PanReac AppliChem
ITW Reagents

Your reliable partner for Life Science

Türkiye Distribütörü:

NOVAGENTEK

PanReac AppliChem
ITW Reagents

Amerikan ITW'nin (Illinois Tool Works) bir bölümü olan ITW Reagents, PanReac AppliChem markası altında laboratuvar ve endüstriyel kullanım için kimyasallar ve yaşam bilimleri ürünleri üretmektedir.

80 yılı aşkın deneyim ve olağanüstü bilgi birikimi ile ITW Reagents'ın Barselona (İspanya) ve Darmstadt'ta (Almanya) üretim tesisleri ve lojistik merkezleri bulunmaktadır.

Daha fazlası için: **www.itwreagents.com**

Novagentek A.Ş. olarak Türkiye Distribütörlüğünü yaptığımız PanReac AppliChem biyokimyasal ürünlerinde geniş stok ve hızlı teslimat garantisi ile hizmetinizdeyiz.

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PanReac AppliChem
ITW Reagents

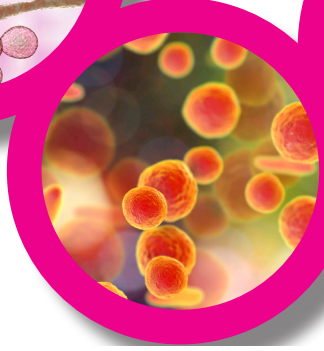
ExitusPlus™ – Etkili çözüm – etkili dekontaminasyon

Yaşam Bilimleri laboratuvarınızda DNA/RNA veya RNase kontaminasyonundan kurtularak (COVID-19/PCR) analiziniz için doğruluk ve güvenilirlik sağlayın.

- DNA, RNA ve RNazları uzaklaştırır
- Etkili dekontaminasyon sağlar
- Toksik değildir
- Aşındırıcı değildir
- Zararlı değildir
- Hızlı
- Kullanımı kolay
- Kullanıma hazır

Daha fazla bilgi için:

Laboratuvarınızı temiz tutun!
Hücre kültürü laboratuvarınız için dekontaminasyon ürünleri



- Bakteri kontaminasyonunu engelleyin
- Mikoplazma kontaminasyonunu engelleyin
- Mantar kontaminasyonunu engelleyin

Incubator-Clean™
Ürün Kodu A5230

Incuwater-Clean™
Ürün Kodu A5219

Aquabator-Clean™
Ürün Kodu A9390

Daha fazla ilgi için:

NOVAGENTEK

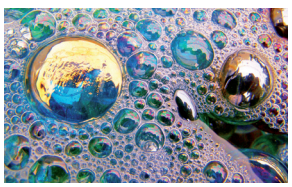
Yaşam Bilimleri ürünleri

Genel biyokimyasallar, biyolojik tamponlar ve deterjanlar

Genel biyokimyasallar
biyolojik araştırma, biyokimyasal iş akışı ve biyoanaliz için.

Daha fazla ilgi için:

Biyolojik tamponlar
Biyolojik araştırmalarda pH değerinin stabilizasyonu için.



Deterjanlar
biyokimyada, hücre biyolojisinde veya moleküler biyolojide yaygın olarak kullanılmaktadır.

En yüksek kalite gereksinimlerini karşılamak için tasarlandı

İlaç ve biyofarmasötik endüstrileri için yüksek kaliteli ürünler

Daha fazla ilgi için:

Üretim için yardımcı maddeler ve hammaddeler

Hücre kültürü ortamı üretimi için hammaddeler

Aşı formülasyonu için yardımcı maddeler

Düşük endotoksinli hammaddeleri

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High-quality products with excellent service

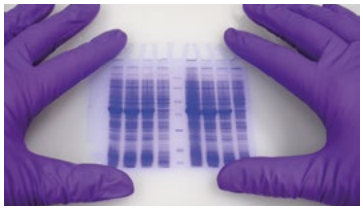
Laboratory Biochemicals

Our **Laboratory Biochemicals** can be used during your scientific research, quality control and a lot of other chemical or biochemical applications. An overview of our **biochemical product offering** is shown below.
For more detailed information visit our website **www.itwreagents.com**

General Biochemicals (GB)
- Buffers
- Chemicals for bioresearch
- Detergents

Nucleic Acid Biochemistry (NB)
- Analytics and assays
- Buffers
- Decontamination
- Enzymes

Protein Biochemistry (PB)
- Acrylamides and products for PAGE
- Assays, inhibitors and supplements
- Detergents for proteomics



Cell Biology (CB)
- Amino acids
- Antibiotics and antimycotics
- Dyes and analytics
- Media and supplements
- Mycoplasma and decontamination

Special Biochemicals (SB)
- Special biochemicals
- Vitamins
- Sugars

Find our interactive productsite on **www.itwreagents.com/rest-of-world/en/lab-biochemicals**

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Biological Buffers

Application

Many biochemical processes are markedly impaired by even small changes in the concentrations of free H^+ ions. It is therefore usually necessary to stabilise the H^+ concentration in vitro by adding a suitable buffer to the medium, without, however, affecting the functioning of the system under investigation.
A buffer keeps the pH value of a solution constant by taking up protons that are released during reactions, or by releasing protons when they are consumed by reactions.
This handout summarizes the most commonly used buffer substances and their respective physical and chemical properties.

Keywords

- Buffer characteristics
- Useful pH range
- Preparing buffer solutions
- Common buffer solutions

Practical tips – Preparing buffer solutions

Recommendations for the setting of the pH value of a buffer and storage conditions

Temperature

Depending on the buffer substance, its pH may vary with temperature. It is therefore advisable, as far as possible, to set the pH at the working temperature to be used for the investigation. For instance the physiological pH value for most mammalian cells at 37°C is between 7.0 and 7.5. The temperature dependence of a buffer system is expressed as *d(pKa)/dT*, which describes the change of the pK_a at an increase of temperature by 1°C.

Titration

1. Generally, the pH value is set using NaOH/KOH or HCl. Slow addition of a strong acid or base whilst stirring vigorously avoids local high concentrations of H^+ or OH^- ions. If this is not done, the buffer substances may undergo chemical changes that inactivate them or modify them so that they have an inhibitory action (Ellis & Morrison 1982).
2. Under stirring CO_2 dissolves in the solution. Stir solutions gently for precise measurements of the pH value.
3. If a buffer is available in the protonised form (acid) and the non-protonised form (base), the pH value can also be set by mixing the two substances.
4. Setting of the ionic strength of a buffer solution (if necessary) should be done in the same way as the setting of the pH value when selecting the electrolyte, since this increases depending on the electrolyte used.
5. If other components are added to the buffer (e.g. EDTA, DTT, Mg^{2+}, β-Mercaptoethanol) changes in the pH should also be considered and pH should be retested.
6. In the presence of divalent metal ions carbonate or phosphate buffers may form precipitates.

How can microbial contamination of buffer solutions be prevented?

1. Sterilize solutions by filtration through a 0.22 µm filter unit or by autoclaving.
2. Addition of 0.02 % (3 mM) sodium azide.
3. Storage at +4°C.
4. Prepare high-concentration stock solutions.

Code	Description	Buffer substance (short name)	Buffer substance name	pKa (25°C, 100 mM)	Effective pH range	autoclavable	Temperature dependence [d(pKa)/dT]	compatibility with protein assays (concentration limits)			Comments, effects in different assays
								BCA	Lowry	Bradford	
A1060	ACES for buffer solutions	ACES	N-(2-Acetamido)-2-aminoethanesulfonic acid	6.78	6.1 - 7.5	+	-0.020		+		significant absorption of UV light at 230 nm; binds Cu^{2+}
A0838	2-Amino-2-Methyl-1-Propanol for buffer solutions	AMP	2-Amino-2-methyl-1-propanol	9.69	8.7 - 10.4	n.a.	-0.032				
A1062	BES for buffer solutions	BES	N,N-Bis-(2-hydroxyethyl)-2-aminoethanesulfonic acid	7.09	6.4 - 7.8	+	-0.016	-	+		binds Cu^{2+}
A1024	Bicine for buffer solutions	Bicine	N,N-Bis-(2-hydroxyethyl)-glycine	8.26	7.6 - 9.0	+	-0.018	+	+		slowly oxidized by ferricyanide; strongly binds Cu^{2+}
A1025	Bis-Tris for buffer solutions	BIS-Tris	[Bis-(2-hydroxyethyl)-imino]-tris-(hydroxymethylmethane)	6.46	5.8 - 7.2	+	-0.017	+			substitute for cacodylate. May be autoclaved or treated with DEPC
A1135	Bis-Tris-Propane for buffer solutions	BIS-Tris-Propane	1,3-Bis[tris(hydroxymethyl)-methylamino] propane	6.80	6.3 - 9.5	+					
A2940	Boric Acid for molecular biology	Boric acid		9.23 (pK_1), 12.74 (pK_2), 13.80 (pK_3)	8.5 - 10.2	+	-0.008 (pK_1)	(10 mM)			forms covalent complexes with mono- and oligosaccharides, ribose subunits of nucleic acids, pyridine nucleotides, glycerol
A2140	Cacodylic Acid Sodium Salt 3-hydrate BioChemica	Cacodylate	Dimethylarsinic acid	6.27	5.0 - 7.4	+					very toxic; nowadays usually replaced by MES
A3900	Sodium Carbonate anhydrous BioChemica	Carbonate	Sodium carbonate	6.35 (pK_1), 10.3 (pK_2)	6.0 - 8.0, 9.5 - 11.1		-0.0055 (pK_1), -0.009 (pK_2)				limited solubility; needs closed system, since in equilibrium with CO_2
A3901	tri-Sodium Citrate 2-hydrate BioChemica	Citrate	Salt of citric acid	3.13 (pK_1), 4.76 (pK_2), 6.40 (pK_3)	2.2 - 6.5, 3.0 - 6.2, 5.5 - 7.2	+		(<1 mM)	(2.5 mM)	(50 mM)	binds to some proteins, forms complexes with metals; often replaced by MES
A1067	Glycine for molecular biology	Glycine		2.35 (pK_1), 9.78 (pK_2)	2.2 - 3.6, 8.8 - 10.6	+	-0.0025 (pK_2)	(1 M)	(2.5 mM)	(0.1 M)	interferes with Bradford protein assay
A1069 A3724 A1070	HEPES for buffer solutions HEPES for molecular biology HEPES Sodium Salt for buffer solutions	HEPES	N-(2-Hydroxyethyl)-piperazine-N'-ethanesulfonic acid	7.48	6.8 - 8.2	+*	-0.014	-	+		can form radicals, not suitable for redox studies.
A1072	HEPPSO for buffer solutions	HEPPSO	N-(2-Hydroxyethyl)-piperazine-N'-2-hydroxypropanesulfonic acid	7.85	7.1 - 8.5	n.a.	-0.010	-	+		can form radicals, not suitable for redox studies
A1073 A1378	Imidazole for buffer solutions Imidazole for molecular biology	Imidazole		6.95	6.2 - 7.8	+*	-0.020				forms complexes with divalent metal cations, relatively unstable
A1074 A4730	MES 1-hydrate for buffer solutions MES 1-hydrate for molecular biology	MES	2-(N-Morpholino)-ethanesulfonic acid	6.10	5.5 - 6.7	+	-0.011	-	+		substitute for cacodylate
A1076 A2947 A1077	MOPS for buffer solutions MOPS for molecular biology MOPS Sodium Salt for buffer solutions	MOPS	3-(N-Morpholino)-propanesulfonic acid	7.14	6.5 - 7.9	+*	-0.011	-	+		partly degraded on autoclaving in the presence of glucose; negligible metal ion binding. May be autoclaved (change in colour does not influence buffer capacity)
A3905	di-Sodium hydrogen phosphate dihydrate BioChemica	Phosphate	Salt of phosphoric acid	2.15 (pK_1), 7.20 (pK_2), 12.33 (pK_3)	1.7 - 2.9, 5.8 - 8.0	+	0.0044 (pK_1), -0.0028 (pK_2), -0.026 (pK_3)	(250 µM)	(250 mM)	(2 M)	substrate/inhibitor of various enzymes (inhibits many kinases and dehydrogenases, enzymes with phosphate esters as substrate; inhibits carboxypeptidase, fumarase, urease); precipitates/ binds bivalent cations; pK increases on dilution
A1079	PIPES for buffer solutions	PIPES	Piperazine-N,N'-bis(2-ethanesulfonic acid)	6.76	6.1 - 7.5	+	-0.0085	-	+		can form radicals, not suitable for redox studies. May be treated with DEPC
A1084	TES for buffer solutions	TES	2-[Tris(hydroxymethyl)-methylamino]-ethanesulfonic acid	7.40	6.8 - 8.2	+	-0.020	-	+		binds Cu^{2+}
A1085 A3954	Tricine BioChemica Tricine for molecular biology	Tricine	N-[Tris(hydroxymethyl)-methyl]-glycine	8.05	7.4 - 8.8	+	-0.021	+	+		strongly binds Cu^{2+}; addition of Cu^{2+} in the Lowry assay enables it to be used; is photooxidised by flavines; substitute for barbital (Veronal)
A1379 A1086 A2264	Tris for buffer solutions Tris ultrapure Tris for molecular biology	Tris	Tris(hydroxymethyl)-aminomethane	8.06	7.5 - 9.0	+	-0.028	(0.1 M)	(250 mM)	(2 M)	high degree of temperature-sensitivity; pH decreases by 0.1 unit with each 10-fold dilution; inactivates DEPC, can form Schiff's bases with aldehydes/ ketones, as it is a primary amine; is involved in some enzymatic reactions (e.g. alkaline phosphatase); toxic for many cells, since it penetrates cells due to its relatively good fat solubility

*Preferred method of sterilization is filtration rather than autoclaving for HEPES, Imidazole, MOPS, TEA and others.

IP-022EN;201812

Biological Buffers

Recipes for commonly used buffer solutions and stocks

To prepare 1 litre of buffer solution dissolve ingredients in approx. 800 ml of deionised water, adjust pH value, add deionised water to 1000 ml final volume, and sterilize if desired.

HeBS transfection buffer (2X)

HEPES	11.9 g/L	(0.050 M)
Na_2HPO_4	0.21 g/L	(1.5 mM)
NaCl	16.4 g/L	(0.280 M)

exactly (!) adjust pH 7.1 with NaOH; filter sterilize; store aliquots at –20°C

MOPS buffer (1X)

MOPS	41.85 g/L	(0.2 M)
Na-acetate	41.02 g/L	(0.5 M)
EDTA-Na_2·$2H_2O$	3.72 g/L	(0.01 M)

adjust pH 7.0; filter sterilize, do not autoclave; MOPS solutions turn dark upon heating; store in the dark and discard if it turns yellow

PBS Phosphate-buffered saline (10X)

KH_2PO_4	2.4 g/L	(0.018 M)
Na_2HPO_4	14.4 g/L	(0.101 M)
NaCl	80 g/L	(1.369 M)
KCl	2 g/L	(0.027 M)

pH (20°C): 7.4; autoclave

SDS-Tris-Glycine buffer (10X) – "Laemmli" Buffer

Cat. No. A1415

Tris	30.29 g/L	(0.25 M)
Glycine	144.13 g/L	(1.92 M)
SDS	10 g/L	(1 %)

pH ~8.3; do not adjust pH value with additional ions; slight deviations may be tolerated

SSC Buffer (20X)

Cat. No. A1396

tri-Na citrate ·$2H_2O$	88.23 g/L	(0.3 M)
NaCl	175.32 g/L	(3 M)

adjust pH to 7.0; autoclave

TAE buffer (50X)

Cat. No. A4686

Tris	242.30 g/L	(2 M)
EDTA-Na_2·$2H_2O$	18.6 g/L	(0.05 M)
Acetic acid glac.	60.05 g/L	(1 M)

adjust pH to 8.5

TAE buffer (10X)

Cat. No. A3945

Tris	107.81 g/L	(0.89 M)
Boric acid	55.03 g/L	(0.89 M)
EDTA-Na_2·$2H_2O$	7.44 g/L	(0.02 M)

adjust pH to 8.3; autoclave

TBS buffer (1X, Tris buffered saline) recipe 1

Tris	3 g/L	(0.025 M)
KCl	0.2 g/L	(2.68 mM)
NaCl	8 g/L	(0.137 M)
Phenol red (optional pH indicator)	0.015 g/L	

Adjust pH to 7.4; filter sterilize or autoclave

TBS buffer (1X, Tris buffered saline) recipe 2

Tris-Cl	15.76 g/L	(0.1 M)
NaCl	8.77 g/L	(0.15 M)

adjust pH to 7.5; autoclave

TE buffer (100X)

Tris	121.14 g/L	(1 M)
EDTA-Na_2·$2H_2O$	37.22 g/L	(0.1 M)

adjust pH to 8.0; pH values 7.0, 7.4, 7.5 or 7.6 are also commonly used; autoclave

References:

(1) Ellis, K.J. & Morrison, J.F. (1982) *Methods in Enzymol.* **87**, 405-426. Buffers of constant ionic strength for studying pH-dependent processes

(2) Good, N. E. & Izawa, S. (1972) *Methods in Enzymol.* **24**, 53-68. Hydrogen Ion Buffers

(3) Laemmli, U.K. (1970) *Nature* **227**, 680-685. Cleavage of structural proteins during the assembly of the head of bacteriophage T4.

(4) Ausubel, F.A., Brent, R., Kingston, R.E., Moore, D.D., Seidman, J.G., Smith, J.A. & Struhl, K. (eds.) (2001) Current Protocols in Molecular Biology, page A.2.5. (Suppl. 40) Greene Publishing & Wiley-Interscience, New York.

(5) Sambrook, J. & Russel, D.W. (2001) Molecular Cloning: A Laboratory Manual, 2rd Edition, page A1.17. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York.

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Reagents for cell culture

Prevention and elimination of Mycoplasma contamination

Incubator-Clean™ A5230

Contamination of incubators and sterile workbenches is a serious problem that can result in costly damage. The Incubator-Clean™ solution prevents contamination and growth of fungi (and spores), bacteria (including tuberculosis bacteria), viruses (including HIV and hepatitis B) and mycoplasma. The active components are quaternary benzylammonium compounds. The solution does not contain mercury, formaldehyde, phenol or alcohol. It is non-corrosive to aluminum, tin-coated iron, chromium, nickel, steel, stainless steel and copper. In addition, Incubator-Clean ™ is biodegradable and non-toxic.

Incuwater-Clean™ A5219

Disinfectant solution for CO_2 incubator water. To prevent microbial growth in incubator water baths. 100X concentrated solution. Use 50 ml per 5 liters of incubator water bath. It does not attack stainless steel and is non-toxic and non-volatile.

Aquabator-Clean™ (100X) A9390

Disinfectant solution for ordinary water baths (not for CO_2 incubators). To prevent microbial growth in water baths. 100X concentrated solution. It is recommended to use 10 ml per liter of water.

PCR Mycoplasma Test Kit A3744

The PCR Mycoplasma Test Kit is designed to detect the presence of mycoplasma contaminating biological materials, such as cultured cells. Ready-to-use PCR Mix for the detection of mycoplasma in cell culture. Detects all mycoplasma species found in cell cultures. Sufficient for 20 tests.

Components of the kit:

- Reaction mix
- Buffer solution
- Positive template control
- Internal control DNA template
- Internal control primers mix

PCR Mycoplasma Test Kit II A8994

This PCR Mycoplasma Test Kit is supplied without Taq-DNA-Polymerase. This enables to lyophilize the temperature-sensitive components and to increase the stability especially during the transport at ambient temperature.
Lyophilized PCR Mix for the detection of mycoplasma in cell culture by conventional PCR. Detects all mycoplasma species found in cell cultures. This kit meets criteria of section 2.6.7 of Ph. Eur.

Components of the kit:

- PCR Primer Nucleotide Mix
- Positive template control
- Reaction Buffer Solution
- Water PCR grade
- Internal control DNA

Product Name	Code	Package
Aquabator-Clean™ (100X)	A9390,0250	250 ml
Incubator-Clean™	A5230,0500	500 ml
	A5230,5000RF	5 L
Incuwater-Clean™	A5219,0100	100 ml
PCR Mycoplasma Test Kit	A3744,0020	20 tests
PCR Mycoplasma Test Kit II	A8994,0025	25 tests
	A8994,0050	50 tests
	A8994,0100	100 tests

Antibiotics and Antimycotics

If you are working with microorganisms or cells as a model, it is almost always crucial to exclude other organisms from your culture. To do this, PanReac AppliChem offers a broad spectrum of antibiotics and antimycotics for use in cell culture. This here is only a selection of the most used antibiotics and antimycotics. You can find more visiting our website.

Code	Product Name	Target organism	Mode of action	Recommended working concentration	Stock solution
A1907	Amphotericin B	Fungi, yeast	Binds to sterols with planar structure and disturbs the membrane permeability	0.25 µg/ml >3 µg/ml fungicidal	30-40 mg/ml in DMSO
A0839	Ampicillin Sodium Salt	Gram positive/ negative bacteria and cocci	Inhibits cell wall synthesis (transpeptidase) in growing bacteria	20 - 60 µg/ml	50 mg/ml in water Store at -20 °C
A3784	Blasticidin S Hydrochloride	Prokaryotes, eukaryotes	Inhibits protein biosynthesis by preventing the formation of the peptide bond	3 - 100 µg/ml	50 mg/ml in water or buffer. Store at –20 °C
A1491	Carbenicillin Disodium Salt	Gram negative germs, enterococci	Inhibits cell wall synthesis (transpeptidase) in growing bacteria	20 - 60 µg/ml	50 mg/ml in water Store at -20 °C
A0879	Cycloheximide	Fungi, eukaryotes	Binds to 80 S ribosome in eukaryotic cells; inhibits formation of peptide bond	10 µg/ml	10 mg/ml Store at -20 °C
A6798	G418 Disulfate solution, sterile	Toxic to bacteria, yeast, higher plants, protozoa, mammalian cells	Aminoglycoside antibiotic	50 - 1000 µg/ml (frequently 0.4 - 1 mg/ml)	2 mg/ml in water or medium, adjust pH to 7.4. Store at +4 °C
A1492	Gentamycin Sulfate	Gram positive/ negative germs	Inhibits protein synthesis by binding to the L6 protein of the 50 S ribosomal subunit	15 - 50 µg/ml	10 - 20 mg/ml in water, formamide
A2175	Hygromycin B solution	Mycoplasma, eukaryotic and prokaryotic cells	Inhibits the protein synthesis by termination of the translocation and causes mistakes in transcription	10 - 400 µg/ml	ca. 41 mg/ml in water Store at -20 °C
A4789	Kanamycin Sulfate	Gram positive/ negative bacteria and cocci	Inhibits protein synthesis (translocation)	10 - 100 µg/ml	10 mg/ml in water Store at -20 °C
A0890	Polymyxin B Sulfate	Gram negative, non-proliferating bacteria	Interaction with phospholipid components of the bacterial cell membrane; changes permeability of the membrane and causes efflux of essential plasma compounds	50 µg/ml	25 mg/ml water, methanol
A1839	Vancomycin Hydrochloride	Bacteriostatic and bactericidal against gram positive cocci and bacteria	Amphoteric glycopeptide antibiotic; binds to bacterial cell wall precursors (peptidoglycans)	1 - 25 µg/ml	soluble in water >100 mg/ml

Cell Proliferation Kit XTT

Kit for the quantification of cell proliferation and viability without using radioactive isotopes; 1000 assays.

Only in living cells mitochondria are capable to reduce XTT to form an orange colored water soluble dye. Therefore, the concentration of the dye is proportional to the number of metabolically active cells.

Main advantages

- Easy to use: There is no requirement for additional reagents and/or cell washing procedures.
- Speed: One step process with results within 2 – 5 hours.
- Sensitivity: Can be assayed even in low cell concentrations.
- Accuracy: Dye absorbance is proportional to the number of live cells in each well.
- Safety: There is no need for radioactive isotopes.
- Convenience: No instrumentation required except for a spectrophotometer (ELISA reader).
  The entire assay can be performed directly in a microtiter plate.

Product Name	Code	Package
Cell Proliferation Kit XTT	A8088,1000	1000 tests

Simple Media and Supplements

The cultivation of cells requires the use of a medium that provides all the nutrients and growth factors needed for the proper proliferation and growth of a cell culture.
The preparation of media in the laboratory allows to define the exact conditions that a certain culture requires for each specific experiment. Here you will find a selection of media components, supplements and auxiliary products for cell culture.

Product Name	Usage	Code	Package
Agar powdered pure, food grade	For plates or special solid medium	A0917,0500	500 g
		A0917,1000	1 kg
		A0917,5000	5 kg
Agar Bacteriology grade	For plates or special solid medium	A0949,0500	500 g
		A0949,1000	1 kg
		A0949,5000	5 kg
Dimethyl Sulfoxide for cell culture	For freezing cells / Antibiotic solutions	A3672,0050	50 ml
		A3672,0100	100 ml
		A3672,0250	250 ml
PBS buffer (10X Dulbecco's) - Powder	Used as buffer system and later for analytical purposes	A0965,9010	10 L
		A0965,9050	50 L
		A0965,9100	100 L
Peptone from Soybean (enzymatic digest) BioChemica	Component of bacterial media	A2206,1000	1 kg
Sodium Chloride solution (0.9 %), sterile	Suitable for cell culture	A1671,0100	100 ml
		A1671,0250	250 ml
		A1671,0500	500 ml
		A1671,1000	1 L
Sodium Pyruvate for cell culture	Often used as a carbon source	A4859,0100	100 g
		A4859,1000	1 kg
Tryptone BioChemica	Component of bacterial media	A1553,0500	500 g
		A1553,1000	1 kg
Yeast extract BioChemica	Component of bacterial media	A1552,0500	500 g
		A1552,1000	1 kg

IP-055EN;202003

Amino Acids

Amino acids are one of the most important components for the existence of life. In science they play a role as buffers but also as a part of media for a proper and desired growth of cell culture. Sometimes even for special methods.
On our webside you can find a great overview of all our amino acids. In the table below you will find a selection of the ones most frequently used by our customers.

Product Name	Code	Package
L-Arginine base (Ph. Eur., USP) pure, pharma grade	A1345,0500	500 g
	A1345,1000	1 kg
	A1345,9010	10 kg
L-Arginine Hydrochloride (Ph. Eur., USP) pure, pharma grade	A1700,1000	1 kg
L-Asparagine 1-hydrate (Ph. Eur.) pure, pharma grade	A1668,0100	100 g
	A1668,1000	1 kg
L-Cysteine Hydrochloride 1-hydrate (Ph. Eur., USP) pure, pharma grade	A1702,1000	1 kg
L-Cystine (Ph. Eur.) pure, pharma grade	A1703,0100	100 g
	A1703,0500	500 g
	A1703,1000	1 kg
L-Glutamic Acid (Ph. Eur., USP) pure, pharma grade	A1704,0250	250 g
	A1704,0500	500 g
	A1704,1000	1 kg
L-Glutamine (DAB, USP) pure, pharma grade	A1420,0250	250 g
	A1420,1000	1 kg
L-Glutamine for cell culture	A3704,1000	1 kg
L-Histidine (Ph. Eur., USP) pure, pharma grade	A1341,0100	100 g
	A1341,1000	1 kg
	A1341,5000	5 kg
L-Isoleucine (Ph. Eur., USP) pure, pharma grade	A1440,1000	1 kg
L-Leucine (Ph. Eur., USP) pure, pharma grade	A1426,1000	1 kg
L-Proline (Ph. Eur., USP) pure, pharma grade	A1707,0100	100 g
	A1707,1000	1 kg
	A1707,9020	20 kg
L-Serine (Ph. Eur., USP) pure, pharma grade	A1708,0100	100 g
	A1708,1000	1 kg
L-Threonine (Ph. Eur., USP) pure, pharma grade	A1419,1000	1 kg

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Mycoplasma in cell culture
detection and elimination

Introduction

Surveys of cultures from labs all over the world reveal a strong prevalence of contamination by mycoplasma and other mollicutes. Depending on the method of detection 10-40% of continuous cell lines have been tested positively. The species most frequently found are *Mycoplasma orale*, M. *fermentans* (human), *M. arginini*, *Acholeplasma laidlawii* (bovine), and *M. hominis* (swine).

Sources of contamination

There are various possible sources for contamination by mycoplasma. During recent years, a rising awareness of the problem may have changed the contribution of the individual sources. Culture reagents such as bovine serum have been a considerable source of contamination in the past. Today, most labs prefer mycoplasma-free tested sera. Laboratory personnel may introduce mycoplasma into cultures, are now trained to avoid contamination during the handling of cultures. However, other sources are even more difficult to avoid. Any addition to the culture is relevant, such as virus suspensions, antibody solutions, or media ingredients. Mycoplasma from original tissue isolates contribute to less than 1% to the reported cases. The most common source by far is cross-contamination from infected cultures. Labs exchange infected cultures and thereby inadvertently distribute mycoplasma.
PanReac AppliChem provides the tools for detection and treatment of mycoplasmas for every cell culture laboratory. For the detection by microscopy we are offering the proven fluorescent dye DAPI (product code A1001, available in pack sizes from 10 mg to 10 g).

Detection by PCR

In recent years the sensitive polymerase chain reaction (PCR) became a standard method for the detection of mycoplasma contamination in biological samples such as mammalian cell cultures. The PCR is established in almost all life science labs either as standard PCR or real time/ quantitative PCR. For your preferred setup, we offer three different kits to choose from.

Keywords

- Mycoplasma contamination
- Mycoplasma-induced cellular effects
- PCR detection of Mycoplasma
- Antibiotics for cell culture treatment

The rRNA gene sequences of prokaryotes including mycoplasmas are well conserved, whereas the lengths and sequences of the spacer region in the rRNA differ from species to species. The detection procedure utilizes the PCR for amplification of a conserved and mycoplasma-specific 16S rRNA gene region. This system does not allow the amplification of DNA originating from other sources, such as cultured cells or bacteria, which affect the detection result. Amplification of the gene sequence with PCR using this primer set enhances not only the sensitivity, but also the specificity of detection. Amplified products are detected by agarose gel electrophoresis or by real time/quantitative PCR (qPCR Mycoplasma Test Kit, product code A9019).

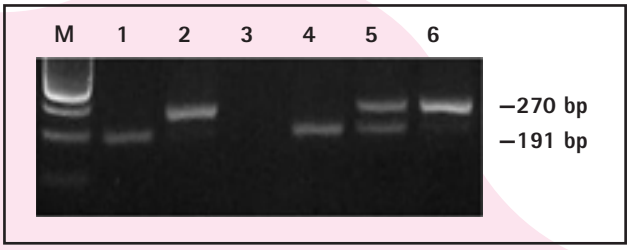
IP-024EN;201811

Mycoplasma in cell culture - detection and elimination

Mycoplasma detection kits using standard PCR:

	PCR Mycoplasma Test Kit (A3744)	PCR Mycoplasma Test Kit II (A8994)	qPCR Mycoplasma Test Kit (A9019)
Kit components:	• Reaction Mix (PCR primers, dNTPs, Taq DNA polymerase) • Buffer solution • Positive template control	• Reaction Mix (including PCR primers, dNTPs) • Reaction Buffer Solution • PCR grade water • Positive template control • Internal control DNA *Kit meets criteria of section 2.6.7 of Ph.Eur.*	• Reaction Mix (including PCR primers, dNTPs) • Reaction Buffer Solution • PCR grade water • Positive template control • Internal control DNA
***Taq* DNA polymerase**	included	not included*	included
Form of delivery	ready-to-use master mix, liquid	single components, lyophilized	single components, lyophilized
Storage	-20 °C	2 - 8 °C	2 - 8 °C
Product codes	A3744,0020 20 tests	A8994,0025 25 tests A8994,0050 50 tests A8994,0100 100 tests	A9019,0025 25 tests

* Use kit A8994 in combination with hot-start polymerase. We recommend PanReac AppliChem SuperHot Taq DNA polymerase A5231.



Possible PCR products of PCR Mycoplasma Test Kit II:
1: negative control; 2: positive control; 3: inhibited sample; 4: negative sample; 5: contaminated positive sample; 6: contaminated positive sample with high mycoplasma DNA concentration; M: DNA marker

Treatment of Mycoplasma Infections in Cell Cultures

PanReac AppliChem offers well-proven treatments to achieve reliable elimination of mycoplasma infections from mammalian cell cultures. Precious cell cultures that are infected cannot always be simply discarded and replaced by new ones. For both, biological and economical reasons it is important to eliminate mycoplasma from cell cultures used in basic research, diagnostics, and biotechnological production.

	Myco-1 & 2
Application	For the treatment of all mammalian cell lines including embryonic stem cells (ES cells). Both agents are used in combination, one after another.
Components	Myco-1 (A5222), based on the antibiotic Tiamulin Myco-2 (A5233), based on the antibiotic Mino-cycline
Form of delivery	sterile 100X concentrated antibiotic solutions
Product codes	A8360,0010 1 Set (2x10 ml)

	Myco-3
Application	Eliminates the most common mycoplasma contaminants including *M. orale, M. hyorhinis, M. fermentans, M. arginini, as well as A. laidlawii.* At the concentrations recommended for use (1 µg/ml), no cytotoxic effects have been found
Components	Myco-3 is based on the antibiotic Ciprofloxacin
Form of delivery	100X concentrated antibiotic solution
Product codes	A5240,0010 10 ml A5240,0020 20 ml A5240,0100 100 ml

	Myco-4
Application	Novel combination of antibiotic and biophysical agents. For maximum efficiency and a broad spectrum. Almost 100 % of permanent eradication of mycoplasma is achieved
Components	One kit is needed for a treatment. Each kit contains • 1 vial of Starter Treatment solution • 3 vials of Main Treatment solution
Form of delivery	sterile, ready-to-use solutions
Product codes	A8366,0002 2 Kits/Treatments

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Reagents for Genomics

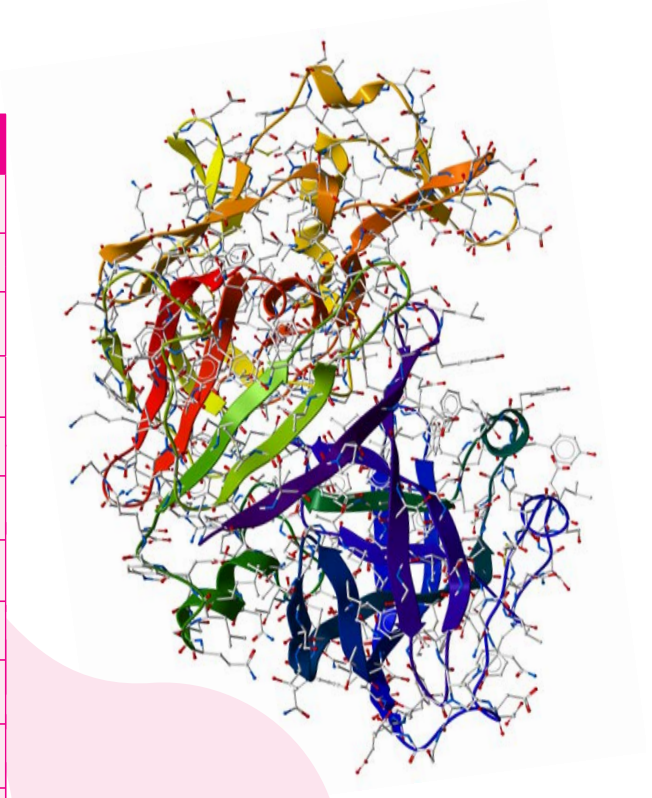
Since the postulation of the Watson-Crick double helix model of DNA, the world of nucleic acids and their importance in every living being has not lost in fascination. This field developed very fast during the last 65 years. With milestones of PCR and sequencing, the work with DNA and RNA has become one of the most important fields for scientists in life sciences.

PanReac AppliChem helps you with products for a clean working space in Nucleic Acids Labs. We provide the most common enzymes used, help with buffers for your work and offer a broad spectrum for assays and analytical tools.

PanReac AppliChem offers the standard enzymes for your work with Nucleic Acids in high quality at a magnificent quality price ratio. These enzymes are used in protocols for purification of DNA, RNA and proteins.

Enzymes

Description	Code	CAS
DNase I	A3778	9003-98-9
Lysozyme BioChemica	A3711	9001-63-2
Lysozyme for molecular biology	A4972	9001-63-2
Proteinase K	A3830	39450-01-6
Proteinase K solution	A4392	
Proteinase K, recombinant	A7932	39450-01-6
RNase A	A2760	9001-99-4
RNase A (DNase-free)	A3832	9001-99-4
SuperHot Taq DNA Polymerase	A5231	
Taq DNA Polymerase	A5186	
Taq DNA Polymerase DNA-free	A5434	



For futher Information go on:
https://www.itwreagents.com/rest-of-world/en/nab-enzymes-for-na-biochemistry

Nucleic Acid Decontamination

To work in genomics means to control, dominate and keep your samples clean. You need to be sure to have only the sequence you want to have in your work environment and not the one of your colleague. Also in the forensic world this plays a crucial point. We from PanReac AppliChem offer the DNA Exitus Plus technology: easy to use, very effective, non-toxic to humans and not harmful to equipment.

Key features

- Catalytic and cooperative effects of the components cause a very rapid non-enzymatic, non-sequence-specific degradation of DNA and RNA molecules.
- All components of DNA-ExitusPlus™ are readily bio-degradable and not harmful or toxic for humans.
- No aggressive mineral acids or alkaline substances are used. Equipment and materials are not damaged or corroded even after prolonged incubation times.
- No toxic fumes.
- Elevated temperatures above approx. 50°C speed up the reaction and the activity.

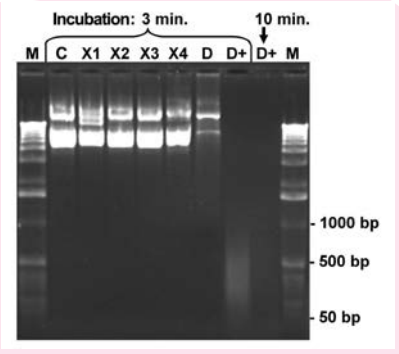


Figure 1

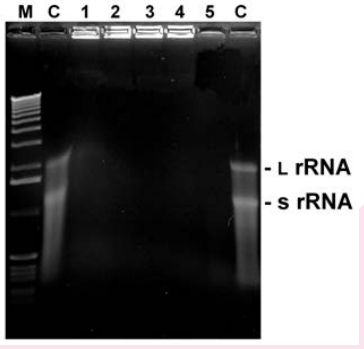


Figure 2

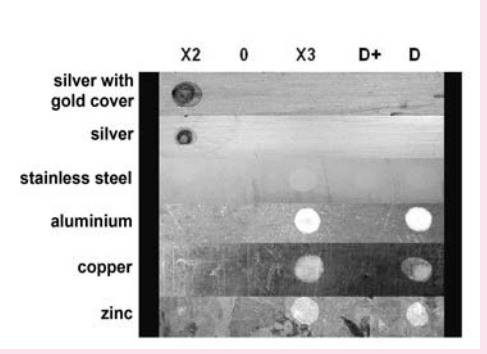


Figure 3

You can see that all the DNA is gone after 10 min of DNA Exitus Plus (Figure 1); also RNA is gone even after 0.5 min (Figure 2); and also compared to other common Decontamination solutions DNA Exitus Plus does not attack your work material (Figure 3).

Description	Code
DNA-ExitusPlus™	A7089
DNA-ExitusPlus™ IF	A7409
Autoclave-ExitusPlus™	A7600
ExitusPlus™ Activity Test	A9411
RNase-ExitusPlus™	A7153

For further information and a simple explaining video go on:
https://www.itwreagents.com/rest-of-world/en/nab-decontamination

Buffers for nucleic acids

Buffers are the one of the most commonly used substance class in biological science. We from PanReac AppliChem offer you a wide selection of buffer compounds and finished buffers where you only have to add the solvent.
This here is only a selection of the most used buffers. You can find more visiting our webside: https://www.itwreagents.com/rest-of-world/en/nab-buffers

Description	Code	pH (20°C; H_2O)	Composition
CTAB – Lysis buffer BioChemica	A4150	8.0 ± 0.1	CTAB ..... 20.00 g/L (2% w/v) EDTA·Na_2·$2H_2O$ ..... 7.44 g/L (20 mM) Tris ultrapure ..... 12.11 g/L (100 mM) Sodium chloride ..... 81.82 g/L (1.4 M)
Guanidine Thiocyanate solution for molecular biology	A0703	7.5 ± 0.2 (25°C)	GuaSCN ..... 708.96 g/L (6 M) Tris ..... 12.11 g/L (0.1 M)
TAE buffer (50X)	A1691	8.5 ± 0.2	EDTA·Na_2·$2H_2O$ ..... 18.61 g/L (0.05 M) Acetic acid glacial ..... 60.05 g/L (1 M) Tris ..... 242.28 g/L (2 M)
TBE buffer (10X)	A0972	8.3 ± 0.2	Boric acid ..... 55.03 g/L (0.89 M) EDTA·Na_2·$2H_2O$ ..... 7.44 g/L (0.02 M) Tris ..... 107.81 g/L (0.89 M)
TE buffer (100X) pH 8.0	A0973	8.0 ± 0.1	EDTA·Na_2·$2H_2O$ ..... 37.22 g/L (0.1 M) Tris ..... 121.14 g/L (1 M)
Tris ultrapure	A1086	10.5 - 11.5 (1M)	
Tris Hydrochloride for molecular biology	A3452	3.5 - 5.0 (0.5 M, 25°C)	

IP-043EN;201810

Analytics & Assays – Isolation of Nucleic Acids

Here you will only see a selection of products for isolation and analysis of nucleic acids. Find a lot of interesting information on our special product page:
https://www.itwreagents.com/rest-of-world/en/nab_analytics-and-assays

TRItidy G™, code A4051

Ready-to-use solution for simultaneous isolation of RNA, DNA and proteins.

- Monophasic reagent (contains phenol and guanidinium thiocyanate)
- Suited for small and large samples.
- For samples of human, animal, plant and bacterial origin.
- Isolation of intact total RNA from tissue and cells, sequential precipitation of DNA and proteins.
- Improved version of the 'single-step' RNA-isolation method developed by Chomczynski & Sacchi.
- Isolation of large and small RNA-species (0.1 - 15 kb) with high purity.

Purity and integrity of the DNA will affect the results of all subsequent applications, so highest quality of DNA is desirable for diagnosis and research.

Further frequently used products for Isolation and Analysis:

Description	Code
Agarose Basic	A8963
Agarose low EEO (Agarose Standard)	A2114
Agarose medium EEO	A2116
Agarose MP	A1091
DNA Isolation Spin-Kit Agarose	A5193
Loading buffer DNA IV (for Agarose gels)	A3481
Ethidium Bromide BioChemica	A1151
Ethidium Bromide solution 1% BioChemica	A1152
Ethidium Bromide solution 0.07% "dropper-bottle"	A2273

Description	Code
DNA-Dye NonTox	A9555
DNA Ladder 50 bp	A8368
DNA Ladder 100 bp	A5191
DNA Ladder 100 bp (lyophilised)	A3470
DNA Ladder 100 bp plus	A5216
DNA Ladder 1 kb	A5207
DNA Ladder Mix 100 – 5000 (lyophilised)	A3660
DNA Marker Phage Lambda – Sty I	A5194

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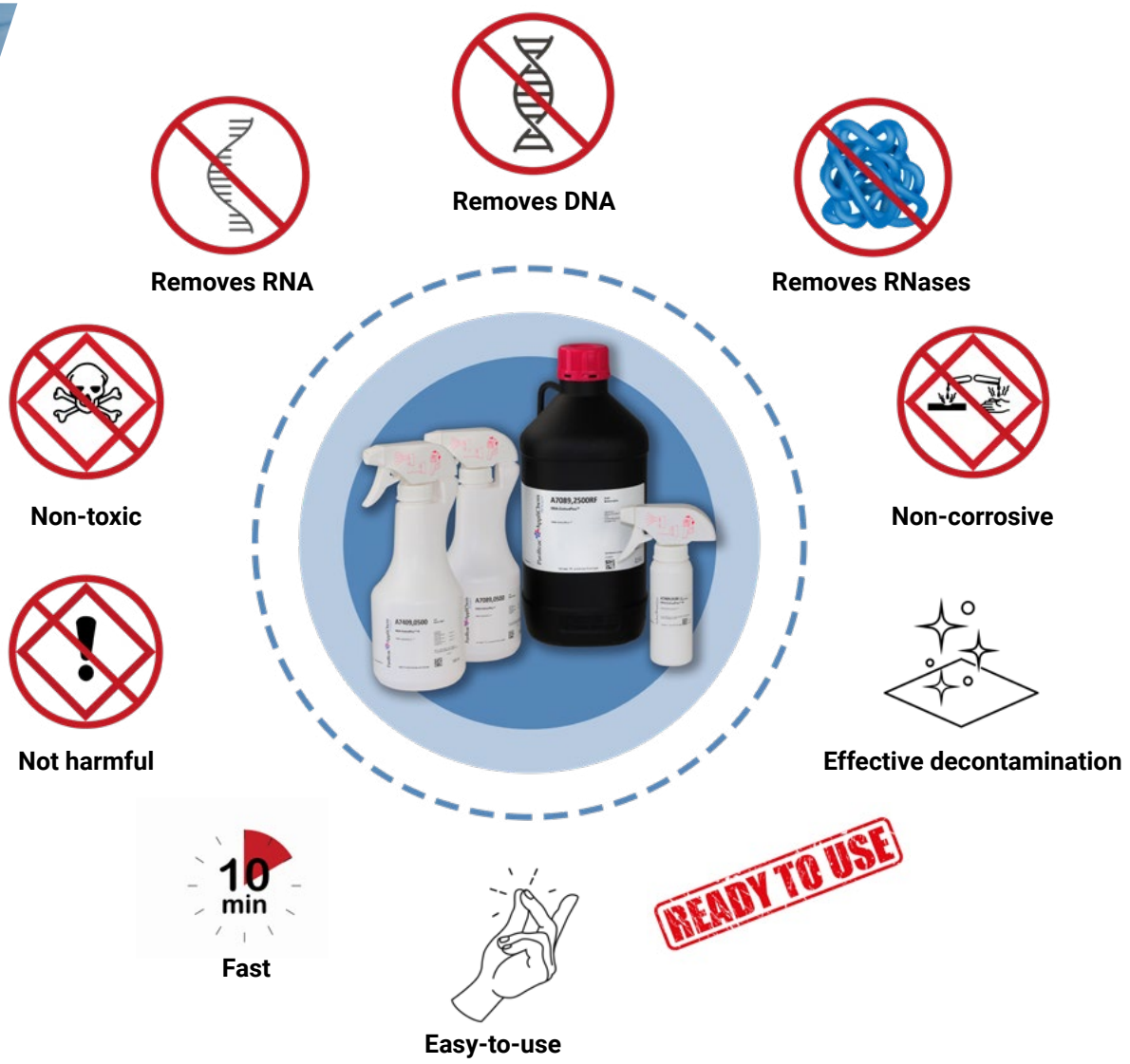
ExitusPlus™ – Effective solution – effective decontamination



Get rid of DNA/RNA or RNase contamination in your Life Science lab
Enabling trueness and reliability for your (COVID-19/PCR) analysis

Visit us at www.itwreagents.com

ExitusPlus™ - Product overview

Product code	Product name	Applications	Pack sizes
A7089,0100	DNA/RNA-ExitusPlus™	DNA & RNA decontamination, with surface trace indicator, sample pack	100 mL
A7089,0500	DNA/RNA-ExitusPlus™	DNA & RNA decontamination, with surface trace indicator	500 mL
A7089,1000RF	DNA/RNA-ExitusPlus™	DNA & RNA decontamination, with surface trace indicator, refill pack	1 L
A7089,2500RF	DNA/RNA-ExitusPlus™	DNA & RNA decontamination, with surface trace indicator, refill pack	2.5 L
A7409,0100	DNA/RNA-ExitusPlus™ IF	DNA & RNA decontamination, indicator free version, sample pack	100 mL
A7409,0500	DNA/RNA-ExitusPlus™ IF	DNA & RNA decontamination, indicator free version	500 mL
A7409,1000RF	DNA/RNA-ExitusPlus™ IF	DNA & RNA decontamination, indicator free version, refill pack	1 L
A7409,2500RF	DNA/RNA-ExitusPlus™ IF	DNA & RNA decontamination, indicator free version, refill pack	2.5 L
A7153,0500	RNase-ExitusPlus™	RNase decontamination	500 mL
A7153,1000RF	RNase-ExitusPlus™	RNase decontamination refill pack	1 L
A7153,2500RF	RNase-ExitusPlus™	RNase decontamination refill pack	2.5 L
A7600,1000	Autoclave-ExitusPlus™	DNA & RNA degradation for autoclaving processes	6 x 1 L
A9411,0025	ExitusPlus™ Activity test	Activity test	25 tests

USAGE

- **Decontamination of free DNA and RNA with DNA/RNA-ExitusPlus™**
- **Elimination of RNases with RNase-ExitusPlus™**

TARGET INDUSTRIES

- **Pharma, research & development, hospital and healthcare, biotech, university & educational sector, clinical diagnostics and police forces**

TARGET APPLICATIONS

- **Molecular biological workflows, genomic workflows, DNA/RNA experiments, PCR workflows, forensic analysis, medical tests, e.g., COVID-19 tests**

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A214,EN;202102

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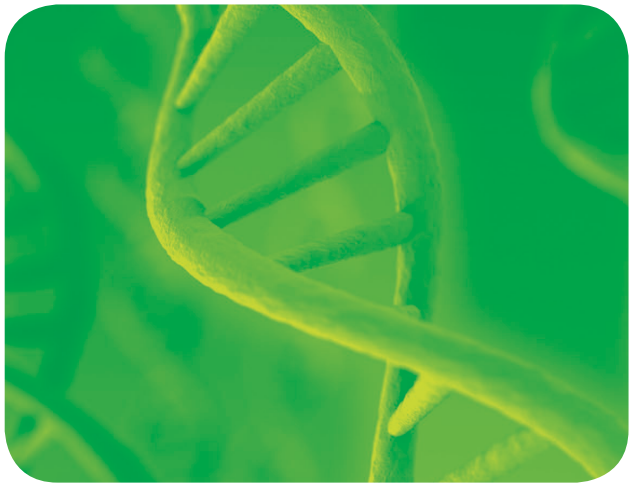
Nucleic Acid Gel Stain with DNA-Dye NonTox

Ethidium Bromide (EtBr) is the most widely used DNA stain in molecular biology. However, due to safety and health concerns associated with exposure to this chemical, there has been increased interest in the use of alternative DNA stains that reduce health hazards and waste disposal processes. Those dyes have achieved interest among different labs, with the aim to reduce mutagenicity in DNA samples as well as being claimed as less hazardous and with low toxicity.

DNA-Dye NonTox is a non-toxic fluorescent reagent supplied in loading buffer, being a highly sensitive stain for the detection of double-stranded DNA (dsDNA). The dye produces instant visualization of DNA bands on gels upon blue light or UV illumination.



The perfect alternative to Ethidium Bromide

DNA-Dye NonTox is ideal in terms of environmental safety requiring a non-hazardous alternative to Ethidium Bromide. In addition, the dye included in DNA-Dye NonTox does not affect structure and integrity of DNA.

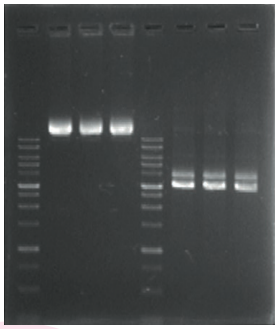
Supplied in 6X DNA Loading Buffer, DNA-Dye NonTox is used to prepare DNA markers and samples for loading on agarose or polyacrylamide gels. It contains three tracking dyes **Bromophenol Blue, Xylene Cyanol FF**, and **Orange G** for visually tracking the DNA migration during the electrophoresis process.

Spectral characteristics

Due to its spectral characteristics DNA-Dye NonTox is **compatible with most systems for gel visualization** and documentation. For highest sensitivity, choose **green detection filter** (approx. 537 nm) if possible. Excitation maxima of DNA-Dye NonTox are 300 nm (UV light) and 470 nm (blue light). Fluorescence emission of DNA-Dye NonTox bound to dsDNA is centered at 537 nm.
The detection limit of DNA-Dye NonTox is **1–5 ng** DNA/band under optimal conditions, especially when blue light is used for excitation. Under UV light >10 ng DNA are typically well detectable.

Main Advantages

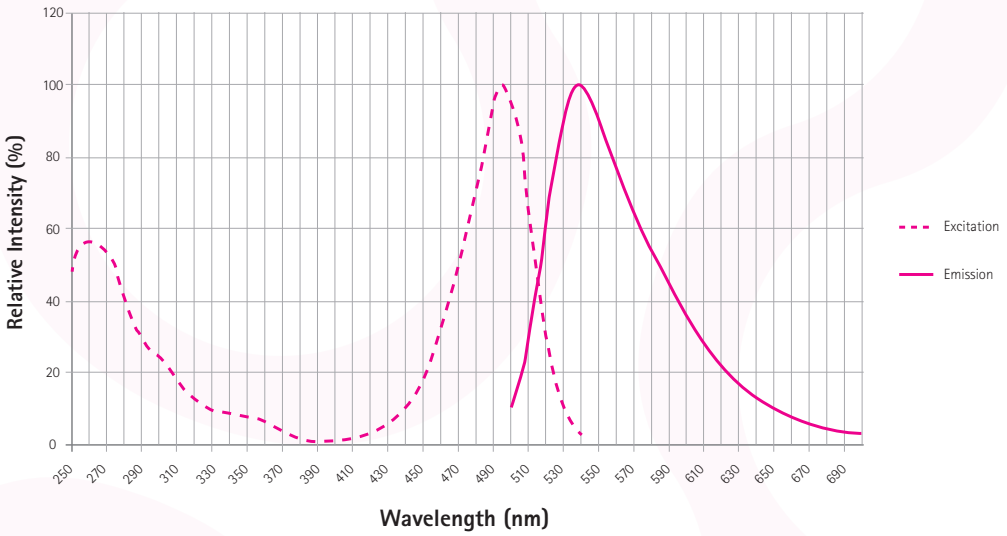
- As **sensitive** as Ethidium Bromide.
- **Non-Hazardous**, non-mutagenic and with low toxicity.
- **Low environmental impact.** No need of special measures with respect to waste management.
- DNA **structure and integrity not affected** so higher transformation rates are achieved.
- DNA-Dye NonTox does **not intercalate**, therefore, no variation in the migration behaviour is observed.



M 1 2 3 M 4 5 6

Agarose gel electrophoresis of DNA stained with DNA-Dye NonTox. DNA marker (M) and samples (1 - 6) were stained with **DNA-Dye NonTox**, separated by agarose gel electrophoresis and subsequently detected under UV light.

Fluorescence excitation/emission spectra of DNA-Dye NonTox nucleic acid gel stain bound to DNA



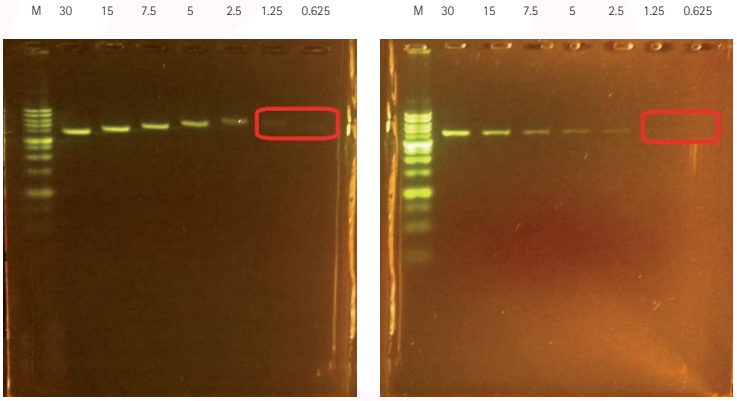
Short protocol

- Vortex DNA-Dye NonTox for 10 seconds prior to use.
- Dilute 1 part of DNA-Dye NonTox with 5 parts of DNA sample and mix*.
  Note: DNA-Dye NonTox must be added to DNA markers in order to visualize the ladder bands simultaneously with the sample after electrophoresis.
- Load sample and run according to standard procedures.
- After electrophoresis, remove gel and place on UV or a blue light transilluminator to immediately visualize bands.
  *DNA-Dye NonTox is a ready-to-use solution supplied as a 6X Loading Dye. No de-staining is required, and it produces low background noise.

Comparison with other DNA Gel Dyes

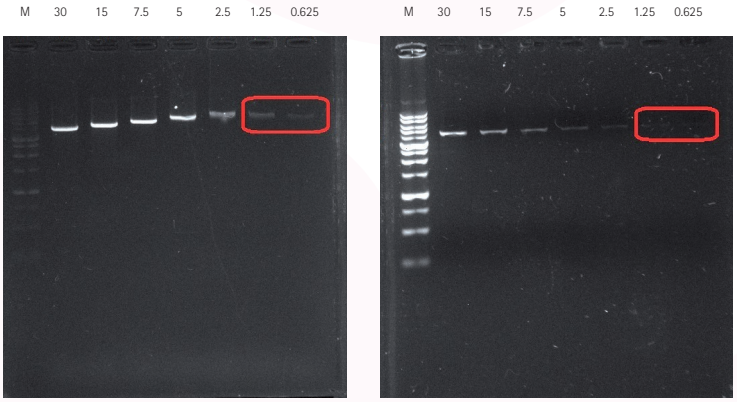
	DNA-Dye NonTox	Ethidium Bromide	SYBR Safe	GelRed	Methylene Blue	Crystal Violet
Protocol	Added to DNA sample and marker.	Can be used in the gel at or as a post-stain at a concentration of 0.5 mg/L.	Used as an in-gel stain only. It is supplied in ready-made buffers.	Can be used as post stain or in-gel stain. It is supplied in ready-made buffers	Post stain only, in 0.025% (w/v) methylene blue in water.	Used in gels at a concentration of around 1.2 mg/mL
Detection	**Compatible with most systems for gel visualization.**	UV transilluminator.	Blue light transilluminator.	UV transilluminator.	Visible light.	Visible light.
Sensitivity	As sensitive as ethidium bromide: bands of 1-5 ng should be detectable.	Can detect bands of 1-5 ng.	As sensitive as ethidium bromide: bands of 1-5 ng should be detectable.	Bands of 0.25 ng	Bands of 500 ng	Bands of 50-200 ng
Toxicity	Non-toxic, non-mutagenic.	Toxic, mutagen, teratogen and carcinogen according to a variety of tests.	Less mutagenic than ethidium bromide but its acute toxicity is higher.	Less mutagenic than ethidium bromide.	Non-mutagenic. Toxic if ingested.	Less mutagenic than ethidium bromide.
Migration behaviour	It attaches to DNA strands, but **does not intercalate.** Variations in the migration behaviour between samples and markers are rarely observed.	Ethidium bromide intercalates between the DNA strands.	As a gel stain, the dye migrates in the opposite direction of DNA, and bottom of gel may have lower dye concentration.	The migration in agarose gel electrophoresis of DNA fragments is shifted to a higher molecular size when using GelRed to stain the DNA.	No effect, as it is a post stain dye.	Combination with bromophenol blue can alter the migration of DNA in the presence of crystal violet.

Sensitivity > 1 ng. More sensitive than ethidium bromide (1 ng) and SYBR Safe (3 ng)



Concentration: ng/µl
Volume: 6 µl / lane
LED wavelength: 470 nm
M: 1 kb DNA ladder

Sensitivity Comparison under LED Transilluminator: DNA-Dye NonTox (left) and SYBR Safe (right).



Concentration: ng/µl
Volume: 6 µl / lane
UV wavelength: 300 nm
Exposure: 1 min
M: 1 kb DNA ladder

Sensitivity Comparison under UV Transilluminator: DNA-Dye NonTox (left) and SYBR Safe (right).

Assessment of Mutagenic Potential

	Controls		Dilution Factor of substance DNA-Dye NonTox				
	Negative control group (D-PBS)	Positive control group (4NOP)§	1X	2X	4X	8X	16X
Mean bacterial population ± SD	19 ± 3	1325 ± 247	35 ± 2	19 ± 7	22 ± 2	21 ± 1	19 ± 4
Mutagenicity*	-	69.73	1.84**	1.02	1.14	1.12	0.98

Table 1: Ames test/Mutagenicity test results using bacterial strain TA-98 (S9-deficient experiment group) for testing DNA Dye NonTox in comparison to Phosphate buffered saline (PBS) as negative control and 4NOP (4-nitro-o-phenylendiamine) as positive control group (n=3).

	Controls		Dilution Factor of substance DNA-Dye NonTox				
	Negative control group (D-PBS)	Positive control group (SA)§	1X	2X	4X	8X	16X
Mean bacterial population ± SD	14 ± 3	508 ± 17	11 ± 6	12 ± 2	13 ± 3	11 ± 6	18 ± 1
Mutagenicity*	-	36.31	0.79	0.88	0.93	0.81	1.29

Table 2: Ames test/Mutagenicity test results using bacterial strain TA98 (S9-deficient experiment group) for testing DNA-Dye NonTox in comparison to Phosphate buffered saline (PBS) as negative control and SA (Sodium azide) as positive control group (n=3).

* Mutagenicity = Testing substance / negative control group (§ Indication of significance ($p < 0.05$))
**The mean bacterial population of the testing substance DNA-Dye NonTox was 1.84-fold greater than that for the negative control group, which was <2-fold, but p value was 0.001 and exhibited significance.

IP-038EN;201711

Description	Code	Package
DNA-Dye NonTox	A9555,1000	1 ml

Storage: 2 – 8°C, protected from light Shelf life: approx. 12 months

Related Products

Description	Code	Package
Agarose Basic	A8963,0100	100 g
	A8963,0250	250 g
	A8963,0500	500 g
	A8963,1000	1 kg
Agarose low EEO (Agarose Standard)	A2114,0100	100 g
	A2114,0250	250 g
	A2114,0500	500 g
DNA-ExitusPlus™	A7089,0100	100 ml
	A7089,0500	500 ml
	A7089,1000RF	1 L
	A7089,2500RF	2.5 L
DNA-ExitusPlus™ IF	A7409,0100	100 ml
	A7409,0500	500 ml
	A7409,1000	1 L
	A7409,1000RF	1 L
	A7409,2500RF	2,5 L
	A7409,5000	5 L
DNase I	A3778,0010	10 mg
	A3778,0050	50 mg
	A3778,0100	100 mg
	A3778,0500	500 mg
Lysozyme for molecular biology	A4972,0001	1 g
	A4972,0010	10 g
Phenol equilibrated, stabilized : Chloroform : Isoamyl Alcohol 25 : 24 : 1	A0889,0100	100 ml
	A0889,0250	250 ml
	A0889,0500	500 ml
Proteinase K	A3830,0025	25 mg
	A3830,0100	100 mg
	A3830,0500	500 mg
RNase-ExitusPlus™	A7153,0500	500 ml
	A7153,1000	1 L
	A7153,1000RF	1 L
	A7153,2500RF	2,5 L
RNase A (DNase-free)	A3832,0050	50 mg
	A3832,0250	250 mg
	A3832,0500	500 mg
TAE buffer (50X)	A1691,0500	500 ml
	A1691,1000	1 L
TRItidy G™	A4051,0100	100 ml
	A4051,0200	200 ml

References

Hunter, S. B. et al., (2005). Journal of Clinical Microbiology, 43(3), 1045-1050.
Huang, Q. (2010). Clin. Lab, 56, 149-152.
Haines, A. M. et al., (2015). Properties of nucleic acid staining dyes used in gel electrophoresis. Electrophoresis, 36(6), 941-944.
Lalchhandama, K. (2016). Sciencevision.

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Nucleic Acid and Protein Purification with TRItidy G™

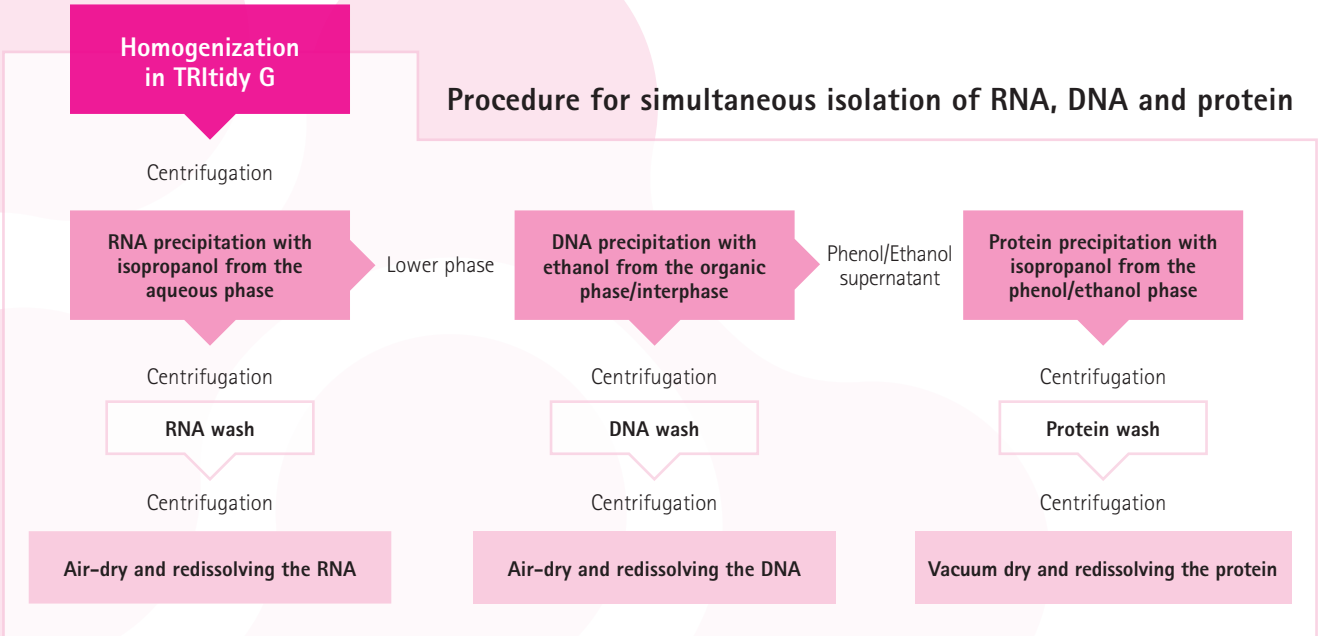
Simultaneous isolation of RNA, DNA and proteins from biological samples was firstly introduced in 1993, based on the use of a reagent containing phenol and guanidine thiocyanate. The simultaneously isolated RNA, DNA and proteins are ready for Northern, Southern and Western blotting as well as PCR, RT-PCR enzymatic assays. The complete recovery of DNA from samples used for the RNA and protein isolation makes it possible to normalize the results of gene expression studies based on DNA content instead of on the more variable total RNA, protein content or tissue weight.

TRItidy G™ is a monophasic reagent, based on the Chomczynski method, with additional modifications to improve the purity of the RNA, DNA and proteins. First, the RNA is selectively retained in the aqueous phase during the acidic extraction, while DNA and proteins stay in the organic phase and interphase, respectively. The DNA is isolated from the interphase/organic phase by a simple ethanol precipitation and proteins from the remaining organic phase.

Main Advantages

- **TRItidy G™** allows **one-step isolation** from the biological sample.
- **Monophasic reagent**
- No need of purification **columns** for the isolation of nucleic acids and proteins.
- **Quick** procedure.
- **Easy** to reproduce.
- Suitable for small and large samples (human, animal, plant, bacterial).

Procedure for simultaneous isolation of RNA, DNA and protein



IP-033EN;201807

Preparation of samples

Depending on your sample type, homogenization of samples should be performed according to the protocol below. The volume of the sample must not exceed 1/10 of the volume of **TRItidy G™**.

Sample type	Procedure
Tissue	Tissue is homogenized in approx. 1 ml **TRItidy G™** per 50 - 100 mg tissue
Cell culture cells (growing in monolayer)	Cells are lysed in 1 ml/10 cm2 (3.5 cm diameter) dish, after aspiration of the medium
Suspension cells	Cells have to be collected by centrifugation before addition of the reagent (1 ml **TRItidy G™** per 1-5 x 10^6 cells; bacteria up to 1 x 10^7).
Blood samples, serum or other biological fluids*	Add 750 µl of **TRItidy G™** per 250 µl of sample volume.

* Biological fluids with high levels of protein or other contaminating substances (e.g. whole blood) may be diluted 1:1 with RNase-free, molecular biology grade water (Suggested product: **A7398**).

Phase separation

Homogenization of the sample → Incubation time (5 min) → Add 0.2 ml of chloroform to the lysate → Additional incubation of 10 minutes → Centrifuge the lysate at 12 000 g for 15 min at 4°C

Purification protocol for RNA, DNA and PROTEINS

RNA Isolation

1. Transfer the aqueous phase to a new tube.
2. Add 1:1 isopropanol.
3. Precipitate the RNA on ice (15 min) and centrifuge.
4. Wash and air-dry RNA.
5. Dissolve in 20 µl DEPC-treated water.

DNA Isolation

1. Add ethanol and incubate (5 min).
2. Centrifuge and remove the supernatant (protein).
3. Wash with sodium citrate 0.1M and centrifuge (5 min).
4. Air-dry the DNA and dissolve in approx. 0.5 ml 1X TE.

Protein Isolation

1. Add isopropanol to the supernatant (2:1).
2. Centrifuge (10 min).
3. Wash protein precipitate with guanidine hydrochloride 0,3M and centrifuge (5 min).
4. Air-dry the precipitate and dissolve in 1% SDS.

Ordering information

Description	Code	Package
TRItidy G™	A4051,0100	100 ml
	A4051,0200	200 ml

Caution: **TRItidy G™** contains Phenol and Guanidinium thiocyanate. For safety instructions please read the Material Safety Data Sheet (MSDS) before use.

Related products

Description	Code
Chloroform BioChemica	A3691
DEPC BioChemica	A0881
Ethanol absolute for molecular biology	A3678
Guanidine Hydrochloride for molecular biology	A1106
2-Propanol BioChemica	A3465
SDS for molecular biology	A2263
TE buffer (1X) pH 7.4 for molecular biology	A9031
Water for molecular biology	A7398

IP-033EN

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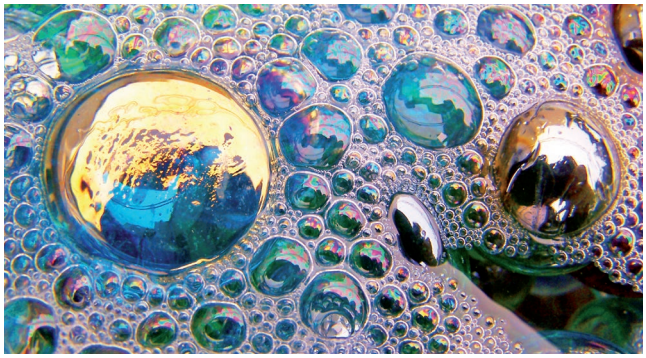
Detergents

Detergents are also called surfactants or surface-active agents. They are soluble both in aqueous solutions and in non-polar organic solvents and can influence the solubility of other molecules (such as lipids or hydrophobic proteins in buffer solutions).

Detergents are widely used in biochemistry, cell biology or molecular biology. Cell lysis, protein solubilization, protein crystallization or reduction of background staining in blotting experiments are just a few of numerous applications.



Examples of Applications

Purification

- Proteins in Protein Expression, stabilize proteins, study of the conformation and function of proteins
- DNA / RNA, as component of a lysis buffer (lysis of cell nuclei)

Solubilization

- Membranes
- Organelles
- Membrane proteins without denaturing them

Blotting (Proteomics and Electrophoresis)

- Southern
- Western
- Northern
- ELISA, or other immunostaining

Electrophoresis

- Amino acid and protein separation (SDS-PAGE)
- Capillary electrophoresis

Chromatography

- Stein-Moore (amino acid content analysis)

First of all, we present one special detergent. This is **Digitonin**. It is a non-ionic detergent from the group of saponins, isolated from the seeds of *Digitalis purpurea*.

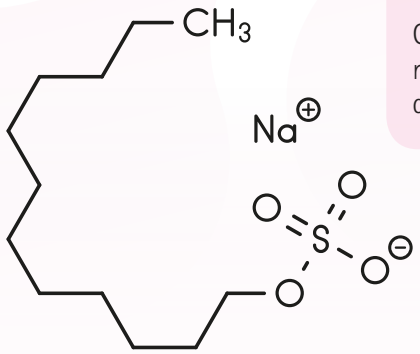
It was reported for extraction of membrane proteins, isolation of mytochondria, permeabilization of cell membranes, Ca^{2+} studies and precipitation of cholesterine. We also offer extracted Saponin from Quillaja Bark.

Product Name	Code	Package
Digitonin (Reag. USP) BioChemica	A1905,0500	500 mg
	A1905,0001	1 g
	A1905,0005	5 g
Saponin from Quillaja Bark pure	A2542,0100	100 g
	A2542,0500	500 g
	A2542,1000	1 kg

Ionic detergents contain a negatively (anionic detergent) or positively (cationic detergent) charged hydrophilic head group. The hydrophobic part is an alkyl chain (as for SDS, CTAB or alkyl sulfonic acids) or a more complicated steroidal structure as a bile acid salt (like cholate and deoxycholate).

Anionic detergent **Sodium Dodecyl Sulfate (SDS)** is one of the worldwide mostly used detergents in biological research.

SDS breaks the non-covalent bonds in proteins, denaturing them and making them to lose their native configuration.



Sodium dodecyl sulfate

Combined treatment with a disulfide reducing agent (β-mercaptoethanol or dithiothreitol) fully deploys the protein.

The monomeric SDS is strongly bound to most proteins at a ratio of 1.4 mg SDS / mg protein.

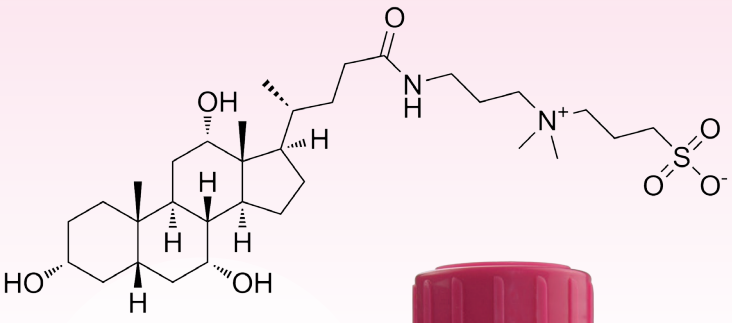
Product name	M (g/mol)	CMC (25 °C)	Code	Package
SDS for analysis, ACS	288.38	8.2 mM	132363.1207	50 g
			132363.1209	250 g
			132363.0914	5 kg
SDS (USP-NF, BP, Ph. Eur.) pure, pharma grade	288.38	8.2 mM	142363.1209	250 g
			142363.1211	1000 g
			142363.0914	5 kg
SDS for molecular biology	288.38	8.2 mM	A2263,0100	100 g
			A2263,0500	500 g
			A2263,1000	1 kg
SDS ultrapure	288.38	8.2 mM	A1112,0100	100 g
			A1112,0500	500 g
			A1112,1000	1 kg
SDS BioChemica	288.38	8.2 mM	A2572,0250	250 g
			A2572,0500	500 g
			A2572,1000	1 kg
SDS grained pure	288.38	8.2 mM	A7249,0500	500 g
			A7249,1000	1 kg
			A7249,5000	5 kg
SDS - Solution 20 % for molecular biology	288.38		A0675,0250	250 ml
			A0675,0500	500 ml
			A0675,1000	1 L
SDS - Solution 20 % pure	288.38		A3942,1000	1 L
SDS - Solution 10 % for molecular biology	288.38		A0676,0250	250 ml
			A0676,0500	500 ml
			A0676,1000	1 L
SDS - Solution 10 % pure	288.38		A3950,1000	1 L
SDS 0.004 mol/l volumetric solution	288.38		182792.1211	1 L
SDS-Tris-Glycine buffer (10X) BioChemica			A1415,1000	1 L

Cetyltrimethylammonium Bromide (CTAB) is a cationic detergent. In biochemistry it is mainly used in DNA extraction, especially of plants, in chromatography, in CTAB-Page and many more applications of chemical procedures and conservation.

Product name	M (g/mol)	CMC (25 °C)	Code	Package
Cetyltrimethylammonium Bromide for molecular biology	364.46	0.92 mM	A6284,0100	100 g
			A6284,0500	500 g
Cetyltrimethylammonium Bromide BioChemica	364.46	0.92 mM	A0805,0100	100 g
			A0805,0500	500 g

Zwitterionic detergents like **CHAPS** or sulfobetaine, combine the features of ionic and non-ionic detergents. Like non-ionic detergents they have no net charge. Consequently they show no electrophoretic mobility and do not bind to ion-exchange resins. Compared to ionic detergents, their CMC values are less sensitive to changes in ion concentration, but they have in common to break protein-protein interactions efficiently (denaturating effect).

The detergent CHAPS is a derivative of cholate; suitable for experiments that require functional proteins in their native state. Easy to remove by dialysis.



Product name	M (g/mol)	CMC (25 °C)	Code	Package
CHAPS BioChemica	614.89	4.2 – 6.3 mM	A1099,0005	5 g
			A1099,0025	25 g
			A1099,0050	50 g

IP-057EN;201907

Non-ionic detergents have uncharged hydrophilic head groups. The CMC value and micellar size of this group of detergents is mainly affected by temperature (the higher the temperature, the higher the CMC), not by ion strength.

Non-ionic detergents are generally non-denaturating and are therefore first choice for applications that require preservation of protein structure and activity. They are mild detergents that primarily break lipid-lipid and lipid-protein interactions, while protein-protein interactions stay unaffected. Especially alkyl glycosides and maltosides are suitable for isolation of biologically active membrane proteins. The advantages over polyoxyethylene detergents are e.g. homogenity in composition and structure (many polyoxyethylenes are composed of several homologues) and a lack of absorbance at 280 nm.

Product name	M (g/mol)	CMC (25 °C)	Code	Package
Brij® 35 aqueous solution 30% w/v for clinical diagnosis		0.092 mM	252317.1611	1 L
Brij® 35 solution 10 % peroxide-free		0.092 mM	A1286,0100	100 ml
n-Dodecyl-β-D-Maltoside BioChemica	510.63	0.15 – 0.19 mM	A0819,0001	1 g
			A0819,0005	5 g
n-Octyl-β-D-Glucopyranoside BioChemica	292.38	25 - 30 mM	A1010,0010	10 g
			A1010,0025	25 g
			A1010,0100	100 g
n-Octyl-β-D-Glucopyranoside pure	292.38	25 - 30 mM	Z46373.1211	1 kg
Pluronic® F-68 BioChemica		~8400	A1288,0100	100 g
			A1288,0500	500 g
Triton® X 100 for molecular biology	646.85	0.3 mM	A4975,0100	100 ml
			A4975,0500	500 ml
			A4975,1000	1 L
Triton® X-100 solution 10 % peroxide-free			A1287,0100	100 ml
Tween® 80 BioChemica	1310	0.012 mM	A1390,0500	500 ml
			A1390,1000	1 L
Tween® 80 (USP-NF, BP, Ph. Eur.) pure, pharma grade			142050.1611	1000 ml
			142050.1214	5 L
Tween® 20 for molecular biology	1227.72	0.059 mM	A4974,0100	100 ml
			A4974,0250	250 ml
			A4974,0500	500 ml
			A4974,1000	1 L
Tween® 20 (USP-NF, BP, Ph. Eur.) pure, pharma grade			142312.1611	1 L
			142312.1214	5 L
Tween® 20 solution 10 % peroxide-free			A1284,0100	100 ml

All our prices on our website are recommended list prices, for larger quantities and special offers contact our sales department or distribution partners.

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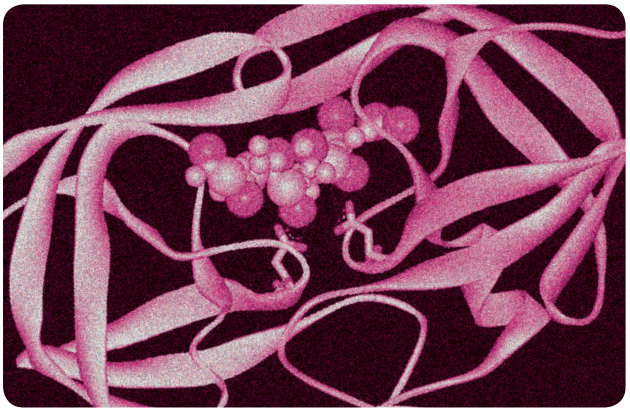
Protease Inhibitors

Introduction

Proteases are key enzymes in the regulation of cellular processes, they are found everywhere in all cells and tissues. Upon cell lysis proteases are released into the lysate. Some of the proteases pose a significant impediment to the analysis of biochemical processes. They can generate erroneous results concerning the activity, structure, or location of proteins. Within only a few minutes protease activity can destroy the preparations that took several days of work. Protease inhibitors are employed in order to prevent involuntary protein degradation. They may be synthesized in the laboratory or purified from natural sources.

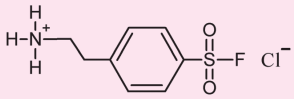
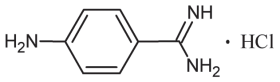
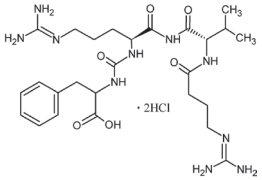
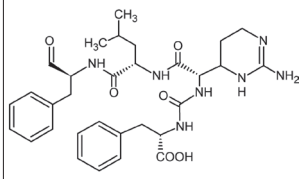
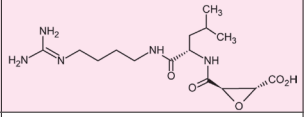
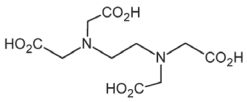
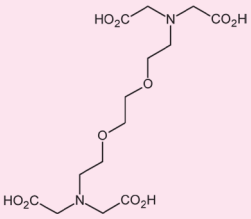
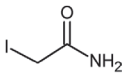
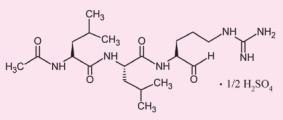
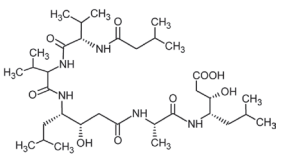
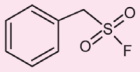


Keywords

- Protease activity
- Protein isolation
- Specific protease inhibitor
- Competitive inhibition

Proteases (also termed proteinase or peptidase) catalyze the hydrolysis of peptide bonds. Exopeptidases remove amino acids from the C- or N-terminus, whereas endopeptidases are capable of cleaving peptides within the molecule. Proteolytic enzyme activity largely depends on the active center of the enzyme. The main components involved in the enzymatic reaction are the amino acids serine, cysteine, and aspartic acid. A fourth group employs metal ions, leading to the classification of the metallo, serine, cysteine and aspartic proteases. In all eukaryotic cells and bacteria a large number of proteases are located in various compartments, the cytosol, mitochondria, vacuoles, lysosomes, ER, or in the extracellular space. Intracellular proteases are essential regulators in the synthesis, activation and degradation of proteins. Extracellular or secreted proteases are most prominent in the intestinal tract of animals or as a part of the blood-clotting cascade. Accordingly, different tissues or organisms contain different sets of proteases. Knowledge of the protease set of a particular expression system enables researchers to combat protease activity throughout the procedure of purification and analysis of proteins.
As proteases evolved, specific natural inhibitors co-evolved, targeting the active center of the enzymes. Protease inhibitors are common in nature, where they have protective and regulatory functions. For instance, about 20 of the nearly 200 proteins of blood serum are protease inhibitors. Various mechanisms are characterized including chemical modification of proteases, competitive binding to the active site or competitive binding to cofactors. For example: (i) TLCK irreversibly inhibits trypsin by alkylating the histidine residue in the active site of the enzyme, (ii) Trypsin inhibitor from soybean forms a strong protein-protein interaction to the active site of trypsin and related serine proteases, (iii) 2-Macroglobulin traps endopeptidases inside of the inhibitor, (iv) bestatine resembles a Phe-Leu substrate dipeptide, but the first residue contains a α-hydroxy group resulting in competitive active site-directed inhibition. Protease inhibitors bind to their target proteins reversibly or irreversibly. Reversibly binding inhibitors may be lost during dialysis or other purification steps. So it is of practical importance to know the mode of action for selecting the appropriate protease inhibitors and preparing solutions and buffers.
Protease inhibitors are supposed to provide specificity so that proteases are blocked but other proteins stay unaffected. Other desired characteristics include solubility and stability. Ideally, the substances are also non-toxic and easy to handle. Scientists at research institutions have relied on the quality of PanReac AppliChem's protease inhibitors for many years. Our protease inhibitors are available as individual substances to target specific proteases (Tab. 1) or more convenient, as cocktails specifically designed to inhibit proteases of the most common expression systems (Tab. 2).

Tab. 1: Individual Protease Inhibitors

Code	Description	M g/mol	Structure	Target Protease Class. Target Enzymes	Mechanism	Recommended Working Concentration	Stock Solution
A1421	AEBSF hydrochloride	239.69		serine proteases, thrombin, chymotrypsin, kallikrein, plasmin, proteinase K, Trypsin	Irreversible inhibition by sulfonylation of a functional group in the active center	0.1 - 2 mM	20 - 100 mM in buffer
A2126	p-Aminobenzamidine dihydrochloride	208.09		serine proteases, trypsin, plasmin, thrombin	Competitive inhibitor	1 mM	100 mM in water
A2266	6-Aminohexanoic acid	131.18		serine proteases		5 mM	500 mM in buffer
A2129	Antipain dihydrochloride	677.63		serine/cysteine proteases, trypsin, papain, cathepsin B		10 - 50 µg/ml	10 mg/ml in water, DMSO, MeOH
A2132	Aprotinin	6511.52	basic protein, consists of 58 amino acids	serine proteases, trypsin, chymotrypsin, kallikrein, plasmin		2 - 10 µg/ml	10 mg/ml in water
A2144	Chymostatin	607.70		serine/cysteine proteases. α-, β-, γ-, δ-chymotrypsin, papain, cathepsin A, B and D	Reversible inhibitor	6 - 60 µg/ml (10 - 100 µM)	20 mg/ml in DMSO, acetic acid
A2157	E-64	357.40		cysteine proteases, papain, bromelain, calpain, cathepsin B, H, L, tumor cathepsin, Streptococcus protease, ficin	Irreversible inhibitor	10 µM	1 - 10 mM in DMSO, 50 % EtOH
A1103	EDTA	292.25		metallo proteases.	Chelating agent, deactivates metal dependent enzymes	1 - 10 mM	500 mM in water
A0878	EGTA	380.35		metallo proteases, KEX 2, calcium-dependent proteases	Calcium specific chelator	1 - 10 mM	in aqueous solution
A1666	Iodoacetamide*	184.96		serine proteases, cerastocytin		1 - 5 mM (185 - 925 µg/ml)	in aqueous solution
A2183	Leupeptin hemisulfate	475.60		serine/cysteine proteases, plasmin, trypsin, papain, cathepsin B, thrombin, calpain	Reversible inhibitor	5 - 50 µg/ml (10 - 100 µM)	1 mg/ml in aqueous solutions
A2205	Pepstatin A	685.91		acid proteases, aspartic proteases, pepsin, cathepsin D, renin, HIV- and MMTV-proteases		1 - 5 µM (0.7 – 3.5 µg/ml)	in MeOH, EtOH, acetic acid solution, DMSO
A0999	PMSF *	174.19		serine/cysteine proteases, trypsin, chymotrypsin, thrombin, papain	Irreversible inhibitor	0.1 - 1 mM	10 -100 mM in EtOH 1.74 - 17.4 mg/ml

* Inactivation by reducing agents

Tab. 2: Protease Inhibitor Cocktails

Code	Description	Composition	Target Protease Class and Application
A7779	Protease Inhibitor Cocktail 5 MammCell/Tissue	E-64 ..... 1 µM AEBSF · HCl ..... 500 µM Aprotinin ..... 150 nM Leupeptin hemisulfate ... 1 µM	Inhibits serine, cysteine and trypsin-like proteases, as well as esterases. Suited for preparation of extracts from mammalian cells and tissue. Lyophilized mixture to make up a 100X solution.

Abbreviations

AEBSF	4-(2-Aminoethyl)-benzolsulfonylfluoride
E-64	N-(trans-Epoxysuccinyl)-L-leucine-4-guanidinobutylamide
EDTA	Ethylenediaminetetraacetate
EGTA	Ethyleneglycol-bis-(2-aminoethyl)-tetraacetate
EtOH	Ethanol
MeOH	Methanol
PMSF	Phenylmethanesulfonylfluoride

Related products

A1086 Tris ultrapure
A1069 HEPES for buffer solutions
A1360 Urea BioChemica
A1499 Guanidine Hydrochloride BioChemica
A1073 Imidazole for buffer solutions
A1101 DTT BioChemica
A1390 Tween® 80 BioChemica
A1112 SDS ultrapure
A0962 Acrylamide 4K solution (40 %)
A1142 Ammonium Persulfate BioChemica
A1148 TEMED
A5243 PVDF-Star Transfer Membrane 0.45 µm
A5237 Reprobe Nitrocellulose supported 0.22 µm Transfer Membrane
A5239 Pure Nitrocellulose unsupported 0.45 µm Transfer Membrane
A5242 Reprobe Nitrocellulose supported 0.45 µm Transfer Membrane

Literature

(1) Voet and Voet, Biochemistry, 2nd edition. John Wiley & Sons, Inc., New York, 1995
(2) Wang et al. (2007) MMDB: annotating protein sequences with Entrez's 3D-structure database. Nucleic Acids Res. 35 (Database issue), D298-300
(3) Chen et al. (2003) MMDB: Entrez's 3D-structure database. Nucleic Acids Res. 31(1), 474-7
(4) Harbut et al. (2008) Bioorg Med Chem Lett. 18 (22), 5932–5936
(5) Song and Suh (1998) Kunitz-type soybean trypsin inhibitor revisited: refined structure of its complex with porcine trypsin reveals an insight into the interaction between a homologous inhibitor from Erythrina caffra and tissue-type plasminogen activator. J Mol Biol. 275 (2), 347-63

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- **Protein and antibody applications:** products for PAGE and Western blots and the exploration of Proteomics.

Disinfection and decontamination

Product code	Product name	CAS number	Pack sizes
WHO list for desinfection			
191086	Ethanol absolute (USP, BP, Ph. Eur.) pharma grade	64-17-5	1 L, 2.5 L, 5 L, 25 L, 200 L
141339	Glycerol (USP, BP, Ph. Eur.) pure, pharma grade	56-81-5	1 L, 2.5 L, 5 L, 25 L
141077	Hydrogen Peroxide 33% w/v (110 vol.) stabilized (USP, BP, Ph. Eur.) pure, pharma grade	7722-84-1	1 L, 5 L, 25 L
141090	2-Propanol (USP, BP, Ph. Eur.) pure, pharma grade	67-63-0	1 L, 2.5 L, 5 L, 25 L, 200 L
DNA / RNA / RNase decontamination			
A7600	Autoclave-ExitusPlus™		6 L (6 x 1 L)
A7089	DNA-ExitusPlus™		100 mL, 500 mL, refill: 1 L, 2.5 L
A7409	DNA-ExitusPlus™ IF		100 mL, 500 mL, refill: 1 L, 2.5 L, 5 L
A9411	ExitusPlus™ Activity Test		25 tests
A7153	RNase-ExitusPlus™		500 mL, 1 L, 2.5 L
Decontamination in cell culture			
A9390	Aquabator-Clean™ (100X)		250 mL
A5230	Incubator-Clean™		500 mL, 5 L
A5219	Incuwater-Clean™		100 mL

DNA-ExitusPlus™ protects PCR diagnostic tests against contamination and false positives while completely eliminating and breaking down coronavirus RNA.

Genomic tests/PCR

Product code	Product name	CAS number	Pack sizes
Classical products for nucleic acid isolation			
A3691	Chloroform BioChemica	67-66-3	1 L
A1935	Chloroform : Isoamyl Alcohol 24:1 BioChemica		500 mL
A3678	Ethanol absolute for molecular biology	64-17-5	250 mL, 500 mL, 1 L, 2.5 L
A8075	Ethanol absolute for molecular biology	64-17-5	1 L, 2.5 L
A1578	Phenol water-saturated, non-stabilized	108-95-2	500 mL
A1624	Phenol water-saturated, stabilized	108-95-2	500 mL
A0444	Phenol water-saturated, non-stabilized + separate Tris solution	108-95-2	500 mL
A0447	Phenol water-saturated, stabilized + separate Tris solution	108-95-2	500 mL
A3276	Phenol liquid non water-saturated, non-stabilized BioChemica	108-95-2	100 mL, 1 L
A1153	Phenol equilibrated, stabilized	108-95-2	100 mL, 250 mL, 500 mL
A0889	Phenol equilibrated, stabilized : Chloroform : Isoamyl Alcohol 25:24:1		100 mL, 250 mL, 500 mL
A0944	Phenol non stabilized : Chloroform : Isoamyl Alcohol 25:24:1		100 mL, 500 mL
A2279	Phenol stabilized : Chloroform : Isoamyl Alcohol 25:24:1		100 mL, 500 mL
A2489	Phenol non-stabilized : Chloroform : Isoamyl Alcohol 25:24:1 + separate Tris solution		500 mL
A3928	2-Propanol for molecular biology	67-63-0	500 mL, 1 L, 2.5 L
Chaotropic isolation			
A3418	DNA Isolation reagent for genomic DNA		50 mL
A1499	Guanidine Hydrochloride BioChemica	50-01-1	1 kg, 5 kg, 25 kg
A1106	Guanidine Hydrochloride for molecular biology	50-01-1	1 kg
A1107	Guanidine Thiocyanate for molecular biology	593-84-0	500 g, 1 kg, 25 kg
A3846	Triethylammonium Acetate buffer pH 7.0 (1 M)	5204-74-0	500 mL, 1 L
A4051	TRItidy G™		100 mL, 200 mL

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Product code	Product name	CAS number	Pack sizes
Enzymes for genomics			
A3778	DNase I	9003-98-9	10 mg, 50 mg, 100 mg, 500 mg
A4972	Lysozyme for molecular biology	9001-63-2	1 g, 10 g
A3711	Lysozyme BioChemica	9001-63-2	1 g, 10 g, 50 g
A5231	SuperHot Taq DNA Polymerase		200 U
A5186	Taq DNA Polymerase		500 U
A5434	Taq DNA Polymerase DNA-free		500 U
A3830	Proteinase K	39450-01-6	25 mg, 100 mg, 500 mg
A7932	Proteinase K, recombinant	39450-01-6	100 mg, 500 mg
A4392	Proteinase K solution		1 mL, 5 mL, 10 mL
A2760	RNase A	9001-99-4	100 mg, 500 mg, 1 g
A3832	RNase A (DNase-free)	9001-99-4	50 mg, 250 mg, 500 mg
Agarose gel electrophoresis			
A8963	Agarose Basic	9012-36-6	100 g, 250 g, 500 g, 1 kg
A2114	Agarose low EEO (Agarose Standard)	9012-36-6	100 g, 250 g, 500 g
A2116	Agarose medium EEO	9012-36-6	100 g, 500 g
A1091	Agarose MP	9012-36-6	100 g, 250 g, 500 g
DNA ladders			
A5191	DNA Ladder 100 bp		250 µg
A3470	DNA Ladder 100 bp (lyophilised)		50 µg
A5216	DNA Ladder 100 bp plus		50 µg, 250 µg
A5207	DNA Ladder 1 kb		50 µg, 250 µg
A3660	DNA Ladder Mix 100 - 5000 (lyophilised)		50 µg
Staining of nucleic acids and cycler validation			
A9555	DNA-Dye NonTox		1 mL
A1152	Ethidium Bromide solution 1% BioChemica	1239-45-8	10 mL, 25 mL, 100 mL
A2273	Ethidium Bromide solution 0.07% "dropper-bottle"	1239-45-8	5 mL, 15 mL
A9742	PCR Cycler Validation Kit		2 tests
A8511	SYBR Green® staining reagent, DNA free		5 x 0.625 mL, 10 x 0.625 mL
Buffers for Genomics			
A3992	Bis-Tris for molecular biology	6976-37-0	250 g
A1025	Bis-Tris for buffer solutions	6976-37-0	250 g, 500 g, 1 kg
A4150	CTAB - Lysis buffer BioChemica		500 mL, 1 L
A5097	EDTA for molecular biology	60-00-4	500 g
A1103	EDTA BioChemica	60-00-4	250 g, 1 kg
A2937	EDTA Disodium Salt 2-hydrate for molecular biology	6381-92-6	250 g, 500 g, 1 kg
A4892	EDTA solution pH 8.0 (0.5 M) for molecular biology		100 mL, 500 mL, 1 L
A1396	SSC buffer (20X) for molecular biology		1 L
A4686	TAE buffer (50X) for molecular biology		1 L
A1691	TAE buffer (50X)		500 mL, 1 L
A4227	TAE buffer (10X) for molecular biology		1 L, 5 L
A3945	TBE buffer (10X) for molecular biology		1 L
A0972	TBE buffer (10X)		1 L, 5 L, 10 L
A4348	TBE buffer (10X) powder		1 L, 5 L, 10 L
A4228	TBE buffer (5X) for molecular biology		5 L
A1417	TBE buffer (5X)		5 L
A4394	TBE buffer (5X) powder		10 L
A3837	TE buffer (1X) pH 7.5		1 L
A2575	TE buffer (1X) pH 8.0		1 L
A0386	TE buffer (1X) pH 8.0 for molecular biology		500 mL, 1 L
A8569	TE buffer (1X) pH 8.0 low EDTA for molecular biology		500 mL, 1 L
A2264	Tris for molecular biology	77-86-1	500 g, 1 kg, 5 kg
A1086	Tris ultrapure	77-86-1	500 g, 1 kg, 5 kg, 10 kg
A1379	Tris for buffer solutions	77-86-1	500 g, 1 kg, 5 kg, 10 kg
A4263	Tris buffer pH 7.5 (1 M) for molecular biology		500 mL
A4577	Tris buffer pH 8.0 (1 M) for molecular biology		500 mL, 1 L
A3452	Tris Hydrochloride for molecular biology	1185-53-1	250 g, 500 g, 1 kg, 25 kg
A1087	Tris Hydrochloride for buffer solutions	1185-53-1	250 g, 500 g, 1 kg, 5 kg

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Product code	Product name	CAS number	Pack sizes
Supporting chemicals for Genomics			
A2331	Bromophenol Blue	115-39-9	25 g
A1098	Cesium Chloride 99.999% for molecular biology	7647-17-8	1 kg
A1126	Cesium Chloride 99.9% BioChemica	7647-17-8	100 g, 1 kg
A0881	DEPC BioChemica	1609-47-8	20 mL, 50 mL, 100 mL
A7248	Dimethyl Sulfoxide (DMSO), sterile filtered (ampoules)	67-68-5	5 x 10 mL
A2156	Formamide deionized for molecular biology	75-12-7	100 mL, 500 mL, 1 L
A0871	Formamide ultrapure	75-12-7	1 L
A5076	Magnesium Chloride 25 mmol/L (25 mM) for molecular biology		5 mL, 100 mL
A5324	Magnesium Chloride 100 mmol/L (100 mM) for molecular biology		1 mL
A2135	Paraffin Oil light for molecular biology	8042-47-5	100 mL, 500 mL
A2260	Polyvinylpyrrolidone (K90) for molecular biology	9003-39-8	250 g, 1 kg
A2159	Salmon sperm DNA sodium salt (sonified)	9007-49-2	1 g, 5 g
A8510	Water PCR tested, DNA free, for molecular biology	7732-18-5	10 x 1.7 mL

Protein and antibody applications

Product code	Product name	CAS number	Pack sizes
Make proteins visible			
251820	Biuret's Reagent for clinical diagnosis		100 mL
A6932	Bradford - Solution for Protein Determination		100 mL, 250 mL, 500 mL
A3480	Coomassie® Brilliant blue G-250 (C.I. 42655)	6104-58-1	25 g
A1092	Coomassie® Brilliant Blue R-250 (C.I. 42660)	6104-59-2	25 g, 100 g
Acrylamides			
A3812	Acrylamide for molecular biology	79-06-1	500 g, 1 kg
A1089	Acrylamide 2K Standard grade, extrapure	79-06-1	500 g, 1 kg
A1090	Acrylamide 4K ultrapure	79-06-1	500 g
A4983	Acrylamide solution (30%) - Mix 29:1 for molecular biology		250 mL, 500 mL, 1 L
A0951	Acrylamide 4K solution (30%) - Mix 29:1		500 mL, 1 L
A3626	Acrylamide solution (30%) - Mix 37.5:1 for molecular biology		250 mL, 500 mL, 1 L
A1672	Acrylamide 4K solution (30%) - Mix 37.5:1		500 mL, 1 L
A0962	Acrylamide 4K solution (40%)		1 L
A3658	Acrylamide solution (40%) - Mix 19:1 for molecular biology		500 mL, 1 L
A0385	Acrylamide solution (40%) - Mix 29:1 for molecular biology		500 mL, 1 L
A0950	Acrylamide 4K solution (40%) - Mix 29:1		500 mL, 1 L
A0946	Acrylamide 4K solution (40%) - Mix 32:1		1 L
A4989	Acrylamide solution (40%) - Mix 37.5:1 for molecular biology		500 mL, 1 L
A1577	Acrylamide 4K solution (40%) - Mix 37.5:1		500 mL, 1 L
A3636	Bisacrylamide for molecular biology	110-26-9	100 g, 250 g, 1 kg
A1096	Bisacrylamide 2K Standard, pure	110-26-9	100 g
SDS			
132363	SDS for analysis, ACS	151-21-3	250 g, 5 kg
142363	SDS (USP-NF, BP, Ph. Eur.) pure, pharma grade	151-21-3	250 g, 1 kg, 5 kg, 25 kg
A2263	SDS for molecular biology	151-21-3	100 g, 500 g, 1 kg
A1112	SDS ultrapure	151-21-3	100 g, 500 g, 1 kg
A2572	SDS BioChemica	151-21-3	250 g, 500 g, 1 kg, 25 kg
A7249	SDS grained pure	151-21-3	500 g, 1 kg, 5 kg
A0675	SDS - solution 20% for molecular biology	151-21-3	250 mL, 500 mL, 1 L
A3942	SDS solution 20% pure	151-21-3	1 L
146132	SDS solution 10% w/v pure	151-21-3	10 L
A0676	SDS - solution 10% for molecular biology	151-21-3	250 mL, 500 mL, 1 L
A3950	SDS solution 10% pure	151-21-3	1 L
A1415	SDS-Tris-Glycine buffer (10X) BioChemica		1 L

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Product code	Product name	CAS number	Pack sizes
Buffers and components for PAGE			
A2941	Ammonium Peroxodisulfate (APS) for molecular biology	7727-54-0	100 g
A1142	Ammonium Peroxodisulfate (APS) BioChemica	7727-54-0	250 g
A2948	DTT for molecular biology	3483-12-3	5 g, 10 g, 25 g
A1101	DTT BioChemica	3483-12-3	5 g, 25 g, 100 g
A1067	Glycine for molecular biology	56-40-6	500 g, 1 kg, 5 kg
A1108	β-Mercaptoethanol for molecular biology	60-24-2	100 mL, 500 mL
A8889	Protein Marker VI (10 - 245) prestained		500 µL
A1415	SDS-Tris-Glycine buffer (10X) BioChemica		1 L
A1148	TEMED	110-18-9	25 mL, 100 mL
A1085	Tricine BioChemica	5704-04-1	250 g, 500 g, 1 kg, 5 kg
Blocking / BSA and control staining			
A0850	Albumin (BSA) EIA and RIA grade	9048-46-8	50 g, 500 g
A2244	Albumin (BSA) Fraction V (pH 5.2)	9048-46-8	50 g
A6588	Albumin (BSA) Fraction V (pH 7.0) for Western blotting	9048-46-8	50 g, 100 g
A1391	Albumin (BSA) Fraction V (pH 7.0)	9048-46-8	25 g, 50 g, 100 g, 250 g, 500 g
A4344	Albumin crude from chicken egg	9006-59-1	250 g, 500 g, 1 kg
A7099	Blocking Buffer I		125 mL, 500 mL
A0830	Nonfat dried milk powder		500 g, 1 kg, 5 kg
A2260	Polyvinylpyrrolidone (K90) for molecular biology	9003-39-8	250 g, 1 kg
Detergents for Western blot			
A5001	TBS (Tris-buffered saline) (20X) - Powder		1 L
A4975	Triton® X-100 for molecular biology	9036-19-5	100 mL, 500 mL, 1 L
A4974	Tween® 20 for molecular biology	9005-64-5	100 mL, 250 mL, 500 mL, 1 L
A1390	Tween® 80 BioChemica	9005-65-6	500 mL, 1 L
Protein expression with IPTG			
A4773	IPTG for molecular biology	367-93-1	5 g, 25 g
A1008	IPTG BioChemica	367-93-1	5 g, 25 g, 50 g, 100 g
A7211	IPTG from plant origin galactose	367-93-1	25 g, 1 kg

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A206,EN;202102

Amino acids
All essential – all from one

Amino acids

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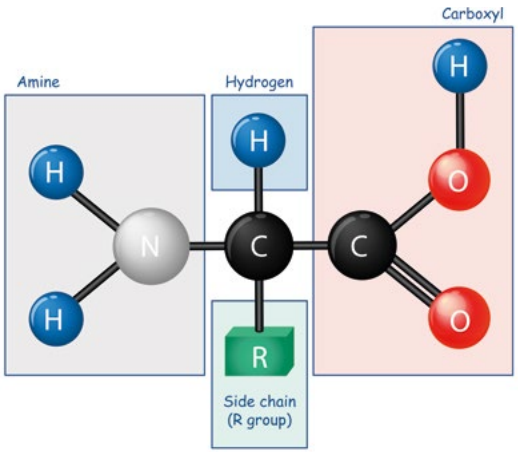

Product code	Product name	CAS number	Pack sizes
A1688	L-Alanine (USP, Ph. Eur.) pure, pharma grade	56-41-7	100 g
A3675	L-Arginine base BioChemica	74-79-3	100 g, 1 kg
A1345	L-Arginine base (USP, Ph. Eur.) pure, pharma grade	74-79-3	500 g, 1 kg, 10 kg
A3709	L-Arginine Hydrochloride BioChemica	1119-34-2	1 kg
A1700	L-Arginine Hydrochloride (USP, Ph. Eur.) pure, pharma grade	1119-34-2	1 kg
147755	L-Asparagine anhydrous (USP-NF) pure, pharma grade	70-47-3	5 kg
A3721	L-Asparagine 1-hydrate BioChemica	5794-13-8	100 g, 1 kg
A1668	L-Asparagine 1-hydrate (Ph. Eur.) pure, pharma grade	5794-13-8	100 g, 1 kg, 25 kg
A1701	L-Aspartic Acid (Ph. Eur., USP) pure, pharma grade	56-84-8	1 kg, 50 kg
A3694	L-Cysteine BioChemica	52-90-4	100 g
A1425	L-Cysteine (DAB) pure, pharma grade	52-90-4	1 kg
A3698	L-Cysteine Hydrochloride 1-hydrate BioChemica	7048-04-6	500 g
A1702	L-Cysteine Hydrochloride 1-hydrate (USP, Ph. Eur.) pure, pharma grade	7048-04-6	1 kg
A1703	L-Cystine (Ph. Eur.) pure, pharma grade	56-89-3	100 g, 500 g, 1 kg, 5 kg
A0622	L-Cystine Dihydrochloride pure	30925-07-6	10 kg
A1704	L-Glutamic Acid (USP, Ph. Eur.) pure, pharma grade	56-86-0	250 g, 500 g, 1 kg, 25 kg
A3704	L-Glutamine for cell culture	56-85-9	1 kg
A1420	L-Glutamine (DAB, USP) pure, pharma grade	56-85-9	250 g, 1 kg
131340	Glycine (Reag. USP) for analysis, ACS	56-40-6	1 kg, 5 kg
631340	Glycine (Ph. Eur, BP, USP) GMP - IPEC grade	56-40-6	5 kg
141340	Glycine (USP, BP, Ph. Eur.) pure, pharma grade	56-40-6	1 kg, 5 kg, 25 kg
A1067	Glycine for molecular biology	56-40-6	500 g, 1 kg, 5 kg
A3738	L-Histidine base BioChemica	71-00-1	100 g, 1 kg
A1341	L-Histidine base (USP, Ph. Eur.) pure, pharma grade	71-00-1	100 g, 1 kg, 5 kg
A3733	L-Histidine Hydrochloride 1-hydrate BioChemica	5934-29-2	100 g, 500 g
A1591	L-Histidine Hydrochloride 1-hydrate (Ph. Eur.) pure, pharma grade	5934-29-2	100 g, 500 g, 1 kg
A1705	L-Hydroxyproline pure	51-35-4	250 g
A1440	L-Isoleucine (USP, Ph. Eur.) pure, pharma grade	73-32-5	1 kg
A1426	L-Leucine (USP, Ph. Eur.) pure, pharma grade	61-90-5	1 kg
A1342	L-Lysine 1-hydrate (DAB) pure, pharma grade	39665-12-8	100 g, 250 g
A1706	L-Lysine Monohydrochloride (USP, Ph. Eur.) pure, pharma grade	657-27-2	1 kg, 25 kg

Amino acids
All essential – all from one

Product code	Product name	CAS number	Pack sizes
A1340	L-Methionine (USP, Ph. Eur.) pure, pharma grade	63-68-3	100 g, 1 kg
A1343	L-Ornithine Hydrochloride (DAB) pure, pharma grade	3184-13-2	1 kg
A1344	L-Phenylalanine (USP, Ph. Eur.) pure, pharma grade	63-91-2	100 g, 1 kg
A1707	L-Proline (USP, Ph. Eur.) pure, pharma grade	147-85-3	100 g, 1 kg, 20 kg
A1708	L-Serine (USP, Ph. Eur.) pure, pharma grade	56-45-1	100 g, 1 kg
A1419	L-Threonine (USP, Ph. Eur.) pure, pharma grade	72-19-5	1 kg
A1645	L-Tryptophan (USP, Ph. Eur.) pure, pharma grade	73-22-3	25 g, 100 g, 500 g, 1 kg
A3401	L-Tyrosine for cell culture	60-18-4	1 kg
A1677	L-Tyrosine (USP, Ph. Eur.) pure, pharma grade	60-18-4	1 kg
A1637	L-Valine (USP, Ph. Eur.) pure, pharma grade	72-18-4	1 kg

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Biological buffers
Balanced solutions – balanced results

Biological buffers

Biochemical processes are markedly impaired even by small pH changes. Therefore, it is usually required to stabilize the pH value in vitro without affecting the system's functioning by using buffered systems (e.g. Tris, HEPES, MOPS, PBS etc.).

Find below PanReac AppliChem branded biological buffers which are suited for your biological / biochemical / biotechnological applications in your laboratory, pilot plant or industry.

Product code	Product name	CAS number	Pack sizes
A1060	ACES for buffer solutions	7365-82-4	1 kg, 10 kg
A3485	Ammonium Sulfate for molecular biology	7783-20-2	1 kg, 5 kg
A1032	Ammonium Sulfate BioChemica	7783-20-2	1 kg, 5 kg
A1062	BES for buffer solutions	10191-18-1	1 kg
A1024	Bicine for buffer solutions	150-25-4	250 g
A3992	Bis-Tris for molecular biology	6976-37-0	250 g
A1025	Bis-Tris for buffer solutions	6976-37-0	250 g, 500 g, 1 kg
A2140	Cacodylic Acid Sodium Salt 3-hydrate BioChemica	6131-99-3	100 g, 250 g
A1065	CHES for buffer solutions	103-47-9	250 g
A4150	CTAB - Lysis buffer BioChemica		500 mL, 1 L
A5097	EDTA for molecular biology	60-00-4	500 g
A1103	EDTA BioChemica	60-00-4	250 g, 1 kg
A2937	EDTA Disodium Salt 2-hydrate for molecular biology	6381-92-6	250 g, 500 g, 1kg
A4892	EDTA solution pH 8.0 (0.5 M) for molecular biology		100 mL, 500 mL, 1 L
A3145	EDTA solution pH 8.0 (0.5 M)		1 L
A1067	Glycine for molecular biology	56-40-6	500 g, 1 kg, 5 kg
A1106	Guanidine Hydrochloride for molecular biology	50-01-1	1 kg
A3240	Guanidine Hydrochloride ultrapure	50-01-1	500 g, 1 kg, 5 kg
A1499	Guanidine Hydrochloride BioChemica	50-01-1	1 kg, 5 kg, 25 kg
A0860	Guanidine Hydrochloride solution (8 M) BioChemica	50-01-1	500 mL
A1107	Guanidine Thiocyanate for molecular biology	593-84-0	500 g, 1 kg, 25 kg
A4335	Guanidine Thiocyanate BioChemica	593-84-0	1 kg
A0703	Guanidine Thiocyanate solution (6 M in 0.1 M Tris; pH 7.5) for molecular biology	593-84-0	1 L
A3724	HEPES for molecular biology	7365-45-9	250 g, 500 g, 1 kg
A1069	HEPES for buffer solutions	7365-45-9	100 g, 250 g, 500 g, 1 kg, 5 kg, 25 kg
A6916	HEPES buffer pH 7.5 (1 M) sterile		250 mL
A6906	HEPES buffer pH 8.0 (1 M) sterile		250 mL
A1070	HEPES Sodium Salt for buffer solutions	75277-39-3	500 g
A1072	HEPPSO for buffer solutions	68399-78-0	100 g
A1378	Imidazole for molecular biology	288-32-4	50 g, 250 g
A3635	Imidazole ultrapure	288-32-4	100 g, 250 g
A1073	Imidazole for buffer solutions	288-32-4	500 g, 1 kg
A0689	MES anhydrous BioChemica	4432-31-9	250 g, 500 g, 1 kg
A1074	MES 1-hydrate for buffer solutions	145224-94-8	100 g, 250 g, 500 g, 1 kg
A2947	MOPS for molecular biology	1132-61-2	100 g, 500 g, 1 kg
A1076	MOPS for buffer solutions	1132-61-2	250 g, 500 g, 1 kg, 5 kg
A9202	PBS tablets pH 7.2 (for 1 L)		10 tabs, 100 tabs
A9201	PBS tablets pH 7.4 (for 1 L)		10 tabs, 100 tabs
A9162	PBS tablets pH 7.4 (for 100 mL)		100 tabs
A9177	PBS tablets pH 7.4 (for 200 mL)		100 tabs
A9191	PBS tablets pH 7.4 (for 500 mL)		100 tabs
A1079	PIPES for buffer solutions	5625-37-6	100 g, 500 g
A2939	Potassium Chloride for molecular biology	7447-40-7	500 g
A1043	Potassium di-Hydrogen Phosphate BioChemica	7778-77-0	1 kg, 5 kg
A1042	di-Potassium Hydrogen Phosphate anhydrous BioChemica	7758-11-4	1 kg, 5 kg
A4555	Sodium Acetate anhydrous for molecular biology	127-09-3	1 kg
A2942	Sodium Chloride for molecular biology	7647-14-5	1 kg, 5 kg
A7006	Sodium Chloride 5 mol/L (5 M) for molecular biology	7647-14-5	1 L

Biological buffers
Balanced solutions – balanced results

Product code	Product name	CAS number	Pack sizes
A1046	di-Sodium Hydrogen Phosphate anhydrous BioChemica	7558-79-4	1 kg, 5 kg
A3905	di-Sodium Hydrogen Phosphate 2-hydrate BioChemica	10028-24-7	1 kg
A1396	SSC buffer (20X) for molecular biology		1 L
A4686	TAE buffer (50X) for molecular biology		1 L
A1691	TAE buffer (50X)		1 L
A4227	TAE buffer (10X) for molecular biology		1 L, 5 L
A3945	TBE buffer (10X) for molecular biology		1 L
A0972	TBE buffer (10X)		1 L, 5 L, 10 L
A4348	TBE buffer (10X) powder		1 L, 10 L
A4228	TBE buffer (5X) for molecular biology		5 L
A1417	TBE buffer (5X)		5 L
A4394	TBE buffer (5X) powder		10 L
A0386	TE buffer (1X) pH 8.0 for molecular biology		500 mL, 1 L
A8569	TE buffer (1X) pH 8.0 low EDTA for molecular biology		500 mL, 1 L
A1084	TES for buffer solutions	7365-44-8	100 g, 1 kg
A1431	Trichloroacetic Acid BioChemica	76-03-9	250 g, 500 g, 1 kg
A0590	Trichloroacetic Acid solution 20% BioChemica	76-03-9	500 mL, 1 L
A1085	Tricine BioChemica	5704-04-1	250 g, 500 g, 1 kg, 5 kg
A0697	Trifluoroacetic Acid BioChemica	76-05-1	100 mL
A2264	Tris for molecular biology	77-86-1	500 g, 1 kg, 5 kg
A1086	Tris ultrapure	77-86-1	500 g, 1 kg, 5 kg, 10 kg, 25 kg
A1379	Tris for buffer solutions	77-86-1	500 g, 1 kg, 5 kg, 10 kg
A4263	Tris buffer pH 7.5 (1 M) for molecular biology		500 mL
A4577	Tris buffer pH 8.0 (1 M) for molecular biology		500 mL, 1 L
A3452	Tris Hydrochloride for molecular biology	1185-53-1	250 g, 500 g, 1 kg, 25 kg
A1087	Tris Hydrochloride for buffer solutions	1185-53-1	250 g, 500 g, 1 kg, 5 kg
A1049	Urea for molecular biology	57-13-6	1 kg, 5 kg, 25 kg
A1360	Urea BioChemica	57-13-6	5 kg, 10 kg

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