must be fixed immediately in order to avoid artefacts. Therefore, the still moist specimens are sprayed about 3 times from a distance of 15-20 cm. After rehydration by descending alcohol series the samples can be stained as usual, e.g. by Papanicolaou staining.

Type analysis:
Alcoholic solution of ethanol and 2-propanol

CL85.1	100 ml	spray bottle	14,95 €

Fixation

Fixing agents: In order to stop their natural degradation process, specimens must be fixed as quickly as possible after extraction. This is usually done with pure fixing agents such as formalin or alcohol. The solutions are easy to use and lead to good results. Formalin, despite its smell and harmful properties, is still the universal fixing agent, whereas alcohol has proved to be best when fixing smears. To get fixing agents with special properties, mixtures from different fixing agents should be used. This also will compensate for the distinct handicaps of many fixing agents, e.g. shrinkage caused by high-percentage alcohol is greatly reduced when glacial acetic acid is added.

Fixing process: Alcohols, various salts and acids denature the protein molecules. The structurally altered molecules form cross-links between each other. In contrast, formalin does not denature. It binds directly to proteins and cross-links the molecules actively with each other.

Fixation of pure lipids or carbohydrates is extremely difficult. When using conventional fixing agents, they are only trapped in the tissue and often washed out in subsequent rinsing steps. Better results are achieved with frozen sections. In electron microscopy lipids can be fixed with osmium tetraoxide.

Other Fixing Agents

Here other important fixative chemicals can be found particularly used in fixative mixtures.

Other Fixing Agents - Summary

Product	Purity	Art. No.	Pack Qty.	€
Acetic acid 100 %	100 %, p.a.	**3738.1**	1 l	22,50
		3738.4	1 l	21,40
		3738.2	2,5 l	48,95
		3738.5	2,5 l	46,15
		3738.3	10 l	115,60
Mercury(II) chloride	≥99,5 %, pure	**7904.1**	100 g	73,65
		7904.2	1 kg	553,65
Potassium dichromate	≥99,5 %, p.a., ACS, ISO	**P744.3**	100 g	24,20
		P744.1	500 g	88,05
		P744.2	1 kg	148,90
Propionic acid	≥99,5 %, for synthesis	**6026.2**	500 ml	13,90
		6026.1	1 l	20,65
		6026.3	2,5 l	37,10
5-Sulphosalicylic acid dihydrate	≥99 %, for biochemistry	**4119.1**	100 g	29,60
		4119.2	500 g	109,00
Trichloroacetic acid 20 %	p.a., 20 % aqueous solution	**7437.1**	1 l	30,00
Trichloroacetic acid solution	p.a., 10 % aqueous solution	**9383.2**	1 l	24,20
		9383.1	10 l	134,40

For additional product data and safety information, see chapter Chemicals A-Z.

Safety data sheets
can be found on the Internet next to the product description.

Glutaraldehyde for Electron Microscopy

Fixation with glutaraldehyde is similar to the fixation process with formalin. Optimal results can be achieved with a concentration of 1 to 6 %.

Glutaraldehyde 50 %
for electron microscopy
50 % solution in water.
1,5-Pentanedial, Glutaric dialdehyde, Glutaral
$C_5H_8O_2$ • M 100,12 g/mol
Danger H301+H331-H334-H314-H400-H317

4995.1	500 ml	plastic	63,35 €
4995.2	2,5 l	plastic	246,20 €
Original pack 4 x 2,5 l			233,89/2,5 l

Glutaraldehyde 25 %
for electron microscopy
25 % solution in water.
1,5-Pentanedial, Glutaric dialdehyde, Glutaral
$C_5H_8O_2$ • M 100,12 g/mol
Danger H334-H314-H400-H302+H332-H317

3778.1	1 l	plastic	50,45 €
Original pack 6 x 1 l			47,93/1 l
3778.2	5 l	plastic	201,60 €
Original pack 2 x 5 l			191,52/5 l

Glutaraldehyde 25 % Mini Pack
for electron microscopy
25 % solution in water.
1,5-Pentanedial, Glutaric dialdehyde, Glutaral
$C_5H_8O_2$ • M 100,12 g/mol
Danger H334-H314-H400-H302+H332-H317

4157.1	25 ml	glass	16,90 €
4157.2	10 x 1 ml (with septum)	card board box	60,10 €

Storage of Glutaraldehyde
Ideally at 2-8 °C under protective gas (argon or nitrogen). Do not freeze!

Osmium tetraoxide for Electron Microscopy

Osmium tetraoxide is suitable for fixing lipides and proteins. Because of the low penetration power, application is primarily limited to ultra thin techniques with small tissue samples.

Osmium tetraoxide
≥99,95 %, p.a., for electron microscopy
In sealed off glass ampoules. Osmium(VIII) oxide, Osmic acid
OsO_4 • M 254,20 g/mol • Storage temp.: +4 °C
Danger H300+H310+H330-H314

8371.1	100 mg	glass	36,45 €
8371.2	500 mg	glass	91,30 €
8371.3	1 g	glass	141,40 €

Osmium tetraoxide solution 2 %
for electron microscopy
In sealed off glass ampoules.
OsO_4 • Storage temp.: +4 °C
Danger H301+H331-H310-H315-H318

7436.1	5 ml	glass	34,95 €

Osmium tetraoxide solution 4 %
for electron microscopy
In sealed off glass ampoules.
OsO_4 • Storage temp.: +4 °C
Danger H301+H331-H310-H315-H318

8088.1	5 ml	glass	52,60 €

To prepare a 1-4 % solution of osmium tetraoxide, Art. No. 8371:

- Score the glass ampoule in centre (e.g. with glass cutter Art. No. 8209.1)
- Open it carefully at the section
- Draw the crystals into a sealable glass jar
- Add the needed amount of distilled water
- Place the sealed jar into an ultrasonic bath, the dissolution process requires 1-2 h
- Store the solution in aliquots at -20 °C in a well-sealed container

Please note: OsO_4 vapours damage the cornea and the mucous membranes of the mouth and the nose. Therefore, working with protective equipment in a fume cupboard is required!

Paraffins

In order to meet the different requirements of paraffin embedding, we provide a large selection of paraffins.

Special paraffin Roti®-Plast

- High-purity paraffin
- Top-quality for routine applications
- Available with or without DMSO
- Defined melting range
- Excellent embedding and cutting properties
- Guaranteed tested quality

Roti®-Plast

100 % paraffin, for histology
Melting range: 54-56 °C

Roti®-Plast is a special paraffin of highest quality without any additives. It penetrates the tissue quickly, completely and gives it its plasticity.

Type analysis:
Appearance. ..... white pastilles
Solidification point. ..... 54-56 °C

6642.1	1 kg	plastic	14,95 €
Original pack 6 x 1 kg			14,20/1 kg
6642.5	2,5 kg	plastic	28,50 €
6642.2	10 kg	plastic	95,60 €
6642.6	20 kg BIG PACK	plastic	158,05 €

Roti®-Plast with DMSO

paraffin, for histology
Melting range: 56-58 °C

Special paraffin, treated with DMSO, enriched with polymers. Makes it easier to penetrate the tissue.

Type analysis:
Appearance. ..... white droplets
Solidification point. ..... 56-58 °C

6643.1	1 kg	carton	31,75 €
Original pack 6 x 1 kg			30,16/1 kg
6643.3	20 x 1 kg	carton	439,70 €
6643.2	2 kg	plastic	51,10 €

Please note:
Protein glycerol (Art. No. P049) contains egg albumin, colloidally dissolved in glycerol. At room temperature it may flocculate. But it will redissolve by gentle warming.

Low Melting Paraffins

These paraffins allow embedding already at temperatures below 55 °C.

If high solid tissue blocks are required, we recommend a final embedding step at standard temperature (56-58 °C).

Paraffin 50-52 °C

extra pure, for histology

Type analysis:
Appearance. ..... pastilles
Solidification point. ..... 50-52 °C

CN48.1	500 g	plastic	19,25 €
Original pack 6 x 500 g			18,29/500 g
CN48.2	1 kg	plastic	28,95 €
Original pack 6 x 1 kg			27,50/1 kg

Paraffin 52-54 °C

extra pure, for histology

Type analysis:
Appearance. ..... pastilles
Solidification point. ..... 52-54 °C

CN49.1	500 g	plastic	19,25 €
Original pack 6 x 500 g			18,29/500 g
CN49.2	1 kg	plastic	28,95 €
Original pack 6 x 1 kg			27,50/1 kg

Granopent® "P"

Paraffin, in pellets
Melting range: 52-54 °C

Type analysis:
Appearance. ..... white, wax-like pellets
Solidification point. ..... 52-54 °C
Needle penetration (25 °C, 1/10 mm). 14-20

9279.1	1 kg	plastic	17,95 €
Original pack 6 x 1 kg			17,05/1 kg
9279.2	2,5 kg	plastic	36,05 €

ready-to-use

Protein glycerol

for microscopy

For fixing and stretching of the cuts.

Type analysis:
Appearance. ..... turbic, colourless to light yellow solution

P049.1	100 ml	glass	16,05 €

Paraplast®-Paraffins

Published on the authority of Leica Biosystems.

Paraplast® is recommended for general tissue embedding. It is composed of a refined mixture of highly purified paraffin containing plastic polymers of regulated molecular weights. This provides improved tissue infiltration and superior quality sections with minimal compression. Paraplast® gives brittle, difficult-to-section tissue an innate elasticity, producing excellent, wrinkle-free sections.

Paraplast PLUS® is suggested for large tissue or tissue that may normally present infiltration issues.

Paraplast X-TRA® is recommended for lower temperature infiltration which aids in the prevention of tissue distortion.

Paraplast®

for histology, in pellets

Tissue embedding medium composed of highly purified paraffin containing complex elastomers with regulated molecular weights.
Melting point: 56 °C

X880.1	1 kg		paper bag	15,30 €
Original pack 6 x 1 kg				14,54/1 kg
X880.3	3 x 1 kg	new size	paper bag	42,50 €
X880.2	8 x 1 kg		paper bag	102,70 €

Paraplast PLUS®

for histology, in pellets

Tissue embedding medium composed of highly purified paraffin containing complex elastomers with regulated molecular weights and an addition of DMSO for large and difficult-to-infiltrate tissue samples.
Melting point: 56 °C

X881.1	1 kg		paper bag	17,75 €
X881.3	3 x 1 kg	new size	paper bag	50,45 €
X881.2	8 x 1 kg		paper bag	107,40 €

Paraplast X-TRA®

for histology, in pellets

Tissue embedding medium composed of polymers with low molecular weights and highly purified paraffin for large and difficult-to-infiltrate tissue samples.
Melting point: 52 °C

X882.1	1 kg		paper bag	19,15 €
X882.2	8 x 1 kg		paper bag	128,90 €

Cryo-Embedding

For preparation of cryo-sections.

Solidofix®-Cryo spray

for histology

Freezing of histological specimens. Cooling of paraffin blocks.
Cooling to -45 °C.

Danger H222-H229-EUH018

Application:
The tissue is sprayed for a few seconds with Solidofix®-Cryo spray.
Then it can be cut.

Properties:
- Solidofix®-Cryo spray cools quickly and gently down to -45 °C
- Contents: Propane/butane gas

T200.1	300 ml	spray bottle	8,10 €
T200.2	5 x 300 ml	spray bottle	31,10 €

▶ Accessories for Embedding see chapter Labware - Labware & Aids.

Our Tip:
Heat Paraplast paraffin to maximum 62 °C.
Higher temperatures may damage the synthetic additives.

Embedding Media for Electron Microscopy

Glycidether 100
for electron microscopy
Formerly known as Epon 812, Epoxipropyl ether of glycerol.
Epon 812

Warning H319-H335

8619.1	500 g	glass	33,90 €
Original pack 6 x 500 g			32,21/500 g
8619.2	2,5 kg	glass	120,95 €

Glycidether Hardener DBA
for glycidether 100
DDSA, 2-Dodecenylsuccinic acid anhydride

Warning H315-H319-H335

8623.1	100 g	glass	24,20 €
8623.2	1 kg	glass	143,95 €
Original pack 6 x 1 kg			136,75/1 kg

Glycidether Hardener MNA
for glycidether 100
1-Methyl-5-norbornene-2,3-dicarboxylic acid anhydride,
Methylnadic anhydride
$C_{10}H_{10}O_3$ • M 178,15 g/mol

Danger H334-H302-H335-H315-H319

8639.1	100 g	glass	29,60 €
8639.2	1 kg	glass	200,95 €
Original pack 6 x 1 kg			190,90/1 kg

Glycidether Accelerator DMP-30
for glycidether 100
2,4,6-Tris(dimethylaminomethyl)-phenol

Warning H302-H315-H319

8621.1	100 g	glass	22,50 €

Methacrylic acid methyl ester
≥99 %, extra pure
For electron microscopy.
Methyl methacrylate
$C_5H_8O_2$ • M 100,12 g/mol

Danger H225-H315-H317-H335

4233.1	1 l	glass	25,30 €
Original pack 6 x 1 l			24,04/1 l
4233.2	2,5 l	glass	49,35 €
Original pack 4 x 2,5 l			46,88/2,5 l

Gelatine Capsules
for electron microscopy
No. 0, length 22 mm, diameter 7 mm, volume 0,68 ml.
Capsules are made of hard gelatine, usually 200-260 Bloom.
Appearance: clear, colourless.

8641.1	100 pieces	plastic	17,75 €

Hydrophilic Carbowax-Embedding

This method is particularly suitable for histochemical specimens. It is based on the ability of polyethylene glycol (PEG, carbowax) to polymerise and, therefore, to build hardened blocks.

Polyethylene glycol 400
ROTIPURAN® Ph.Eur.
Type 400 (liquid), PEG 400, Polyglycol, Polyoxyethylene
M 380-420 g/mol

0144.1	1 l		plastic	23,65 €
Original pack 6 x 1 l				22,47/1 l
0144.2	5 l		plastic	83,35 €
Original pack 2 x 5 l				79,18/5 l
0144.3	25 kg	BIG PACK	plastic	283,80 €

Polyethylene glycol 1000
ROTIPURAN® Ph.Eur.
Type 1000 (solid), PEG 1000, Polyglycol, Polyoxyethylene
M 950-1050 g/mol

0150.1	1 kg	plastic	28,50 €
Original pack 6 x 1 kg			27,08/1 kg
0150.2	5 kg	plastic	98,40 €
0150.3	500 g	plastic	19,60 €
Original pack 6 x 500 g			18,62/500 g

Polyethylene glycol 1500
ROTIPURAN® Ph.Eur.
Type 1500 (solid), PEG 1500, Polyglycol, Polyoxyethylene
M 1400-1600 g/mol

0152.1	1 kg	plastic	28,50 €
Original pack 6 x 1 kg			27,08/1 kg
0152.2	5 kg	plastic	98,40 €
0152.3	500 g	plastic	19,60 €
Original pack 6 x 500 g			18,62/500 g

Polyethylene glycol 2000
ROTIPURAN® Ph.Eur.
Type 2000 (solid), PEG 2000, Polyglycol, Polyoxyethylene
M 1800-2200 g/mol

0154.1	1 kg	plastic	28,50 €
Original pack 6 x 1 kg			27,08/1 kg
0154.2	5 kg	plastic	98,40 €
0154.3	500 g	plastic	19,60 €
Original pack 6 x 500 g			18,62/500 g

▶ Our complete range of polyethylene glycol see chapter Chemicals A-Z.

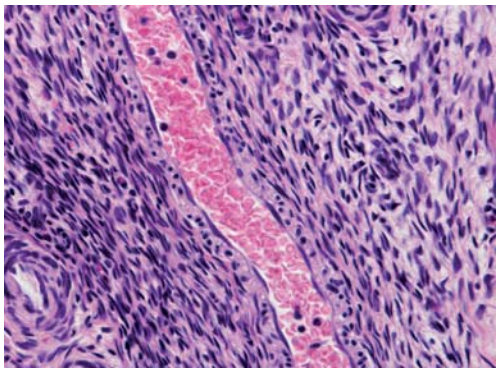
Safety data sheets
can be found on the Internet next to the product description.

Staining Solutions & Kits

for histology, microscopy and cytology.

ROTH staining solutions have been developed, tested and optimised for scientific routine applications.

We have a number of ready-to-use solutions in our range for the most common staining methods.



Ready-to-use staining solutions:
- Simple, quick and solid application
- Excellent quality
- Specially selected starting material
- Good reproducibility

Staining Methods for Blood Smears

ready-to-use

We offer staining solutions for classic preparing of blood elements and for other standard assays, e.g. detection of blood parasites or bacteria.

LOEFFLER's methylene blue solution

for microscopy and cell counting

Methylene blue solution 0,5 %

Warning H371

LÖFFLER'S methylene blue solution is used for staining bacteria, fungi and blood parasites in blood smears, e.g. together with carbolic fuchsine solution (Art. No. A130) for Ziehl-Neelsen staining (detection of TB bacteria). Furthermore, it is used as a vital staining agent for selective staining of nuclei during counting of eukaryotic cells.

Type analysis:

Suitability for microscopy. ..... complies

AE64.1	500 ml	glass	22,80 €
AE64.2	1 l	glass	28,50 €
Original pack 6 x 1 l			27,08/1 l
AE64.3	2,5 l	plastic	59,05 €
Original pack 4 x 2,5 l			56,10/2,5 l

Wright's eosin methylene blue solution

for microscopy

Wrights staining solution, eosin methylene blue solution acc. to Wright.

Danger H225-H370-H301+H311+H331

Wrights eosin methylene blue solution is used especially for staining blood and bone marrow smears. Additionally, there are various applicabilities in staining of cytological material such as urine, sputum etc.

Type analysis:

Suitability for microscopy. ..... complies

CN05.1	500 ml	glass	23,90 €
CN05.2	1 l	glass	34,30 €
Original pack 6 x 1 l			32,59/1 l

Application range:

Giemsa- and May-Grünwald-solution can be combined and then used to obtain particularly high-contrast staining ("Panoptic staining according to Pappenheim").

May-Gruenwald's solution

for microscopy

Eosine methylene blue solution

Danger H225-H370-H301+H311+H331

May-Gruenwald's solution is a methanolic solution of eosin methylene blue. Due to the high concentration of methanol, the specimens are fixed at the same time (recommended residence time: 3 min).
May-Gruenwald's solution is used for differential staining of blood smears and cytological specimens.

T863.1	500 ml	plastic	21,75 €
T863.2	1 l	glass	25,30 €
Original pack 6 x 1 l			24,04/1 l
T863.3	2,5 l	plastic	54,65 €
Original pack 4 x 2,5 l			51,92/2,5 l

Giemsa stock solution

for microscopy

Azure eosin solution

Danger H225-H301+H311+H331-H370

Giemsa solution contains azure, eosine, methanol and glycerin. Before staining a fixing step with methanol for about 10 min is recommended. Giemsa solution is appropriate for use in all current assays of blood and bone marrow smears.
Working solution: Dilute stock solution at a ratio of 1:20 (e.g. 0.5 ml with 9.5 ml dist. water).

T862.1	500 ml	plastic	24,20 €
T862.2	1 l	glass	36,05 €
Original pack 6 x 1 l			34,25/1 l
T862.3	2,5 l	plastic	77,95 €
Original pack 4 x 2,5 l			74,05/2,5 l

Panoptical fast staining kit

NEW

for microscopy

Staining kit for fast oversight staining of blood smears and other cytological preparations (modified method acc. to Pappenheim), incl. instructions for use.

Storage temp.: +20 °C

Danger H225-H301+H311+H331-H370

Formulation:

Panoptical fast staining solution 1 (Art. No. 8934)
Panoptical fast staining solution 2 (Art. No. 8935)
Panoptical fast staining solution, fixatif (Art. No. 8939)

6487.1	1 kit (3 x 250 ml)	plastic	70,45 €
6487.2	1 kit (3 x 500 ml)	plastic	128,50 €

Elastica Staining

ROTH staining solutions for preparing elastic fibres in tissue sections.

ready-to-use

Nuclear fast red aluminium sulphate solution
for microscopy
For visualising nuclei e.g. during Elastica Staining.

Warning H319

N069.1	500 ml	glass	30,00 €

Resorcinol-Fuchsine-solution acc. to Weigert
for microscopy
For visualising elastic fibres.
WEIGERT'S Resorcinol-Fuchsine-solution

Danger H225-H302+H312+H332-H319-H317-H370-H336

X877.1	500 ml	glass	31,10 €
X877.2	1 l	glass	52,15 €
Original pack 6 x 1 l			49,54/1 l
X877.3	2,5 l	plastic	107,40 €
Original pack 4 x 2,5 l			102,03/2,5 l

Elastica van Gieson staining kit
NEW
for microscopy
Staining kit for visualising connective tissue with elastic fibres, incl. instructions for use.
Storage temp.: +20 °C

Danger
H224-H302-H312-H332-H318-H336-H370-EUH001

Formulation:
Hematoxylin solution A acc. to Weigert (Art. No. X906). ..... 500 ml
Hematoxylin solution B acc. to Weigert (Art. No. X907). ..... 500 ml
Van Gieson's Solution (Art.-No. 3925). ..... 500 ml
Resorcinol-Fuchsine-solution acc. to Weigert (Art. No. X877). ..... 500 ml

8275.1	1 kit	glass	119,90 €

Our Tip:
The ready-to-use staining solutions should be filtrated before use.

Staining protocols
can be found on the internet next to the product description.

Hematoxylin-Eosin Staining (H&E Staining)

Simple and quick staining method for visualising nuclei and cytoplasm.

ready-to-use

Hemalum solution acid acc. to Mayer
for microscopy
For visualising nuclei.
Mayers Hemalum solution

Warning H302-H315-H319

T865.1	500 ml	glass	24,20 €
T865.2	1 l	glass	39,70 €
Original pack 6 x 1 l			37,72/1 l
T865.3	2,5 l	plastic	71,95 €
Original pack 4 x 2,5 l			68,35/2,5 l

Eosin J solutions
For visualising cell structures during standard staining methods.

Product	Purity	Art. No.	Pack Qty.	€
Eosin Y solution 0.5 % in water	for microscopy	**X883.1**	500 ml	18,85
		X883.2	1 l	27,10
Eosin Y solution 1 % in water		**3137.1**	500 ml	21,00
		3137.2	1 l	30,00
Eosin Y solution 1 % in methanol		**3139.1**	500 ml	24,20
		3139.2	1 l	37,10

For additional product data and safety information, see chapter Chemicals A-Z.

H&E fast staining kit
NEW
for microscopy
Staining kit for fast oversight staining of tissue sections.
Hematoxylin-eosin staining, incl. instructions for use.
Storage temp.: +20 °C

Danger H225-H290-H301+H311+H331-H370

Formulation:
Fast staining H&E, solution 1 (Art. No. 8947)
Fast staining H&E, solution 2 (Art. No. 8950)

9194.1	2 x 250 ml	plastic	48,40 €
9194.2	2 x 500 ml	plastic	70,45 €

Trichrome Staining

ready-to-use

A standard staining method for analysis of connective tissue, allowing a differentiated visualisation of various fibres of connective tissue against epithelial and muscle tissue.

We offer the necessary solutions for staining acc. to Masson-Goldner and van Gieson and in addition hematoxylin solutions for acid resistant staining of nuclei acc. to Weigert.

Hematoxylin solutions acc. to Weigert

For visualising nuclei.

Working solution:
Mix WEIGERT'S solution A and WEIGERT'S solution B at a ratio of 1:1 prior to use (iron hematoxylin solution). This working solution is stable for 8 days in maximum at room temperature.

Product	Synonym	Purity	Art. No.	Pack Qty.	€
Hematoxylin solution A acc. to Weigert	Solution A acc. to Weigert	for microscopy	**X906.1**	500 ml	51,30
Hematoxylin solution B acc. to Weigert	Solution B acc. to Weigert		**X907.1**	500 ml	19,25

For additional product data and safety information, see chapter Chemicals A-Z.

Goldner's staining solutions

For visualising connective tissue (Masson-Goldner trichrome staining).

Product	Synonym	Purity	Art. No.	Pack Qty.	€
Goldner's staining I	Ponceau-Fuchsin solution	for microscopy	**3469.1**	500 ml	26,35
			3469.2	1 l	37,55
Goldner's staining II	Phosphotungstic acid-Orange G solution		**3470.1**	500 ml	46,80
			3470.2	1 l	80,10
Goldner's staining III	Light green SF yellowish solution		**3473.1**	500 ml	27,45
			3473.2	1 l	36,05

For additional product data and safety information, see chapter Chemicals A-Z.

Application range:
WEIGERT'S iron hematoxylin solution results in very acidoresistant staining of nuclei. Therefore, the method is particularly suitable for staining delimed tissues and for sections intended to be counter-stained with acid dyes.

Masson-Goldner's trichrome staining kit

for microscopy

Staining kit for visualising connective tissue (Masson-Goldner trichrome staining), incl. instructions for use.

Danger H225-H315-H318-H336

Application: Firstly the nuclei are stained with Weigert's iron hematoxylin solution, an acidoresistant staining. Subsequently the trichrome staining is carried out with the acid stains acc. to Goldner. Every staining step is followed by a rinsing step with acetic acid 1%.
This reagent is not included to the kit.
Result: Visualisation of nuclei, cytoplasm, muscle, erythrocytes, connective tissue.

Formulation:

Hematoxylin solution A acc. to Weigert (Art. No. X906). ..... 500 ml
Hematoxylin solution B acc. to Weigert (Art. No. X907). ..... 500 ml
Goldner's stain I (Art. No. 3469). ..... 500 ml
Goldner's stain II (Art. No. 3470). ..... 500 ml
Goldner's stain III (Art. No. 3473). ..... 500 ml

3459.1	1 kit	glass	144,05 €

Van Gieson's Solution

for microscopy

For visualising connective tissue during van Gieson trichrome staining and Elastica van Gieson staining.
Van Gieson's picrofuchsin

EUH001

Application: First the nuclei are stained with Weigert's iron hematoxylin solution (Art. No. X906.1 Hematoxylin solution A and Art. No. X907.1 Hematoxylin solution B at a ratio of 1:1). Subsequently the trichrome staining is carried out with van Gieson's picrofuchsin solution.
Result: Visualisation of nuclei, connective tissue, cytoplasm, muscle and other tissue components.

3925.1	500 ml	glass	23,15 €
3925.2	1 l	glass	33,90 €
Original pack 6 x 1 l			32,21/1 l

Van Gieson trichrome staining kit

NEW

for microscopy

Staining kit for visualising connective tissue, incl. instructions for use.
Storage temp.: +20 °C

Danger H225-H318-H336-EUH001

Application: First the nuclei are stained with Weigert's iron hematoxylin solution (Art. No. X906.1 Hematoxylin solution A and Art. No. X907.1 Hematoxylin solution B at a ratio of 1:1). Subsequently the trichrome staining is carried out with van Gieson's picrofuchsin solution.
Result: Visualisation of nuclei, connective tissue, cytoplasm, muscle and other tissue components.

Formulation:

Hematoxylin solution A acc. to Weigert (Art. No. X906). ..... 500 ml
Hematoxylin solution B acc. to Weigert (Art. No. X907). ..... 500 ml
Van Gieson's Solution (Art.-No. 3925). ..... 500 ml

9193.1	1 kit	glass	85,50 €

Weigert's iron hematoxylin staining kit

NEW

for microscopy

Staining kit for acid resistant staining of nuclei, incl. instructions for use.
Storage temp.: +20 °C

Danger H225-H318-H336

Formulation:

Hematoxylin solution A acc. to Weigert (Art. No. X906). ..... 500 ml
Hematoxylin solution B acc. to Weigert (Art. No. X907). ..... 500 ml

9192.1	1 kit	glass	64,40 €

PAS-Staining

A classical method mainly used for visualising carbohydrates in tissue. We offer the necessary components - single reagents or the complete staining kit with instructions for use.

ready-to-use

PAS staining kit

for microscopy

Staining kit for Periodic Acid Schiff (PAS) staining, incl. instructions for use.
Storage temp.: +4 °C

Danger H302-H315-H319-H350

Periodic Acid Schiff staining is generally used for detecting carbohydrates in tissue.
Application:
Staining is carried out in 3 steps: Periodic acid transforms 1.2 glycol groups to aldehyde groups, which are stained with Schiff´s reagent. Hemalum solution performs counter staining of nuclei.
Result:
Carbohydrates red, nuclei blue.

Formulation:

Periodic acid solution 1 % (Art. No. HP00)..... 500 ml
Schiff´s reagent (Art. No. X900)..... 500 ml
Hemalum solution acid acc. to Mayer (Art. No. T865)..... 500 ml

HP01.1	1 kit	glass	79,05 €

Periodic acid solution 1 %

for microscopy

For hydrolysis of carbohydrates, e.g. in PAS reaction (Periodic Acid Schiff reaction).
$H_5IO_6 + H_2O$

Warning H315-H319

Type analysis:
Assay (H_5IO_6)..... 1 % in water

HP00.1	500 ml	glass	36,45 €

Schiff's reagent

for microscopy

Fuchsine sulphurous acid

Danger H350

Schiff´s reagent has a wide spectrum of application in PAS reaction (Periodic Acid Schiff reaction), in combined alcian blue PAS staining and as a reagent for detecting aldehydes.
Storage: At room temperature in the dark. After the bottle has been opened well-sealed at 4-8 °C. Discard the solution if it turns reddish.

X900.1	500 ml	glass	21,20 €
X900.2	1 l	glass	27,65 €
Original pack 6 x 1 l			26,27/1 l

Cytological Routine Staining

Ready-made solutions for routine applications, like, e.g., staining acc. to Papanicolaou, which is mainly used for visualisation of cancer cells.

ready-to-use

Hematoxylin solution acc. to Delafield

for microscopy

Delafield's hematoxylin solution

Danger H225-H370-H332+H312+H302

Type analysis:
Suitability for microscopy..... complies
Dilution for use: 1:20 in distilled water (staining: 30 min.)

CN03.1	500 ml	glass	36,05 €

Hematoxylin solution acid acc. to Ehrlich

for microscopy

Ehrlich's acid hematoxylin solution

Danger H225-H319-H336

Type analysis:
Suitability for microscopy..... complies

CN04.1	500 ml	glass	36,05 €

Hematoxylin solution acc. to Gill II

for microscopy

Danger H318-H302

Type analysis:
Suitability for microscopy (tissue section)..... complies

T864.1	500 ml	glass	36,05 €
T864.2	1 l	glass	52,15 €
Original pack 6 x 1 l			49,54/1 l
T864.3	2,5 l	plastic	99,90 €
Original pack 4 x 2,5 l			94,91/2,5 l

Hematoxylin solution acc. to Harris

for microscopy

Harris Hematoxylin solution, Papanicolaou solution 1a

Type analysis:
Suitability for microscopy (tissue section)..... complies

X903.1	500 ml	glass	31,10 €
X903.2	1 l	glass	48,30 €
Original pack 6 x 1 l			45,89/1 l
X903.3	2,5 l	plastic	101,60 €
Original pack 4 x 2,5 l			96,52/2,5 l

Papanicolaou-orange solution 2a (OG 6)

for microscopy

Danger H225

Type analysis:
Suitability for microscopy..... complies

T867.1	500 ml	glass	21,75 €
T867.2	1 l	glass	31,10 €
Original pack 6 x 1 l			29,55/1 l
T867.3	2,5 l	plastic	68,30 €
Original pack 4 x 2,5 l			64,89/2,5 l

Papanicolaou solution 2b Orange II solution
for microscopy

Danger H225-H301+H311+H331-H370-H319

Type analysis:
Suitability for microscopy. ..... complies

AE62.1	500 ml	glass	30,00 €
AE62.2	1 l	glass	38,20 €
Original pack 6 x 1 l			36,29/1 l
AE62.3	2,5 l	plastic	69,80 €
Original pack 4 x 2,5 l			66,31/2,5 l

Papanicolaou polychrome solution 3a (EA31)
for microscopy

Danger H225-H301+H311+H331-H370-H319

Type analysis:
Suitability for microscopy. ..... complies

AE63.1	500 ml	glass	24,20 €
AE63.2	1 l	glass	36,05 €
Original pack 6 x 1 l			34,25/1 l
AE63.3	2,5 l	plastic	77,95 €
Original pack 4 x 2,5 l			74,05/2,5 l

Papanicolaou polychrome solution 3b (EA 50)
for microscopy

Danger H225-H301+H311+H331-H370-H319

Type analysis:
Suitability for microscopy. ..... complies

T866.1	500 ml	glass	26,55 €
T866.2	1 l	glass	33,90 €
T866.3	2,5 l	plastic	72,60 €

PAP fast staining kit
for microscopy

NEW

Staining kit for fast staining of cytological smears
(fast staining acc. to Papanicolaou), incl. instructions for use.
Storage temp.: +20 °C • Transport temp.:

Danger H225-H302+H312+H332-H319-H370-H373-EUH208

Formulation:
PAP fast staining, solution 1 (Art. No. 9197)
PAP fast staining, solution 2 (Art. No. 9199)

9195.1	2 x 250 ml	plastic	54,30 €
9195.2	2 x 500 ml	plastic	83,85 €

▶ Accessories for Embedding see chapter Labware - Labware & Aids.

Staining protocols
can be found on the internet next to the product description.

Bacteriological Staining

Ziehl-Neelsen Staining

NEW

ready-to-use

Ziehl-Neelsen staining kit
for microscopy

Staining kit for visualising acid-fast bacteria (e.g. bacteria of TB),
incl. instructions for use.
Storage temp.: +20 °C

Danger H314-H341-H371

Formulation:
Löffler's methylene blue solution (Art. No. AE64). ..... 500 ml
Carbol fuchsine solution (Art. No. A130). ..... 500 ml

8276.1	1 kit	glass	38,60 €

Neisser Staining

ready-to-use

Standard staining method in bacteriology,
especially used for visualising diphtheria bacteria.

Neisser's solution I
for microscopy

Solution for diphtheria staining acc. to Neisser.
Neisser's solution Ia, Methylene blue solution 0,1 %

3463.1	100 ml	glass	18,20 €
3463.2	500 ml	glass	33,90 €

Neisser's solution II
for microscopy

Solution for diphtheria staining acc. to Neisser.
Neisser's solution Ib, Crystal violet solution

Danger H225-H371-H302-H412

3464.1	100 ml	glass	18,20 €
3464.2	500 ml	glass	33,90 €

Neisser's solution III
for microscopy

Solution for diphtheria staining acc. to Neisser.
Neisser's solution II, Chrysoidine solution 0,3 %

Danger H225-H371-H302-H412

3466.1	100 ml	glass	18,20 €
3466.2	500 ml	glass	33,90 €

Gram Staining

ready-to-use

Gram staining is the most important technique for differentiation and identification of bacteria. It was developed by the Danish bacteriologist Hans Christian Gram (1853-1938).

Due to the structure of their cell walls nearly all bacterial species can be differentiated in gram-positive and gram-negative bacteria.

Gram staining kit
for microbiology

Kit for differentiation of gram-positive and gram-negative bacteria, incl. instructions for use.

Danger H225-H314-H302+H312+H332-H336-H341

This classical staining method allows a quick differentiation of gram-positive and gram-negative bacteria. Subsequently a specific treatment with antibiotics is possible.
Application:
In the first step bacteria are stained by Carbol gentianaviolet and Lugol solution. Afterwards gram-negative bacteria are decolourised by Gram's decolourising solution. In the last step these bacteria are counterstained by Carbol fuchsine solution.
Result:
Gram-positive bacteria appear blue, gram-negative bacteria red.

Formulation:

Carbol gentianaviolet solution (Art. No. CN00). ..... 500 ml
Iodine-potassium iodide solution acc. to Lugol (Art. No. N052). ..... 500 ml
Gram's decolourising solution (Art. No. CN02). ..... 500 ml
Carbol fuchsine solution (Art. No. A130)..... 500 ml

HP02.1	1 kit	glass	90,20 €

Gram's decolourising solution
for Gram staining

Danger H225-H319-H336

Ethanolic solution containing 25 % acetone. It is used for differentiation of bacteria during Gram staining.

CN02.1	500 ml	glass	20,35 €

Iodine-potassium iodide solution acc. to Lugol
for microscopy

Lugol solution

Warning H373

1 % aqueous iodine solution. Contains ~3,3 g/l iodine and ~6,7 g/l potassium iodide.

N052.1	250 ml	glass	15,80 €
N052.3	500 ml	glass	22,05 €
N052.2	1 l	glass	27,45 €
Original pack 6 x 1 l			26,08/1 l

Our Tip:
The ready-to-use staining solutions should be filtrated before use.

Carbolic fuchsine solution
for microscopy

For bacterial staining (Gram staining and staining of acid-fast bacteria, e.g. TB bacteria acc. to Ziehl-Neelsen).

Danger H314-H341

A130.2	500 ml	glass	20,35 €
A130.1	1 l	glass	32,15 €
Original pack 6 x 1 l			30,54/1 l

Carbol gentian violet solution
for microscopy

For Gram staining.

Warning H226

The solution is used for the first step of Gram staining. It can be applied like crystal violet solution acc. to Gram. Gentian violet and crystal violet are two different names for the same dye.

CN00.1	500 ml	glass	21,40 €
CN00.2	1 l	glass	30,65 €
Original pack 6 x 1 l			29,12/1 l

Safranine solution
for Gram staining

1 % safranine solution in water. Replaces Carbolic fuchsine solution during staining procedure of gram-negative bacteria.

CN01.1	500 ml	glass	30,00 €

Preparation of an oxalate gentian violet solution
Dissolve 0.8 g ammonium oxalate (Art. No. P737.1) in 80 ml dist. water. Then dissolve 2 g gentian violet (crystal violet, Art. No. T123.1) in 20 ml 96 % ethanol (Art. No. T171.1). Mix both solutions well. Filter solution before using.

Lactophenol Blue Staining

Staining method for identification and visualisation of fungi cells during microbiological assays.

ready-to-use

Lactophenol blue solution
for microscopy
Fungal stain for microbiological material.

Danger H301+H311+H331-H314-H341-H373

Lactophenol blue solution is used to visualise fungi cells in air-dried, heat-fixed smears of various cytological materials. After staining the fungi cells appear dark blue.

3097.1	100 ml	glass	23,90 €

Dyes

ROTH offers a wide range of staining agents in a tried and tested quality for use in botany, bacteriology, histology and cell culture.

Staining of Cellulose According to Behrens

ready-to-use

With zinc iodine chloride solution from ROTH.

Zinc iodine chloride solution
acc. to Behrens, for microscopy
Reagent for cellulose.

Danger H314-H400-H410-H302-H373

Type analysis:
Suitability for microscopy. ..... complies

6395.1	100 ml	glass	23,15 €

Performing detection of cellulose:
Add one drop of the solution to the section applied to a slide. After 30 min in maximum cellulose fibres are stained blue; wood, cork and cutin are stained yellow. The cellulose staining is a dichroitic staining. Depending on the polarisation direction of light different wavelengths of light are absorbed. Thus the dye changes from dark blue to colourless.

Acc. to Dieter Gerlach: Bot. Mikrotechnik, 2. Edition, Thieme (1977)

Safety data sheets
can be found on the Internet next to the product description.

Chromogenic Dyes

Acid blue 93 (C.I. 42780)
p.a., water soluble
For staining of histological sections and for cytology.
Aniline blue water soluble, Methyl blue
$C_{37}H_{27}N_3O_9S_3Na_2$
M 799,81 g/mol
Acid blue 93 is a plasma stain. It is often used in trichome stains to visualise connective tissue. Solution 1 % in water.

4002.1	10 g	glass	68,70 €
4002.2	25 g	glass	149,45 €

Alcian blue 8 GS (C.I. 74240)
for microscopy
Bacteriology and histology.
Alcian Blue 8 GX, Ingrain Blue 1
Basic dye, soluble in diluted acetic acid solution (0.1 % - 3 %) in concentrations of 0.05 % to 1 %. Used e.g. for staining of glycoproteins as an alternative to PAS-Staining.

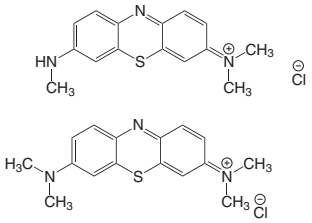
3082.2	5 g	glass	33,25 €
3082.1	10 g	glass	55,80 €
3082.3	25 g	glass	122,45 €
3082.4	100 g new size	glass	342,95 €

Astra blue FM (C.I. 48048)
for microscopy
$C_{47}H_{52}CuN_{14}O_6S_3$
M 1068,75 g/mol

Warning H315-H319-H335

Soluble in water (0.5 %), staining reagent for cellulose.

5165.1	10 g	glass	12,40 €
5165.2	50 g	glass	25,70 €



Azure II
for microscopy
1:1 mixture of Azure B and Methylen blue
$C_{16}H_{18}ClN_3S \cdot C_{15}H_{16}ClN_3S$
M 625,68 g/mol

Warning H302-H412

Azure II is a mixture of equal parts of the basic coal tar dyes methylene blue and Azure B. These dyes are mainly used for staining of blood elements (e.g. in Giemsa staining solution). In watery solution they form special salts with the acid eosin, the eosinates.

7640.1	1 g	glass	11,00 €
7640.2	10 g	glass	18,20 €
7640.3	50 g	glass	44,00 €

Azure II eosinat
for microscopy
1:1:1 mixture of Azure B, Methylen blue and Eosine Y
$C_{16}H_{18}ClN_3S \cdot C_{15}H_{16}ClN_3S \cdot C_{20}H_6Br_4Na_2O_5$
M 1317,92 g/mol

Danger H318

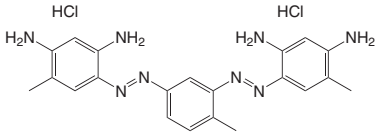
Azure II is a mixture of equal parts of the basic coal tar dyes methylene blue, Azure B and eosin. It is mainly used for staining of blood elements (e.g. in Giemsa staining solution). In watery solution it forms Azure B eosinates which cause the so called "Romanowsky-Giemsa effect", a polychromatic, pH-dependent staining of chromatin.

7642.1	5 g	glass	17,75 €
7642.2	25 g	glass	33,25 €
7642.3	100 g	glass	96,25 €

Azure B (C.I. 52010)
for microscopy
N,N,N'-Trimethylthionin, Azure I
$C_{15}H_{16}ClN_3S$
M 305,83 g/mol

Azure B belongs to the basic coal tar dyes (methylene blue and its derivatives). These dyes are mainly used for staining of blood elements. In watery solution they form special salts with the acid eosin, the eosinates.
Besides eosin and methylene blue Azure B is the main component of Giemsa staining solution. The Azure B eosinates in the solution cause the so called "Romanowsky-Giemsa effect", a polychromatic, pH-dependent staining of chromatin.

7637.1	5 g	glass	13,15 €
7637.2	25 g	glass	22,40 €
7637.3	100 g	glass	55,80 €



Bismarck brown R (C.I. 21010)
for microscopy
For modified Coomassie Blue-staining.
Basic Brown 4, Vesuvin R
$C_{21}H_{24}N_8 \cdot 2\ HCl$
M 461,40 g/mol

Basic azo dye, soluble in ethanol or methanol (1 - 3 %), low-soluble in water (0.5 %). Used for staining of brown alga, for mucus and vital staining. Ingredient of staining solutions according to Papanicolaou.

0316.1	25 g	plastic	60,75 €

Bismarck brown Y (C.I. 21000)
for microscopy
Basic Brown 1, Bismarck brown G
$C_{18}H_{18}N_8 \cdot 2\ HCl$
M 418,33 g/mol

0313.1	10 g	glass	18,20 €
0313.2	25 g	glass	31,75 €

Brilliant cresyl blue (C.I. 51010)
p.a.
Brilliant blue C
$(C_{17}H_{20}N_3O)_2 \cdot ZnCl_4$
M 385,96 g/mol

Warning H315-H319-H335

Basic vital dye, soluble in water (3 %) and ethanol (2 %).

5162.1	5 g	glass	21,40 €
5162.2	10 g	glass	31,10 €

Brilliant Green (C.I. 42040)
for microscopy
Indicator pH 0,0-2,6
Basic Green 1, Malachite Green G, Diamond Green G, Ethyl Green
$C_{27}H_{34}N_2O_4S$
M 482,64 g/mol

Warning H302-H319

Basic dye, soluble in water and alcohol (1-5 %). Used e.g. for spore staining according to Rakette (substitute for malachite green).

0324.1	25 g	glass	16,70 €
0324.2	100 g	plastic	36,45 €

Bromophenol blue
ACS, for microscopy
Indicator pH 3,0-4,6
3,3',5,5'-Tetrabromophenolsulphonphthalein, BPB
$C_{19}H_{10}Br_4O_5S$
M 669,99 g/mol
Well-soluble in ethanol, used for vital staining of spermatozoa.

T116.1	5 g	glass	20,35 €
T116.2	10 g	new size glass	26,80 €
T116.3	25 g	new size glass	42,90 €

Carmine (C.I. 75470)

for microscopy

Karmin

$C_{22}H_{20}O_{13}$

M 492,38 g/mol

Water-insoluble natural dye, obtained from dried female scale insects (Cochenille). Main ingredient is carminic acid. For use as a dye in microscopy it is applied in conjunction with a mordant, usually based on aluminium, producing a well-staining calcium aluminium lake of carminic acid.

6859.1	10 g		glass	41,40 €
6859.2	25 g	new size	glass	85,90 €

Celestine blue (C.I. 51050)

for microscopy

$C_{17}H_{18}ClN_3O_4$

M 363,80 g/mol

A watery solution of Celestine blue Hemalum is used for acid resistant staining of nuclei. It replaces Weigert's iron hematoxylin solution e.g. during trichrome staining.

7646.1	5 g	glass	22,50 €
7646.2	25 g	glass	81,60 €
7646.3	100 g	glass	278,45 €

Chromotrope® 2R

for microscopy

Indicator for complexometry.

$C_{16}H_{10}N_2Na_2O_8S_2$

M 468,39 g/mol

Warning H315-H319-H335

Water soluble azo dye, stains cytoplasm red. Commonly used in concentrations of 0.5-1.0 %.

4937.2	10 g	new size	glass	26,80 €
4937.1	50 g		glass	99,90 €

Congo Red (C.I. 22120)

for microscopy

Bacteriology, indicator pH 3,0-5,0

Direct Red 28, Disodium-3,3'[[1,1-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalin-1-sulphonate)

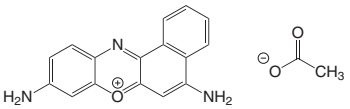
$C_{32}H_{22}N_6Na_2O_6S_2$

M 696,66 g/mol

Danger H350-H361d

Azo dye, soluble in water (colloidal solution) and ethanol. A 1% solution in ethanol is used for detection of amyloid proteins (= abnormally mutated proteins).

0322.1	5 g		glass	14,55 €
0322.2	25 g		glass	26,35 €
0322.3	100 g	new size	glass	52,70 €



Cresyl violet acetate

p.a.

Cresyl echt Violet, Cresyl Fast Violet

$C_{18}H_{15}N_3O_3$

M 321,34 g/mol

Cresyl violet acetate is a nuclear stain. It is used for visualising nerve tissue during Nissl staining. Usually, a 1% solution in water is applied.

7651.1	5 g	glass	48,95 €
7651.2	10 g	glass	83,35 €
7651.3	25 g	glass	192,45 €

Crystal violet (C.I. 42555)

p.a., ACS

Indicator pH 0,0-2,0

Hexamethylpararosaniline chloride, Methyl violet 10B, Gentian violet

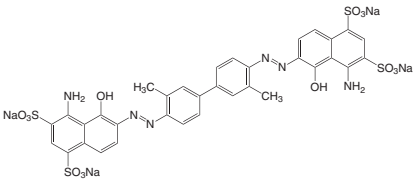
$C_{25}H_{30}ClN_3$

M 407,99 g/mol

Danger H318-H351-H400-H410-H302

Crystal violet, also called gentian violet, is soluble in water and alcohol and is used for multiple histological stains, e.g. Gram staining.

T123.2	5 g	new size	glass	16,05 €
T123.1	25 g		glass	24,65 €
T123.3	100 g	new size	glass	64,40 €



Evan's blue (C.I. 23860)

for microscopy

Direct Blue 53

$C_{34}H_{24}N_6Na_4O_{14}S_4$

M 960,82 g/mol

Danger H350-H361d

Diazo dye for intravital staining.

7684.1	5 g	glass	24,65 €
7684.2	25 g	glass	51,10 €
7684.3	100 g	glass	166,65 €

Fast Green FCF

for microscopy

For staining proteins.

Food Green 3

$C_{37}H_{34}N_2Na_2O_{10}S_3$

M 808,84 g/mol

Warning H341-H351

Soluble in ethanol and water, replaces light green in Masson Goldner Staining or in Papanicolaou solutions.

0301.1	25 g	glass	85,90 €

Fuchsine basic (C.I. 42510)

for microscopy

Indicator pH 1,0-3,1

Basic violet, Magenta

$C_{20}H_{20}N_3Cl$

M 337,85 g/mol

Warning H351

Soluble in ethanol and water. Multiple use in histology, e.g. carbolic fuchsine solution in Gram staining oder resorcinol fuchsine solution in elastica staining.

3256.2	25 g	new size	glass	31,10 €
3256.1	50 g		glass	55,80 €
3256.3	100 g	new size	glass	74,20 €

Giemsa stain

for microscopy

Warning H319

Mixture of Azure and Eosin for preparing Giemsa solution. It is used for staining blood and bone marrow smears.

7691.1	5 g	glass	13,15 €
7691.2	25 g	glass	22,50 €
7691.3	100 g	glass	56,90 €

Hematoxylin (C.I. 75290)

for microscopy

Hydroxybrasilin

$C_{16}H_{14}O_6$

M 302,29 g/mol

A beige natural dye which achieves its active form, the hemalum, by oxidation (e.g. with sodium iodate) and treating with a metallic mordant (e.g. alum). Hemalum lakes stain cell nuclei blue.

3816.1	10 g	glass	37,95 €
3816.3	50 g	glass	151,05 €
3816.2	100 g	glass	266,10 €

Indigo carmine (C.I. 73015)

for microscopy

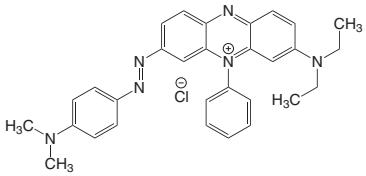
Indicator pH 11,5-13,0

$C_{16}H_8N_2Na_2O_8S_2$

M 466,36 g/mol

Warning H302

5156.1	10 g	glass	13,45 €
5156.2	25 g	glass	19,90 €
5156.3	100 g	glass	57,95 €



Janus green B (C.I. 11050)

for microscopy

Diazin Green S

$C_{30}H_{31}ClN_6$

M 511,07 g/mol

Vital dye for staining of leucocytes and for visualising mitochondria. Besides Janus green is used as counter stain during the modified Ziehl-Neelsen staining.

Oxidized indicator blue, reduced indicator pink

7697.1	5 g	glass	22,50 €
7697.2	25 g	glass	55,80 €
7697.3	100 g	glass	170,95 €

Jenner Stain

for microscopy

Mixture of eosin, methylene blue, Azure A, B and C

Methylene blue eosinate (Romanowsky dye mixture) for staining blood smears, bone marrow smears et al. acc. to Jenner. Usually 1 g dye is dissolved in 400 ml methanol (stock solution). For use the solution is diluted 1:1 with aqua dest.

7698.1	5 g	glass	13,15 €
7698.2	25 g	glass	22,50 €
7698.3	100 g	glass	55,80 €

Leishman stain

for microscopy

Mixture of methylen blue, Azure A, B and C

Eosin methylene blue acc. to Leishman

Eosin methylene blue mixture (Romanowsky dye) for staining blood smears, bone marrow smears et al. acc. to Leishman.

7702.1	5 g	glass	13,15 €
7702.2	25 g	glass	22,40 €
7702.3	100 g	glass	55,80 €

Light green SF (C.I. 42095)

for microscopy

Acid Green 5

$C_{37}H_{34}N_2Na_2O_9S_3$

M 792,86 g/mol

Water-soluble dye for visualising connective tissue during Masson-Goldner trichrome staining (ingredient of Goldner's stain III).

7706.1	5 g	glass	17,75 €
7706.2	25 g	glass	40,35 €
7706.3	100 g	glass	124,60 €

Malachite green oxalate (C.I. 42000)

for microscopy

Indicator pH 0,0-2,0, for protein analysis.
Basic green 4
$C_{52}H_{54}N_4O_{12}$
M 927,02 g/mol

Danger H318-H361d-H400-H410-H302

Water soluble dye; in botany used for staining bacteria and fungal infected tissues and for detection of spores.

5895.2	25 g		glass	14,95 €
5895.1	100 g		glass	30,00 €
5895.3	250 g	new size	glass	42,90 €

Spore staining acc. to Wirtz

Boil the heat fixed smear with malachite green, Art. No. 5895, (5 % solution in water) for 20 sec and allow to act for at least 30 sec. Rinse in running tap water, counterstain with safranin O, Art. No. T129, (0.5 % solution in water) for 30 sec, rinse again and dry.

Result: Spores green, other bacteria parts red

Methylene blue (C.I. 52015)

For microscopy and staining of nucleic acids in polyacrylamide gels.
Basic Blue 9
$C_{16}H_{18}ClN_3S$
M 319,9 g/mol

Warning H302-H412

Water-soluble nuclear dye, does not intercalate between base pair stacks of DNA. Especially used for staining of blood cells.

Application note:
Staining of nucleic acids in PAA

- Use a 0.2 % solution of methylene blue for staining
- Stain for 20 min.
- Wash for 15 min. in distilled water

Nucleic acids are visible as blue bands.
Detection limit: 20 ng/band.

A514.1	10 g		glass	18,20 €
A514.2	50 g	new size	glass	42,90 €
A514.3	100 g	new size	glass	69,80 €

Methyl green (C.I. 42590)

for microscopy

Indicator pH 0,2-1,8
Methyl green zinc chloride double salt, Ethyl green zinc chloride double salt
$C_{27}H_{35}Cl_2N_3 \cdot ZnCl_2$
M 608,78 g/mol

Danger H314-H351-H411

Acid nitroso dye, staining reagent for visualising nuclei, water soluble (1 %).

5159.1	5 g		glass	19,90 €
5159.2	10 g		glass	31,75 €
5159.3	25 g		glass	62,90 €

Methyl orange (C.I. 13025)

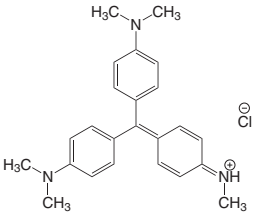
ACS, for microscopy

Indicator pH 3,2-4,4
4-(Dimethylamino)-azobenzene -4'-sulphonic acid sodium salt, Orange III
$C_{14}H_{14}N_3NaO_3S$
M 327,4 g/mol

Danger H301

Azo dye, low soluble in water (5 g/l).
Ingredient of trichrom stains used for detection of connective tissue.

T118.1	50 g		glass	23,90 €
T118.2	100 g		glass	36,05 €
T118.3	250 g	new size	glass	53,65 €



Methyl violet 2B (C.I. 42535)

for microscopy

Basic Violet
$C_{24}H_{28}N_3Cl$
M 393,96 g/mol

Warning H302-H400

Water-soluble dye (30 g/l), closely related to crystal violet, used e.g. for fibrin staining acc. to Weigert.

7715.1	5 g		glass	13,15 €
7715.2	25 g		glass	22,50 €
7715.3	100 g		glass	44,00 €

Naphthol green B (C.I. 10020)

for microscopy

Acid Green 1
$(C_{10}H_5NNaO_5S)_3Fe$
M 878,47 g/mol
Acid nitroso dye, soluble in water (1 %).

5161.1	25 g		glass	15,60 €
5161.2	100 g		glass	34,30 €

Neutral red (C.I. 50040)

p.a.

Indicator pH 6,8-8,0
Toluylene red
$C_{15}H_{17}ClN_4$
M 288,78 g/mol
Water-soluble vital staining dye.

T122.2	1 g	new size	glass	19,90 €
T122.1	10 g		glass	50,45 €
T122.3	25 g	new size	glass	100,55 €

Nigrosin, water soluble (C.I. 50420)
for microscopy
Acid Black 2
Water-soluble dye (10 g/l), is used in bacteriology.

7718.1	25 g	glass	13,15 €
7718.2	100 g	glass	33,25 €

Nile blue A (C.I. 51180)
~80 %
Nile blue sulphate
$C_{40}H_{40}N_6O_6S$
M 732,84 g/mol
Water-soluble dye used for staining of lipoids and lipids.

4377.2	5 g	new size	16,05 €
4377.1	10 g	glass	26,80 €
4377.3	25 g	new size glass	42,90 €

Nuclear fast red (C.I. 60760)
for microscopy
$C_{14}H_8NNaO_7S$
M 357,28 g/mol
Nucleic acid dye, ingredient of the nuclear fast red aluminium sulphate solution.

7728.1	1 g	glass	22,05 €
7728.2	5 g	glass	66,55 €
7728.3	10 g	glass	110,65 €

Orange II sodium salt (C.I. 15510)
for microscopy
Indicator pH 7,4-8,6 and pH 10,2-11,8
Acid Orange 7
$C_{16}H_{11}N_2NaO_4S$
M 350,33 g/mol
Water-soluble dye, is used in cytology, e.g. as ingredient of Papanicolaou solution 2b.

7729.1	5 g	glass	13,15 €
7729.2	25 g	glass	22,50 €
7729.3	100 g	glass	54,75 €

Orange IV sodium salt (C.I. 13080)
for microscopy
Indicator pH 1,2-2,7
Tropaeolin OO
$C_{18}H_{14}N_3NaO_3S$
M 375,39 g/mol
Water-soluble dye.

7731.1	5 g	glass	13,15 €
7731.2	25 g	glass	22,50 €
7731.3	100 g	glass	54,75 €

Orange G (C.I. 16230)
for microscopy and electrophoresis
Acid Orange 10
$C_{16}H_{10}N_2Na_2O_7S_2$
M 452,37 g/mol
Azo dye, soluble in ethanol. Ingredient of Papanicolaou solutions used for staining of cytological material.

0318.1	10 g	glass	12,70 €
0318.2	25 g	glass	18,20 €
0318.3	100 g	new size glass	42,90 €

Orcein
for microscopy
Natural Red 28
Organic plant pigment, extracted from lichen. Soluble in alcohol (red) or diluted alkaline solutions (blue). Used for detection of elastic fibres.

0320.1	25 g	plastic	145,15 €

Ponceau S (C.I. 27195)
for histology and electrophoresis
For reversible protein staining on membranes and for microscopy.
Scarlet red
$C_{22}H_{12}N_4Na_4O_{13}S_4$
M 760,56 g/mol

⚠ **Warning** H315-H319-H335

5938.2	10 g	glass	23,55 €
5938.1	25 g	glass	47,85 €

Safranin O (C.I. 50240)
for microscopy
Safranin T
$C_{20}H_{19}ClN_4$
M 350,85 g/mol

⚠ **Warning** H315-H319

Basic azin dye, soluble in water and ethanol, well adapted to visualise chromosomes. Safranin is used for bacteria staining, e.g. during Gram-staining or spore staining acc. to Wirtz.

T129.1	10 g	glass	37,55 €

Silver nitrate

≥99 %, Ph.Eur., extra pure

$AgNO_3$

M 169,88 g/mol

Danger H272-H314-H400-H410

In histology silver nitrate is used for silver impregnation. It results a fine precipitation of silver visualising different structures in specimens, e.g. reticular fibres of connective tissue, fine neurocytes.

9370.4	10 g	plastic	25,70 €
9370.1	50 g	plastic	90,20 €
9370.2	250 g	plastic	370,90 €
9370.3	1 kg	plastic	1396,45 €
Original pack 6 x 1 kg			1326,63/1 kg

Sudan II (C.I. 12140)

for microscopy

Solvent Orange 7

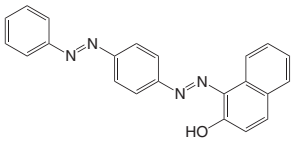
$C_{18}H_{16}N_2O$

M 276,34 g/mol

Warning H315-H319-H335

Orange, lipo-soluble azo dye, used for detection of lipids in tissue sections.

7732.1	5 g	glass	11,00 €
7732.2	25 g	glass	22,50 €
7732.3	100 g	glass	53,65 €



Sudan III (C.I. 26100)

for microscopy

Sudan Red B

$C_{22}H_{16}N_4O$

M 352,39 g/mol

Fat-soluble dye used for staining of lipoids and lipids.

4711.2	50 g	new size	glass	21,40 €
4711.1	100 g		plastic	40,75 €

Sudan black B (C.I. 26150)

for microscopy

Neptune black, Rich black

$C_{29}H_{24}N_6$

M 456,55 g/mol

Fat-soluble azo dye, used for detection of neutral triglycerides and lipids.

0292.1	10 g		glass	21,20 €
0292.2	25 g	new size	glass	30,00 €
0292.3	50 g	new size	glass	46,15 €

▶ For more details on specifications, see chapter Chemicals A-Z.

Sudan IV (C.I. 26105)

NEW

for microscopy

Scarlet red, Fatty ponceau

$C_{24}H_{20}N_4O$

M 380,45 g/mol

Warning H315-H319-H341

Fat-soluble azo dye, used for staining of neutral triglycerides and lipids.

0327.1	25 g	glass	21,20 €
0327.2	50 g	glass	30,00 €

Sudan orange G (C.I. 11920)

for microscopy

Solvent Orange 1

$C_{12}H_{10}N_2O_2$

M 214,22 g/mol

Lipo-soluble azo dye for staining of triglycerides in tissue sections.

7733.1	5 g	glass	11,00 €
7733.2	25 g	glass	22,50 €
7733.3	100 g	glass	53,65 €

Sulfobromophthalein disodium salt

≥95 %, for biochemistry

Organic dye for microscopy.

Bromosulfalein, Phenoltetrabromophthalein disulfonic acid disodium salt

$C_{20}H_8Br_4O_{10}S_2Na_2$

M 838 g/mol

Danger H334-H317

4033.1	1 g	glass	36,05 €
4033.2	5 g	glass	136,55 €

Tetrazolium blue chloride

≥95 %, for biochemistry

For vital staining of cells.

Blue tetrazolium chloride, BTC, 3,3'-Dianisole-4,4'-bis(3,5-diphenyltetrazolium chloride), 3,3'-(3,3'-Dimethoxy[1,1'biphenyl]-4,4'diyl)-bis(2,5-diphenyl-2H-tetrazolium) dichloride

$C_{40}H_{32}Cl_2N_8O_2$

M 727,64 g/mol

Danger H350

Application of tetrazolium blue chloride: histochemical detection of succinate dehydrogenase and NAD-linked enzymes, vital staining for detection of living cells through the reduction of tetrazolium to formazan, biochemical assays of glucose oxidase, analysis of various corticosteroids.

4176.1	1 g	glass	53,65 €
4176.2	5 g	glass	203,20 €

Tetrazolium violet

for microscopy

$C_{23}H_{17}ClN_4$

M 384,86 g/mol

Redox indicator for detection of living cells.

7736.1	1 g	glass	37,55 €
7736.2	5 g	glass	142,45 €
7736.3	10 g	glass	267,70 €

Thiazolyl blue

≥98 %, for biochemistry

3-(4,5-Dimethylthiazole-2-yl)-2,5-diphenyl-2H-tetrazolium bromide, MTT

$C_{18}H_{16}BrN_5S$

M 414,33 g/mol

MTT-reagent, used for detection of apoptosis.
Stock solution: 5 mg/ml in PBS buffer solution, sterile filtrated (pH <5)
Stability of stock solution: approx. 1 month at +4 °C, protected from light
Working concentration: 1 mg/ml

4022.1	1 g		glass	27,85 €
4022.3	5 g	new size	glass	117,20 €
4022.2	10 g		glass	188,15 €
4022.4	25 g	new size	glass	375,20 €

Thionine (chloride) (C.I. 52000)

for microscopy

$C_{12}H_{10}ClN_3S$

M 263,75 g/mol

Basic nuclear dye, used in Nissl-Staining for detection of neurocytes.

5042.1	10 g	plastic	102,70 €

Toluidine blue O (C.I. 52040)

for microscopy

Basic Blue 17

$C_{15}H_{16}Cl\ N_3S$

M 305,83 g/mol

Basic water-soluble nuclear dye, used in solutions of 0.03 % - 0.1 %. In histology e.g. used for staining of neurohistological specimens, in botany for detection of plant cells (solutions of 0.03 % - 0.1 %).

0300.1	5 g		glass	17,10 €
0300.2	10 g		glass	25,70 €
0300.3	25 g	new size	glass	48,30 €
0300.4	100 g	new size	glass	138,70 €

2,3,5-Triphenyltetrazolium chloride

≥98,5 %, p.a.

For microbiology and histochemistry.
For vital staining of cells.

Tetrazolium red, TTC, TTZ, TPTZ

$C_{19}H_{15}ClN_4$

M 334,79 g/mol

Storage temp.: +4 °C

Warning H315-H319-H335

Used in biochemistry to measure the activity of dehydrogenases and in vital staining to detect living cells through the reduction of tetrazolium to formazan via the dehydrogenases of the respiratory chain. Triphenyltetrazolium chloride can be used to measure the bacterial content of liquids in food analysis and/or to determine seed vitality. In microbiology it is used to distinguish between coliform and noncoliform bacteria, whereas in thin layer chromatography it is ideal as a spray reagent on reducing sugar, corticosteroids and other reducing agents.

KK13.1	10 g	glass	46,15 €
KK13.2	50 g	glass	190,85 €

Safety data sheets

can be found on the Internet next to the product description.

Trypan blue (C.I. 23850)

for microscopy and cell staining

For vital and histological staining.

Benzamine blue, Tolidin-diazo-bis-8-amino-1-naphthol-3,6-disulphonic acid tetrasodium salt

$C_{34}H_{24}N_6Na_4O_{14}S_4$

M 960,82 g/mol

Danger H350

Trypan blue is a protein staining azo dye used for vital staining (vitality test of cells), based on its selective ability to pass membranes of damaged cells. Used for polychromatic staining, e.g. to visualise collagen fibres in connective tissue.

Application:
Stock solution: 0.5 % in PBS or in NaCl solution (0.9 %).
Stabile for several months when sterile filtrated and stored at room temp.
Working concentration: 0.1-0.2 % in PBS

Note:
Always keep bottles tightly closed.

CN76.1	10 g	glass	21,40 €
CN76.2	25 g	glass	38,60 €
CN76.3	50 g	glass	69,80 €

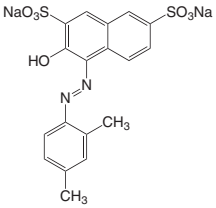
Wright's stain

for microscopy

Eosin methylene blue

Eosin methylene blue mixture (Romanowsky dye) for staining blood smears, bone marrow smears et al. acc. to Wright.

7744.1	5 g	glass	13,15 €
7744.2	25 g	glass	22,50 €
7744.3	100 g	glass	55,80 €



Xylidine Ponceau 2R (C.I. 16150)

for microscopy

Xylidine red, Ponceau de Xylidine

$C_{18}H_{14}N_2Na_2O_7S_2$

M 480,40 g/mol

Warning H351

Water-soluble dye, used e.g. for Masson-Goldner trichrome staining (ingredient of Goldner's stain I).

7747.1	5 g	glass	13,40 €
7747.2	25 g	glass	22,40 €
7747.3	100 g	glass	56,10 €

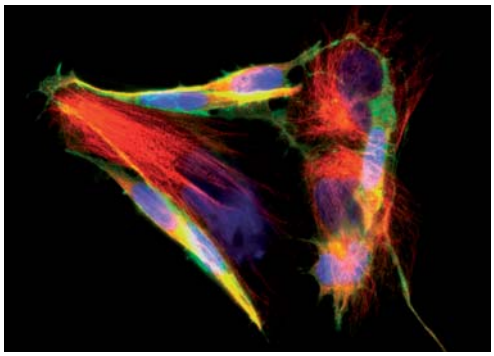
Spore staining acc. to Rakette

Boil the heat fixed smear with malachite green, Art. No. 5895, (5 % solution in water) for 20 sec and allow to act for at least 30 sec. Rinse in running tap water, counterstain with Eosin Y, Art. No. 7089, (2.5 % solution in water) for 1 min, rinse again and dry.

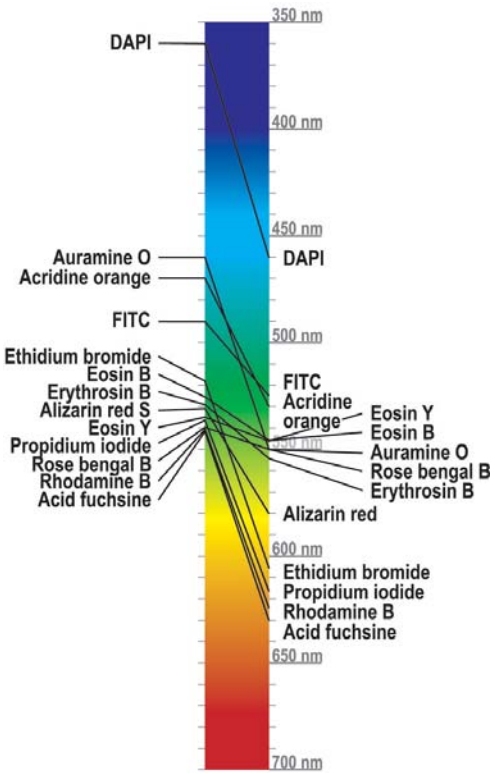
Result: Spores green, other bacteria parts red.

Acc. to Dieter Gerlach: Bot. Mikrotechnik, 2. Auflage, Thieme (1977)

Fluorescent Dyes

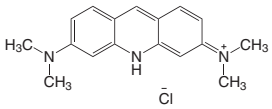


With kind permission of M. Köster, H. Kleinholz, G. E. Pollenberg, University of Heidelberg.



Fluorescent dyes are suitable for various applications in microscopy, e.g. in order to tag antibodies used in immunohistochemical assays or for counter-staining of nuclei.

Fluorescent dyes are sensitive to light, therefore they are to be **stored in the dark**.



$ZnCl_2$

Acridine orange (C.I. 46005)

for microscopy

Fluorescence indicator

Acridine orange zinc chloride double salt, Basic Orange 14

$C_{17}H_{20}Cl_3N_3Zn$ • M 438,09 g/mol

Warning H341

Fluorescent dye with DNA intercalating properties. Application range: Differentiation of dsDNA (green fluorescence) and ssDNA/RNA (red fluorescence), vitality test for determination of living cells. Soluble in water and ethanol.

Excitation maximum: 470 nm
Emission maximum: 526 nm (green)
Emission maximum: 650 nm (red)

0249.1	10 g	glass	20,65 €
0249.2	25 g	glass	38,60 €

Alizarin red S (C.I. 58005)

Indicator pH 4,3-6,3 and pH 9,4-12,0

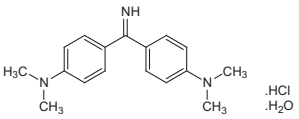
Alizarin sulphonic acid sodium salt, Alizarin carmine

$C_{14}H_7NaO_7S$ • M 342,26 g/mol

Dye for vital staining, e.g. staining of mineralized sites in bone tissue. Soluble in water and ethanol (0.1-1.0 %).

Excitation maximum: 530-560 nm
Emission maximum: 580 nm

0348.1	10 g	glass	17,75 €
0348.2	25 g	glass	27,85 €
0348.3	100 g new size	glass	84,85 €



Auramine O (C.I. 41000)

for microscopy

4,4'-Bis-(dimethylamino)-benzophenonimide-hydrochloride, Basic Yellow 2

$C_{17}H_{22}ClN_3$ • M 303,84 g/mol

Warning H351-H302-H319-H411

Used for detection of acid-fast bacteria (e.g. Mycobacteria) in histological sections, 1 % in ethanol 95 %.
Excitation maximum: 460 nm
Emission maximum: 550 nm

0319.1	25 g	glass	14,95 €
0319.2	50 g	glass	24,40 €

Rose Bengale B (C.I. 45440)

for microscopy

4,5,6,7-Tetrachloro-2',4',5',7'-tetraiodofluorescein-dipotassium salt

$C_{20}H_2Cl_4I_4Na_2O_5$ • M 1017,65 g/mol

Water-soluble fluorescent dye, e.g. for use in bacteriological assays.
Excitation maximum: 540 nm
Emission maximum: 550-600 nm

3162.1	50 g	plastic	85,90 €

DAPI

≥98 %, p.a.

For DNA-staining.

4',6-Diamidino-2-phenylindole dihydrochloride

$C_{16}H_{17}Cl_2N_5$ • M 350,3 g/mol

Storage temp. -20 °C • Transport temp.: room temp.

Fluorescent dye with specific DNA-binding capacity. For detection of mycoplasms in cell culture, for quantitative DNA measurement, and for chromosome counter staining. Store in the dark! Stabile for one year when solubilised, stored at -20 °C, and protected from light
Stock solution: 1 to 10 mg/ml in sterile water
Working concentration:
Nucleus staining in living cells: approx. 1 µg/ml in medium
Nucleus staining in fixed cells or fixed tissue sections: approx. 0.2 µg/ml in PBS, TBS or another incubation buffer
Detection of mycoplasms: 1 µg/ml in methanol
Excitation maximum: 359 nm
Emission maximum: 461 nm

6335.1	25 mg	glass	83,35 €
6335.2	100 mg	glass	231,15 €

Eosin B (C.I. 45400)

for microscopy

Eosin scarlet, Eosin bluish, 4',5'-Dibromo-2',7'-dinitrofluoroesceine disodium salt.

$C_{20}H_6Br_2N_2Na_2O_9$ • M 624,09 g/mol

Like eosin Y used as a plasma stain, e.g. for hematoxylin-eosin (H&E) staining. Soluble in water and ethanol, usual concentration 0.5 - 2.0 %.

Excitation maximum: 525 nm
Emission maximum: 545 nm

0306.1	10 g	glass	15,80 €
0306.2	25 g	glass	25,30 €
0306.3	50 g	glass	39,70 €

▶ Accessories for Embedding see chapter Labware - Labware & Aids.

Eosin Y (C.I. 45380)

for microscopy

Eosin yellowish

$C_{20}H_6Br_4Na_2O_5$ • M 691,86 g/mol

Warning H319

Eosin Y is a slightly acid fluorescent dye, which stains cytoplasm red. It is soluble in alcohol and water (usual concentrations: 0.5 - 2.0 %). Manifold use, e.g. for hematoxylin-eosin (H&E) staining, spore staining etc.

Excitation maximum: 534 nm
Emission maximum: 544 nm

7089.1	50 g	glass	30,00 €
7089.2	100 g	glass	51,50 €
7089.3	500 g	glass	162,90 €
Original pack 6 x 500 g			154,76/500 g

Spore staining acc. to Rakette

Boil the heat fixed smear with malachite green, Art. No. 5895, (5 % solution in water) for 20 sec and allow to act for at least 30 sec. Rinse in running tap water, counterstain with Eosin Y, Art. No. 7089, (2.5 % solution in water) for 1 min, rinse again and dry.

Result: Spores green, other bacteria parts red.

Acc. to Dieter Gerlach: Bot. Mikrotechnik, 2. Auflage, Thieme (1977)

Erythrosine B (C.I. 45430)

for microscopy

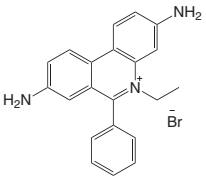
Tetraiodine fluorescein disodium salt, Iodine eosin, Erythrosine bluish, Acid Red 51

$C_{20}H_6I_4Na_2O_5$ • M 879,84 g/mol

Warning H302

Water-soluble plasma stain (0.5-2.0 %), used like eosin Y, e.g. for hematoxylin-eosin (H&E) staining.
Excitation maximum: 529 nm
Emission maximum: 554 nm

0331.1	25 g	plastic	41,85 €



Ethidium bromide

≥98 %

For DNA-staining.

Homidium bromide, 3,8-Diamino-5-ethyl-6-phenylphenanthridinium bromide

$C_{21}H_{20}BrN_3$ • M 394,33 g/mol

Storage temp. +20 °C

Danger H330-H341-H302

Fluorescent dye with specific DNA binding capacity. Intercalates between base pair stacks of dsDNA, causing weaker staining of ssDNA or RNA. For staining of DNA/RNA in gels and for counterstaining of nuclei in histological and cytological analyses. Store in the dark!
Excitation maximum: 518 nm
Emission maximum: 605 nm

7870.1	1 g	glass	21,40 €
7870.2	5 g	glass	83,75 €

ready-to-use

Ethidium bromide solution 0,5 % in dropper bottle

aqueous solution (5 mg/ml)

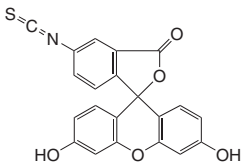
For counterstaining of nuclei in histology and cytology.
For staining of DNA/RNA after electrophoresis.

Warning H332

In spite of newly developed fluorescent staining reagents ethidium bromide remains the standard staining technic for nucleic acid in electrophoresis. Ethidium bromide is a carcinogenic substance which shouldn't come in contact with skin. In order to minimise this danger we offer ready-to-use ethidium bromide solution in dropper bottles for easy handling and maximum safety.

Application:
In order to prepare a staining solution add 5 drops of ethidium bromide solution to 500 ml water, buffer, or electrophoresis running buffer, respectively.
Nuclei / nucleic acids are stained red.
Excitation maxima (unbound): 210 nm, 285 nm, 470 nm
Excitation maxima (bound to DNA): 330 nm, 500 nm
Excitation possible via DNA at 254 nm
Emission maximum: 605 nm.
Please store in the dark!

HP46.1	15 ml	plastic	27,85 €
HP46.2	5 x 15 ml5x15 ml	plastic	99,45 €



Fluorescein isothiocyanate Isomer I

≥90 %, p.a.

For the study of antigen and antibody reactions.
FITC
$C_{21}H_{11}NO_5S$ • M 389,39 g/mol
Storage temp. -20 °C • Transport temp.: room temp.

Danger H334-H317

Used for labeling of different biomolecules in immunohistology and immunocytology.
Excitation maximum: 490 nm
Emission maximum: 525 nm

3745.2	100 mg	glass	31,75 €
3745.1	250 mg	glass	60,10 €

Propidiumiodide

≥95 %, p.a.

For fluorescence staining of DNA.
3,8-Diamino-5-(3-diethylaminopropyl)-6-phenyl-phenanthridinium iodide methiodide
$C_{27}H_{34}I_2N_4$ • M 668,4 g/mol • Storage temp. +4 °C

Warning H315-H319-H335-H341

Fluorescent dye with specific DNA-binding capacity. Like ethidium bromide it intercalates between base pair stacks of DNA.
Used for detection of mycoplasms in cell cultures, for quantitative DNA measurement and for chromosome counter staining. In Annexin staining it is used for counter staining of the nuclei (detection of apoptotic cells).
Application:
Living cells: approx. 1-5 mg/ml in medium
Fixed cells: approx. 1-50 µg/ml in PBS
Excitation maximum: 535 nm
Emission maximum: 617 nm
Note:
Store solution and powder at +4 °C protected from light
(stabile for approx. 6 months)

CN74.1	25 mg	glass	61,85 €
CN74.2	50 mg	glass	107,40 €
CN74.3	100 mg	glass	192,45 €

Rhodamine B (C.I. 45170)

for microscopy

Oil-soluble red A, Safraniline, Rosaceine
$C_{28}H_{31}ClN_2O_3$ • M 479,02 g/mol

Danger H318-H412

Water-soluble fluorescent dye for detection of acid-fast bacteria (e.g. Mycobacteria) in histological sections, usually in combination with auramine O.
Excitation maximum: 540 nm
Emission maximum: 625 nm

T130.1	25 g	glass	30,00 €

Acid fuchsine (C.I. 42685)

for microscopy

Fuchsine acidic
$C_{20}H_{17}N_3Na_2O_9S_3$ • M 585,54 g/mol
Used as plasma stain in 0.5-1.0 % watery solution.
Excitation maximum: 540 nm
Emission maximum: 630 nm

T128.1	10 g	glass	53,65 €

Fat-soluble Dyes

Product	Solution	Staining	Art. No.	Pack Qty.	€
Nile blue A (C.I. 51180)	saturated aqueous solution	neutral lipids pink, acid lipids blue	**4377.2**	5 g	16,05
			4377.1	10 g	26,80
			4377.3	25 g	42,90
Sudan III (C.I. 26100)	ethanolic solution 0,2-1,0 %	neutral triglycerides red	**4711.2**	50 g	21,40
			4711.1	100 g	40,75
Sudan black B (C.I. 26150)	ethanolic solution 1%	neutral triglycerides dark brown	**0292.1**	10 g	21,20
			0292.2	25 g	30,00
			0292.3	50 g	46,15
Sudan IV (C.I. 26105)	saturated ethanolic solution	neutral triglycerides red	**0327.1**	25 g	21,20
			0327.2	50 g	30,00

For additional product data and safety information, see chapter Chemicals A-Z.

Dyes for Vital Staining

Usual stock solution: 1 % dye in distilled water.
Dilute solution as required prior to use.

Product	Application	Staining	Art. No.	Pack Qty.	€
Acridine orange (C.I. 46005)	vitality test	living cells green fluorescence	**0249.1**	10 g	20,65
			0249.2	25 g	38,60
Alizarin red S (C.I. 58005)	detection of mineralized sites in bone tissue	red fluorescence	**0348.1**	10 g	17,75
			0348.2	25 g	27,85
			0348.3	100 g	84,85
Bismarck brown R (C.I. 21010)	vitality test	living cells brownish	**0316.1**	25 g	60,75
Brilliant cresyl blue (C.I. 51010)	supravital staining	reticulocystes dark blue	**5162.1**	5 g	21,40
			5162.2	10 g	31,10
Bromophenol blue	vitality test of spermatozoa	dead cells blue	**T116.1**	5 g	20,35
			T116.2	10 g	26,80
			T116.3	25 g	42,90
Eosin Y (C.I. 45380)	vitality test of spermatozoa	dead cells red	**7089.1**	50 g	30,00
			7089.2	100 g	51,50
			7089.3	500 g	162,90
Erythrosine B (C.I. 45430)	vitality test	dead cells red	**0331.1**	25 g	41,85
Ethidium bromide	vitality test	dead cells red fluorescence	**7870.1**	1 g	21,40
			7870.2	5 g	83,75
Evan's blue (C.I. 23860)	intravital staining	dead cells blue	**7684.1**	5 g	24,65
			7684.2	25 g	51,10
			7684.3	100 g	166,65
Janus green B (C.I. 11050)	supravital staining	mitochondria in living cells blue	**7697.1**	5 g	22,50
			7697.2	25 g	55,80
			7697.3	100 g	170,95
Methylene blue (C.I. 52015)	vitality test	dead cells blue	**A514.1**	10 g	18,20
			A514.2	50 g	42,90
			A514.3	100 g	69,80
Neutral red (C.I. 50040)	vitality test	dead cells red	**T122.2**	1 g	19,90
			T122.1	10 g	50,45
			T122.3	25 g	100,55
Nile blue A (C.I. 51180)	vitality test	neutral lipids pink acid lipids blue	**4377.2**	5 g	16,05
			4377.1	10 g	26,80
			4377.3	25 g	42,90
Propidiumiodide	vitality test	dead cells red fluorescence	**CN74.1**	25 mg	61,85
			CN74.2	50 mg	107,40
			CN74.3	100 mg	192,45
Tetrazolium blue chloride	vitality test	living cells red	**4176.1**	1 g	53,65
			4176.2	5 g	203,20
Thiazolyl blue	vitality test	living cells blue-violet	**4022.1**	1 g	27,85
			4022.3	5 g	117,20
			4022.2	10 g	188,15
			4022.4	25 g	375,20
Toluidine blue O (C.I. 52040)	intravital staining	abnormal cells blue	**0300.1**	5 g	17,10
			0300.2	10 g	25,70
			0300.3	25 g	48,30
			0300.4	100 g	138,70
2,3,5-Triphenyl-tetrazolium chloride	vitality test	living cells red	**KK13.1**	10 g	46,15
			KK13.2	50 g	190,85
Trypan blue (C.I. 23850)	vitality test	dead cells blue	**CN76.1**	10 g	21,40
			CN76.2	25 g	38,60
			CN76.3	50 g	69,80

For additional product data and safety information, see chapter Chemicals A-Z.

Substrates

Carl Roth offers you a wide range of substrates for biochemistry, cellular biology and microbiology. The key substrates for Western Blot and ELISA are summarised here.

For detailed information regarding usage, chemical details, safety instructions and further package sizes for these and many other substrates, refer to **"Substrates & Inducers"** earlier in this chapter on biochemistry or to Chemicals A-Z.

For Alkaline Phosphatase (AP)

Substrate	Application	Detection	Art. No.	Pack Qty.	€
BCIP-Natrium salt	western, *in situ*, histochemistry	colour (brown-violet)	**A155.1**	100 mg	25,70
			A155.2	500 mg	107,40
			A155.3	1 g	188,15
			A155.4	5 g	633,20
BCIP-Toluidin salt*	western, *in situ*, histochemistry	colour (brown)	**6368.1**	500 mg	33,25
			6368.2	1 g	63,45
			6368.3	5 g	241,90
NBT*	western, *in situ*, histochemistry	colour (brown-violet)	**4421.1**	100 mg	15,95
			4421.2	500 mg	40,75
			4421.3	1 g	77,30
			4421.4	5 g	274,15
pNPP	ELISA	colour (yellow)	**4165.1**	2,5 g	14,55
Rose-phos-Toluidin salt	western, *in situ*, histochemistry	colour (pink)	**4247.1**	50 mg	43,55
			4247.2	100 mg	79,05

For additional product data and safety information, see chapter Chemicals A-Z.

For Horse Raddish Peroxidase (HRP)

Substrate	Application	Detection	Art. No.	Pack Qty.	€
Chlornaphtol	western	colour (blue)	**4104.1**	5 g	26,35
			4104.2	10 g	43,55
			4104.3	25 g	84,85
DAB	western, *in situ*, histochemistry	colour (brown)	**CN75.1**	1 g	21,40
			CN75.2	5 g	67,65
			CN75.3	10 g	115,60
Roti®-Lumin ultra	western	chemolumine-scence	**3734.1**	1 mini kit (spray)	213,95
			3734.2	1 kit (spray)	869,70
Roti®-Lumin plus	western	chemolumine-scence	**3692.1**	1 mini kit (spray)	121,40
			3692.2	1 kit (spray)	251,55
			3692.3	1 refill kit (bottles)	407,45
Roti®-Lumin	western	chemolumine-scence	**P078.2**	1 mini kit	53,65
			P078.1	1 kit	198,80
TMB	ELISA	colour (blue)	**6350.1**	1 g	48,30
			6350.2	5 g	149,45
			6350.3	25 g	697,70
TMB dihy-drochloride	ELISA	colour (blue)	**4107.1**	500 mg	35,40
			4107.2	1 g	57,55

For additional product data and safety information, see chapter Chemicals A-Z.

Please note our **Technical Information Brochure** on the Internet next to the products:

Immunostaining by HRP and AP
Protocols

Hydrophobic Mounting Media

ready-to-use

The classical mounting media for producing durable sections in microscopy. ROTH offers **synthetic mounting media** like the proved Roti®-Histokitt and **natural balsams** like the classic Canada balsam.

Roti®-Histokitt

mounting medium, for histology
Compatible with Roti®-Histol (Art. No. 6640).

Danger H225-H304-H361d-H373-H315-H336

Synthetic, quick-drying mountant for producing durable sections.
- Results in permanent specimens with neutral pH
- Protects against bleaching
- Not suitable for aqueous samples!

Type analysis:

Appearance. ..... clear, viscous liquid
Identity. ..... complies
Refractive index n_D^{20}. 1,4930-1,4960

6638.1	100 ml	glass	12,05 €
6638.2	500 ml	glass	33,90 €

Roti®-Histokitt II

mounting medium, for histology
Compatible with xylene (e.g. Art. No. 9713).

Warning H226-H315-H312+H332

Synthetic, xylene-soluble mountant for producing durable sections.
- Results in permanent specimens with neutral pH
- Protects against bleaching
- Not suitable for aqueous samples!
- Adapted for embedding machines!
- Typical refractive index: 1.4930-1.4960

Type analysis:

Appearance. ..... clear, viscous liquid
Density (d 20 °C/4 °C). 0,95
Viscosity (20 °C). ..... 250-450 mPa s

T160.1	100 ml	glass	12,05 €
T160.2	500 ml	glass	33,25 €

Safety data sheets
can be found on the Internet next to the product description.

Roti®-Mount

Mountant for microscopy, free from xylene and toluene.
Compatible with Roticlear® (Art. No. A538) and n-Butyl acetate (Art. No. P036).

Danger H225

Synthetic mountant for producing durable specimens in histology and cytology, free from xylene and toluene. Not suitable for aqueous samples!
Storage:
For long-term storage we recommend a storage temperature of 4 °C in the dark. For use the product should have room temperature to ensure an ideal consistence.

Type analysis:

Appearance. ..... colourless to light yellowish, viscous liquid
Viscosity (20 °C). ..... 1000-1200 mPas
Refractive index (20 °C). 1,43-1,46
Density (20 °C). 0,850-900

HP68.1	100 ml	glass	19,25 €
HP68.2	500 ml	glass	57,55 €

Canada balsam

natural, for microscopy
Balsamum Canadense

Warning H226

Type analysis:

Appearance. ..... yellowish translucent, highly viscous
Odour. ..... characteristic (like conifers)
Density (20 °C). 0,980-0,998
Refractive index n_D^{20}. 1,520-1,530
Flash point. ..... 43 °C
Solubility in:
Ether. 1:1
Toluene. 1:1
Chloroform. 1:1

8016.1	25 ml	glass	18,20 €
8016.2	100 ml	glass	44,00 €

▶ Immersion oil & Oil of cedar wood
see page 1412

Mounting with Euparal

ready-to-use

Euparal

for microscopy

Mounting agent

Warning H226-H315-H319-H335

Euparal is an alternative to Canada balsam for mounting microscopic specimens and is used in the same way. Unlike Canada balsam, which is very sensitive to water and can only be used after specimens have been dehydrated with high-percentage alcohol and xylene, mounting in Euparal with 80 % alcohol is possible without any cloudiness occuring. Euparal solidifies slower than balsam.

Refractive index for liquid Euparal: 1.483
Refractive index for completely solidified Euparal: 1.535

The duration of the solidifying process depends on the mounted object and temperature. Euparal solidifies faster when warm.

Euparal-essence (Art. No. A145) serves as a diluent and solvent for euparal. Euparal and Euparal essence are not compatible with organic solvents.

As it is a natural resin and there is no polymerisation, permanent Euparal preparations can be dissolved later under gentle heating with Euparal essence.
Euparal contains Sandarac resin, camphor and salol. Paraldehyde and eucalyptol serve as a solvent.

Type analysis:

Appearance. ..... yellowish solution
Solubility (EtOH). ..... soluble
Refractive index (20 °C) 1,480-1,510

7356.1	100 g	glass	46,15 €
7356.2	5 x 100 g	glass	189,10 €

Euparal essence

for microscopy

Diluent and solvent for Euparal (Art. No. 7356).

Warning H226-H315-H319-H335

Type analysis:

Appearance. ..... yellowish solution
Refractive index (20 °C) 1,450-1,500

A145.1	100 ml	glass	40,35 €

Hydrophilic Mounting Media

ready-to-use

These mounting media allow embedding without previous dehydration. Thus shrinking of specimens caused by organic solvents can be avoided. Additionally the hydrophilic milieu prevents washing out of cell ingredients like lipids, an important requirement for use in histochemistry.

Roti®-Mount Aqua

for microscopy

Aqueous mounting medium

Storage temp.: +4 °C

Roti®-Mount Aqua is an aqueous solution of polyacrylate resin used for mounting of paraffin sections and cryostat sections directly after staining. The solution is ready to use. Colours and tissue structures are preserved in an optimal way. For long-term preserving of fluorescent dyes we recommend Roti®-Mount FluorCare (Art. No. HP19).
Application:
Residues of staining solution are removed by rinsing with buffer or destilled water. Afterwards the specimens are mounted with Roti®-Mount Aqua.
Storage:
Store at +4 °C in the dark, shelf life minimum 2 years.

Type analysis:

Appearance. ..... colourless, viscous liquid
Viscosity (20 °C). ..... 170-220 mPas
Refractive index (20 °C) 1,440-1,465
Density (20 °C). 1,05-1,18

2848.1	15 ml	dropp. bottle	20,10 €
2848.2	50 ml	glass	37,55 €

Roti®-Mount FluorCare

for fluorescence microscopy

Aqueous mounting medium with antifading effect.

Storage temp.: +4 °C

Roti®-Mount FluorCare has been developed especially for fluorescene microscopy and is compatible with all current fluorescent dyes. It is an aqueous mountant with an additional antifading reagent which reduces photobleaching drastically. Fluorescence will remain for many weeks.
In contrast to other mounting media Roti®-Mount FluorCare does not show autofluorescence at any common wavelength.
Roti®-Mount FluorCare is also available with the dyes DAPI (HP20.1) and propidiumiodide (HP21.1) for simultaneous counter staining of nuclei.
Storage:
The solution should be stored at +4 °C in the dark.
Shelf life: minimum 1 year.

Type analysis:

Appearance. ..... clear, viscous liquid
Viscosity (20 °C). ..... 170-220 mPas
Refractive index (20 °C) 1,44-1,465
Density (20 °C). 1,05-1,18

HP19.1	15 ml	dropp. bottle	51,10 €

Roti®-Mount FluorCare DAPI

for fluorescence microscopy

Aqueous mounting medium with antifading effect.
Contains DAPI for counterstaining.

Storage temp.: +4 °C

Roti®-Mount FluorCare DAPI is an aqueous mounting medium with antifading effect. Additional it contains ready-to-use DAPI allowing counterstaining of nuclei and mounting at the same time. DAPI has an excitation maximum at 359 nm and an emission maximum at 461 nm.
Roti®-Mount FluorCare is also available with the dye propidiumiodide (HP21.1) and without dye (HP19.1).

Storage:
The solution should be stored at +4 °C in the dark.
Shelf life: minimum 1 year.

Type analysis:

Appearance. ..... clear, viscous liquid
Viscosity (20 °C). ..... 170-220 mPas
Refractive index (20 °C). 1,44-1,465
Density (20 °C). 1,05-1,18

HP20.1	15 ml	dropp. bottle	62,90 €

Roti®-Mount FluorCare PI

for fluorescence microscopy

Aqueous mounting medium with antifading effect.
Contains propidiumiodide (PI) for counterstaining.

Storage temp.: +4 °C

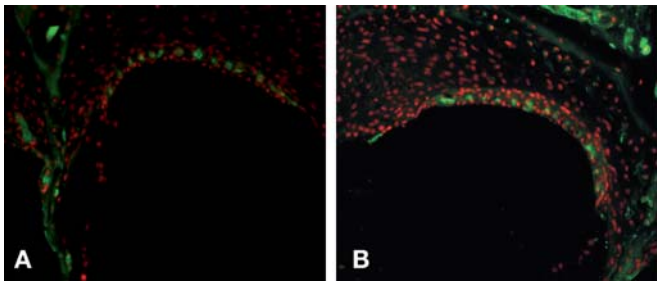
Roti®-Mount FluorCare PI is an aqueous mounting medium with antifading effect. Additional it contains ready-to-use propidiumiodide allowing counterstaining of nuclei and mounting at the same time. Propidiumiodide has an emission maximum of 535 nm and an emission maximum of 617 nm.
Roti®-Mount FluorCare is also available with the dye DAPI (HP20.1) and without dye (HP19.1).

Storage:
The solution should be stored at +4 °C in the dark. Shelf life: minimum 1 year.

Type analysis:

Appearance. ..... viscous, slightly reddish liquid
Viscosity (20 °C). ..... 170-220 mPas
Refractive index (20 °C). 1,44-1,465
Density (20 °C). 1,05-1,18

HP21.1	15 ml	dropp. bottle	62,90 €



Example of Use

Figure:
Immunostaining of DNA adducts (red) and CNPase (green) in cryosections of the inner ear (stria vascularis) from mice
a) mounted in glycerol
b) mounted in Roti®-Mount FluorCare

With kind assistance of laboratory Dr. J. Thomale, DNA-Repair Group, Institute of Cell Biology, West German Cancer Centre Essen

Mowiol®4-88

granulated

Aqueous mounting medium in histology.
Polyvinyl alcohol
$(-CH_2CHOH-)_n$
M ~31,000 g/mol

For durable preparations.
Mowiol 4-88 is used as hydrophilic mounting medium, particularly for immune histochemical applications. Usually it is applied in combination with the antibleaching reagent DABCO (1.4-Diazabicyclo-(2.2.2)octan), Art. No. 0718, which conserves the colours and the fluorescence of durable samples.

Type analysis:

Appearance. ..... colourless to light yellow granules
Viscosity (4 %, H_2O, 20 °C). ..... 3,0-5,0 mPas
Degree of hydrolysis, Mol.- %. 86,7-88,7
Ester value (mg KOH/g). 130-150
Residual acetate. ..... 10,0-11,6 %
Ash content (as Na_2O). ..... ≤0,5 %

0713.1	50 g	plastic	11,00 €
0713.2	100 g	plastic	15,60 €

DABCO®

≥99 %

Anti-bleaching reagent in histology.
Triethylendiamine, 1,4-Diazabicyclo[2.2.2]octane
$C_6H_{12}N_2$
M 112,18 g/mol

Danger H228-H302-H315-H318-H335

DABCO is an anti-bleaching reagent. It is combined with hydrophilic mounting media as Mowiol 4-88, Art. No. 0713, or glycerol in order to conserve the colours and the fluorescence of durable samples.

Type analysis:

Appearance. ..... white to off-white crystals
Assay. ..... ≥99,0 %
Water. ..... ≤0,5 %

0718.1	25 g	glass	18,50 €
0718.2	50 g	glass	33,00 €

Alginic acid sodium salt

for biochemistry

From brown algae.
Sodium alginate

9180.1	250 g	plastic	26,35 €
9180.2	1 kg	plastic	71,95 €
Original pack 6 x 1 kg			68,35/1 kg

Instructions for use
can be found on the Internet next to the product description.

Kaiser's glycerol gelatine phenol-free

for microscopy

Aqueous mounting medium

- Non-hazardous ingredients
- Neutral pH (6-7)
- Convenient also for sensitive stainings

It is an aqueous mounting medium which is solid at room temperature. Composition and application are according to the classical Kaiser's glycerol gelatine; however, it does not contain phenol. The added preserving agent is classified as non-hazardous. The pH value of the product is 6-7. Therefore, it is suitable also for stainings which are sensitive against acids (e.g. hematoxylin). Prior to use the glycerol gelatine is melted on a water bath (max. 50-55 °C) and then dropped onto the slide by using a pipette or a glass rod.

Type analysis:

Appearance. ..... light yellowish coloured, solid medium
Glycerol. ..... ~40 %
Gelatine. ..... 7-12 %
Refractive index (20 °C) 1,44-1,47
Density (20 °C). 1,02

6474.1	50 ml	glass	16,05 €

Glycerol-gelatine (acc. to Kaiser)

Preparation:

Dissolve 10 g gelatine gold in 60 ml water and add 70 ml glycerol.

Add 0.1 g phenol to 100 g mixture, heat 10-25 minutes in the water bath while stirring until purification, then filter hot over glass wool or paper.

Avoid heating much beyond 60 °C, because overheated gelatine loses its ability to solidify.

Glycerols - Summary

Product	Purity	Art. No.	Pack Qty.	€
Glycerol	≥99,5 %, p.a., anhydrous	**3783.1**	1 l	48,95
		3783.3	1 l	52,90
		3783.2	2,5 l	87,65
		3783.4	2,5 l	95,60
		3783.5	5 l	134,95
		3783.6	10 l	209,65
Glycerol	≥98 %, Ph.Eur., anhydrous	**7530.1**	1 l	34,30
		7530.4	2,5 l	55,80
		7530.2	10 l	187,60
		7530.3	35 kg	364,45
Glycerol 86 %	≥86 %, p.a.	**4043.1**	1 l	44,00
		4043.3	2,5 l	65,50
		4043.2	5 l	120,95
Glycerol 86 %	~86 %, Ph.Eur., extra pure	**7533.1**	1 l	31,10
		7533.3	2,5 l	55,40
		7533.2	10 l	169,35

For additional product data and safety information, see chapter Chemicals A-Z.

Gelatine

gold, extra pure, 180 Bloom

Storage temp.: +20 °C

Type analysis:

Gel strength. ..... 180 Bloom
Particle size. ..... ≤30 mesh
Water . ..... <15 %
Ash. ..... <2 %
Peroxides (as H_2O_2). ..... <0,001 %
Sulphur dioxide (SO_2) ..... <0,005 %
Gelatine is produced from porcine skin.

4274.3	500 g	plastic	27,45 €
Original pack 6 x 500 g			26,08/500 g
4274.1	1 kg	plastic	39,70 €
Original pack 6 x 1 kg			37,72/1 kg
4274.2	5 kg	plastic	160,20 €

Our tip:

The Bloom grade declares the strength of the gelatine film. The higher the bloom grade the more rigid the gelatine film. Usually, a Bloom grade of 180 is sufficient for histological applications.

Gelatine

platinum, extra pure, 240 Bloom

Storage temp.: +20 °C

Type analysis:

Gel strength. ..... 240 Bloom
Particle size. ..... ≤30 mesh
Water . ..... <15 %
Ash. ..... <2 %
Peroxides (as H_2O_2). ..... <0,001 %
Sulphur dioxide (SO_2) ..... <0,005 %
Gelatine is produced from porcine skin.

4582.3	500 g	plastic	28,95 €
Original pack 6 x 500 g			27,50/500 g
4582.1	1 kg	plastic	46,15 €
Original pack 6 x 1 kg			43,84/1 kg
4582.2	5 kg	plastic	166,65 €

Phytohistol® plus

for microscopy

ready-to-use

Botanical mounting medium based on sugar

- New compound
- High stability
- No hazardous ingredients
- Neutral pH 6-7

Phytohistol® plus is an aqueous mounting medium based on sugar with the consistency of liquid honey. It is especially suitable for plant materials. After evaporation of the water a rubber-like film remains. For producing durable specimens we recommend to seal the edges of the cover slip with our Roti®-Seal cover slip sealant (Art. No. 6473).
Shelf life: The solution contains a preserving agent and is stable for minimum 4 years after manufacture.
Application: Drop on slide, add specimen. When free from air bubbles place cover slip.

Type analysis:

Appearance. ..... yellow to brownish, viscous liquid
Refractive index (20 °C) 1,51-1,53

6471.1	15 ml	dropp. bottle	19,60 €
6471.2	50 ml	plastic	51,10 €

Immersion Oils

ready-to-use

Immersion oil
for microscopy, fluorescence tested

H411

An immersion oil with low viscosity and low background fluorescence, especially suitable for fluorescence microscopy.

Guarantee analysis:

Refractive index (20 °C).....1,5150-1,5170
UV-transmission
450 nm.....≥90 %
400 nm.....≥78 %
380 nm.....≥65 %
Fluorescence (as quinine):
365 nm.....≤1,5 ppm

X899.4	15 ml	dropp. bottle	8,10 €
X899.1	50 ml	glass	13,65 €
X899.2	100 ml	glass	20,65 €
X899.3	500 ml	glass	70,85 €

Immersion oil
for microscopy

A viscous solution of natural oils based on oil of cedar wood.

Danger H304-H410

Type analysis:

Appearance. ..... clear, yellow-brownish, viscous oil
Refractive index (20 °C).....1,508-1,525

5789.1	50 ml	glass	9,90 €
5789.3	100 ml	glass	12,80 €
5789.2	500 ml	glass	33,25 €

Oil of cedar wood
for microscopy

Oleum Ligni cedri

Danger H304-H410

The classic medium for immersion microscopy

Type analysis:

Appearance. ..... yellow to brownish, translucent, viscous
Odour. .....characteristic
Refractive index n_D^{20}. 1,51-1,525

5308.1	100 ml		glass	14,55 €
5308.2	250 ml	new size	glass	21,40 €
5308.3	500 ml	new size	glass	37,55 €

Barrier Marker

ready-to-use

Roti®-Liquid Barrier Marker

For immunology, histology and molecular biology. Glass bottle with brush.

Danger H225-H304-H315-H336-H411

The solution is applied to slides or other glass surfaces. After drying, a resistant hydrophobic film remains providing a barrier to aqueous liquids. Circles drawn with Roti®-Liquid Barrier Marker prevent aqueous solutions from spreading by increasing the surface tension of the water. Therefore expensive antibody solutions for example, can be used more effectively. The barrier film can be wiped off the glass surface with a dry cloth or a cloth impregnated with xylene.
Areas of applications: Ideal for immunological, histological and molecularbiological assays.

Roti®-Liquid Barrier Marker, colourless

For use with solvents as ethanol or acetone.
Roti®-Liquid Barrier Marker, red (Art. No. AN92) for use without solvents. The red dye is not solvent resistent.

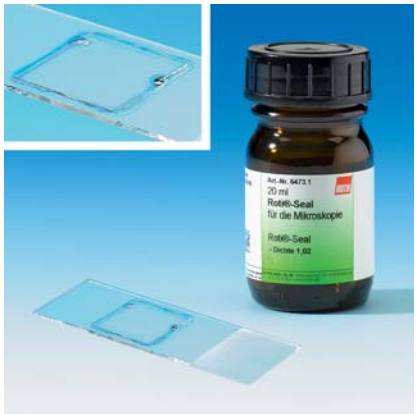
AN91.1	10 ml		glass	31,10 €
AN91.2	5 x 10 ml	new size	glass	121,40 €

Roti®-Liquid Barrier Marker, red

Roti®-Liquid Barrier Marker, colourless (Art. No. AN91) for use with solvents.

AN92.1	10 ml		glass	31,10 €
AN92.2	5 x 10 ml	new size	glass	121,40 €

Specimen Protection



Roti®-Seal

for microscopy

Aqueous cover slip sealant.

- Non-hazardous ingredients
- Solvent-free
- Solidification by light

Roti®-Seal is used to seal the edges of the coverslip. Therefore, it protects the mounted specimen reliably against damages caused by air humidity. Roti®-Seal is solid at room temperature. Prior to use it is melted on a water bath (max. 50-55 °C), then it is applied around the edges of the coverslip by using a pipette or a glass rod. Exposure to light (day-light is sufficient) allows the sealant to harden within a short time.
Melt on a water bath (50-55 °C) prior to use.

Type analysis:

Appearance. ..... light yellowish coloured, solid medium

6473.1	20 ml	glass	10,25 €

▶ More slides and slide magazines see chapter Labware - Labware & Aids.

Instructions for use
can be found on the Internet next to the product description.

Adhesion Slides

For sophisticated immunohistochemical assays.

121°C

Roti®-Bond Adhesion Slides

Fast and highly efficient immobilisation of cellular material with optimal structure conservation.

The new adhesive coating of the Roti®-Bond adhesion slides reacts to natural surface structures of cells and tissues, anchoring them securely to the glass surface. Due to this procedure, based on different binding principles, the cells do not lose their antigenicity, their cell functionality and their three-dimensional structure.

- **Assays using only several hundred cells possible**
- **No cell loss even during harsh incubation procedures**
- **Excellent recovery rate**
- **Compatible with all standard and modern assay systems and all fluorescent dyes**
- **Particularly adapted to assays using stem cells**

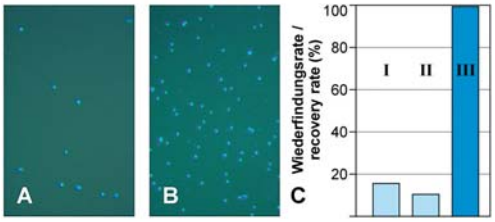


Figure:
Brand comparison of efficient cell immobilisation.
1800 murine myeloma cells in 30 µl PBS were applied to each slide.
Cells were counted after full immunohistochemical assay including alkali treatment (70 mM NaOH, 150 mM NaCl, 40 % ethanol, 5 min, RT) and DAPI-counterstaining of the remaining nuclei.
A: Other adhesion slide,
B: Roti®-Bond Adhesion Slide,
C: Recovery rate in percent (I and II: other adhesion slides, III: Roti®-Bond)

Application:
Immobilisation of cells or tissue sections occurs immediately after contact to the glass surface. Drying of the samples is therefore not necessary. The cellular material can then be fixed with all common fixatives. Cell cultivation can be continued in appropriate culture medium after cell adhesion, allowing *in-vivo* live assays, e.g. with a multiphoton or laserscan microscope.
At present, there is no evidence of any preferential cell type binding in heterogenous cellular material.
Dimensions: L 75 mm x W 25 mm, thickness 1 mm

Roti®-Bond adhesion slides 50 and 100 are delivered in Rotilabo®-slide boxes.

Art. No.	Pack Qty.	€
CL20.1	5	11,75
CL20.2	50	84,85
CL20.3	100	118,25