

Selecting Media and Buffers for Microbiology and Molecular Biology Applications

CORNING

Application Note

Corning offers a wide range of reagents and buffers for microbiology and molecular biology applications. These products allow for selective cell growth as well as viability and proliferation. Use the guide below to help you select the appropriate product for your research. If you have questions, please contact our Scientific Support Team at ScientificSupportEMEA@corning.com. You can find additional product details at www.corning.com/lifesciences.

Liquid

Corning Cat. No.	Description	Applications
30-006-CF	Kanamycin Sulfate, 5,000 µg/mL solution (50 mL)	Kanamycin is a member of the aminoglycosides a group of molecules and interacts with the 30S subunit of prokaryotic ribosomes. It induces errors in translation and thus hinders protein synthesis. The KanR-Tn5 gene product (aminoglycoside phosphotransferase) confers resistance to kanamycin. Kanamycin sulfate is effective against Gram-negative and Gram-positive bacteria. This is also offered in powder form.
46-000-CV	Water, Molecular Biology Grade; tested to USP Sterile Purified Water Specifications (500 mL)	Molecular biology grade water is ideal for the preparation of reagents, rinsing glassware and plasticware, and other molecular biology applications where RNase-, DNase-, and protease-free water is required. No toxic agents, including DEPC, are used in the preparation of Corning's molecular biology grade water, eliminating possible interferences with enzymatic reactions.
46-000-CM	Water, Molecular Biology Grade; tested to USP Sterile Purified Water Specifications (1L)	
46-003-CR	S.O.C. Medium (10 mL)	S.O.C. is the preferred medium for post-transformation <i>Escherichia coli</i> work. S.O.C. medium is used as a recovery medium during the final stage of transformation of <i>E. coli</i> . The use of SOC medium improves transformation efficiency.
46-009-CM	TE Buffer, 1X (1L)	Tris-EDTA (TE) buffer is commonly used in work with nucleic acids. For example, it can be included as a solubilization buffer in DNA and RNA purification, as a running buffer in electrophoresis, or as a general storage buffer for nucleic acids.
46-010-CM	TAE Buffer, 10X (1L)	Tris-Acetate-EDTA (TAE) buffer is used in DNA agarose gel electrophoresis, both in the agarose gel itself and the running buffer. Linear, double-stranded DNA separates faster in a TAE buffer-based system compared to Tris-Borate-EDTAA (TBE) buffer, but the latter has a higher buffering capacity and is thus more resistant to changes in pH. Use of TAE vs. TBE buffer depends on downstream applications. TAE is recommended for preparative electrophoresis in which the nucleic acid bands being separated are to be used in cloning and other work requiring enzymatic applications.
46-011-CM	TBE Buffer, 10X (1L)	Tris-Borate-EDTA (TBE) has applications in DNA and RNA agarose gel electrophoresis and polyacrylamide gel electrophoresis. TBE has a higher buffering capacity than Tris-Acetate-EDTA (TAE) buffer, but the latter is more suitable for steps involving the action of enzymes on nucleic acids because borate is an enzymatic inhibitor. Electrophoresis using TBE-containing agarose gels and TBE running buffer is much more suitable for size analysis of the nucleic acids being separated, as TBE buffer allows these nucleic acids to better maintain their structural integrity.
46-013-CM	PBS 10X, without Calcium and Magnesium, pH 7.4 (1L)	Phosphate Buffered Saline (PBS) is used to maintain a physiological pH and osmolarity, two key factors in tissue culture and molecular biology research. This concentrated form should be diluted to a working concentration using reagent grade water.
46-020-CM	SSC Buffer, 20X (1L)	Saline-Sodium Citrate (SSC) buffer is used in both nucleic acid hybridization and blot transfer procedures. 20X is the maximum concentration used; 0.2X may be used depending on the application.
46-021-CM	SSPE, 20X (1L)	Saline-Sodium-Phosphate-EDTA (SSPE) buffer has applications in nucleic acid hybridization and other molecular biology work.
46-030-CM	1M Tris-HCl Buffer, 1M pH 7.5 (1L)	Tris-Hydrochloride (Tris-HCl) buffer has many applications in molecular biology work, including use in nucleic acid purification. This product can be diluted to obtain the desired concentration.
46-031-CM	1M Tris-HCl Buffer, 1M pH 8.0 (1L)	
46-032-CV	Sodium Chloride, 5M (500 mL)	NaCl is a common molecular biology reagent. All production lots are tested to ensure that they are free of RNase. This product is used to control osmolarity and conductivity, among other factors.
46-033-CI	Sodium Acetate, 3M (100 mL)	Sodium Acetate is a common molecular biology reagent. All production lots are tested to ensure that they are free of RNase. It is often used in buffer systems to maintain the pH of a given solution.
46-034-CI	0.5M EDTA, pH 8.0 (100 mL)	Ethylenediaminetetraacetic acid (EDTA) is a polyamino carboxylic acid. It is a colorless, water-soluble solid and is useful as a chelating agent due to its ability to "sequester" metal ions such as Ca ₂ ⁺ and Fe ₃ ⁺ . These cations are responsible for various undesirable effects in molecular biology and cell culture processes. After being bound by EDTA, these metal ions remain in the solution but exhibit diminished reactivity. Therefore, the use of EDTA allows for greater control over many experiments.

Liquid (continued)

Corning Cat. No.	Description	Applications
46-040-CI	SDS, 10% (100 mL)	Sodium Dodecyl Sulfate (SDS) is an anionic detergent with applications in SDS-PAGE protein analysis and nucleic acid purification. It is a wetting agent that is effective in both acid and alkaline solutions and is most often used as a protein and lipid solubilization reagent. SDS is also a powerful protein denaturant. This 10% solution is prepared in 18 megaohm water and is 0.2 µm filtered.
46-050-CM	Miller's LB Broth (1L)	Miller's LB broth is based on the original lysogeny broth (LB) media formulation developed by Luria and Bertani, which was designed for the rapid propagation of recombinant <i>E. coli</i> strains. Miller's LB contains a 20-fold concentration sodium chloride compared to the original formulation and is widely used for the growth and maintenance of cells in work with plasmid DNA and recombinant protein production.
46-055-CM	Terrific Broth (1L)	Terrific Broth is a medium for the propagation and maintenance of recombinant <i>E. coli</i> . Because this medium supports higher cell densities than LB medium, it is preferred for maximizing plasmid yield in preparation for nucleic acid purification.

Powder

46-100-RG	Carbenicillin Disodium Salt (5 g)	Carbenicillin is a form of penicillin and is often used in place of ampicillin because it maintains stability after being autoclaved. Like ampicillin, carbenicillin interferes with the cell-wall synthesis of actively growing cells.
46-101-RF	X-Gal (1 g)	X-Gal (5-bromo-4-chloro-3-indolyl-β-D-galactopyranoside) is a substrate of β-galactosidase, a gene product of the lac operon in <i>E. coli</i> . X-Gal included in bacterial medium will be hydrolyzed by β-galactosidase to produce indoxyl, a colorimetric indicator of the activity of the lac operon.
46-102-RF	IPTG (Isopropyl thiogalactoside) (1 g)	IPTG is an inducer of the lac operon in bacteria, which is frequently used in cloning as a component of a recombinant plasmid. When used with X-Gal to detect lac gene activity, IPTG can be used for screening clones containing a gene of interest in the lac operon.
46-103-RM	MOPS Buffer (100 g)	MOPS is a zwitterionic buffer used in denaturing agarose gel electrophoresis of RNA and in SDS-PAGE protein analysis. It has a pH range of 6.5 to 7.9.
61-088-RM	Streptomycin Sulfate (100 g)	Streptomycin is an antibiotic that acts as a protein synthesis inhibitor. This aminoglycoside binds to the 30S ribosomal subunit, preventing protein production and leading to bacterial cell death. Streptomycin is more effective against Gram-positive bacteria than Gram-negative bacteria.
61-176-RG	Kanamycin Sulfate (5 g)	Kanamycin is an aminoglycoside antibiotic, inhibiting bacterial propagation through binding to the 30S ribosomal subunit and preventing protein synthesis. This antibiotic is useful in selecting for <i>E. coli</i> bacteria that have been transformed with a plasmid containing a gene that provides resistance to it. Such a strategy is commonly used in cloning. This is also offered in liquid form.
61-238-RH	Ampicillin, Sodium Salt (10 g)	Ampicillin is a penicillin derivative that inhibits bacterial cell-wall synthesis by inactivating transpeptidases on the inner surface of the bacterial cell membrane. A β-lactam antibiotic with an amino group side chain attached to the penicillin structure. Its mode of resistance is through the cleavage of the β-lactam ring of ampicillin by β-lactamase. Ampicillin is effective against Gram-positive and some Gram-negative bacteria.
61-238-RM	Ampicillin, Sodium Salt (100 g)	
61-241-RG	Neomycin Sulfate (5 g)	Neomycin, a nucleoside antibiotic and aminoglycoside, is a protein synthesis inhibitor that causes premature chain termination by acting as an analog of the 3'-terminal end of aminoacyl-tRNA. It prevents growth of bacteria, protozoa, algae, and mammalian cells. Organisms carrying the resistance gene puromycin acetyltransferase are effectively protected from this compound. Neomycin is effective against Gram-negative and Gram-positive bacteria.
61-242-RG	Tetracycline Hydrochloride (5 g)	Tetracycline Hydrochloride (HCl) is an antibiotic that inhibits protein synthesis by binding to the 30S ribosomal subunit, blocking interactions at the acceptor site on the RBA-ribosome complex. It is a member of the tetracycline group of antibiotics, a broad-spectrum class that inhibits growth of both aerobic and anaerobic organisms through this common mechanism. The congener tetracycline is semi-synthetically produced from chlortetracycline, a product of <i>Staphylococcus aureofaciens</i> . Resistance is conferred by the TetR-Tn10 gene product that blocks cell wall permeability. Tetracycline HCl is effective against Gram-positive and Gram-negative bacteria.

For more specific information on claims, visit the Certificates page at www.corning.com/lifesciences.

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Corning Incorporated Life Sciences Europe

Corning BV
Fogostraat 12
1060 LJ Amsterdam
The Netherlands
Phone: +31 (0) 20 659 60 51
Fax: +31 (0) 20 659 76 73
CSEurope@corning.com
www.corning.com/lifesciences

Support Offices

EUROPE

France
t 0800 916 882
f 0800 918 636

Germany
t 0800 101 1153
f 0800 101 2427

The Netherlands
t 31 20 655 79 28
f 31 20 659 76 73

United Kingdom
t 0800 376 8660
f 0800 279 1117

All Other European Countries
t 31 (0) 20 659 60 51
f 31 (0) 20 659 76 73