



## Ready-to-Run Buffers and Solutions





Bio-Rad is a premier provider of buffers and premixed reagents for life science research. We offer a variety of different products for all your protein and nucleic acid experiments. Whether you need powdered reagents or premixed solutions, Bio-Rad reagents meet the highest quality standards to ensure consistency and reliability in your experiments.



## FastCast™ Solutions

Access all the benefits of TGX™ and TGX Stain-Free™ gel chemistries with the fastest gel run times, the most efficient transfers, stain-free visualization in 5 minutes, as well as a long shelf life (1 month after casting) using convenient premixed handcasting solutions. Long shelf life TGX chemistry retains Laemmli-like separation characteristics while using a standard Tris/glycine running buffer system.



## Gel Casting Solutions

### Tris Buffers and Acrylamide Solutions for Gel Casting

Bio-Rad offers a variety of prepared solutions for casting polyacrylamide gels. Tris solutions are formulated into working concentrations for preparing the stacking and resolving portions of native or SDS-PAGE gels, according to Laemmli or Ornstein-Davis discontinuous buffer systems. Acrylamide solutions are provided ready to use and come with instructions. High-purity reagents and carefully controlled manufacturing conditions allow acrylamide solutions to be stable for 1 year at 4°C.

## Electrophoresis Buffer Reagents

In case you would like to prepare it all yourself, we offer a complete line of reagents. Our classic electrophoresis powder reagents are the ultimate in high quality.



## FastCast Solutions

| Solution                                               | Applications       |
|--------------------------------------------------------|--------------------|
| TGX™ FastCast™ acrylamide starter kit, 7.5%            | Protein Separation |
| TGX FastCast acrylamide kit, 7.5%                      | Protein Separation |
| TGX FastCast acrylamide starter kit, 10%               | Protein Separation |
| TGX FastCast acrylamide kit, 10%                       | Protein Separation |
| TGX FastCast acrylamide starter kit, 12%               | Protein Separation |
| TGX FastCast acrylamide kit, 12%                       | Protein Separation |
| TGX Stain-Free™ FastCast™ acrylamide starter kit, 7.5% | Protein Separation |
| TGX Stain-Free FastCast acrylamide kit, 7.5%           | Protein Separation |
| TGX Stain-Free FastCast acrylamide starter kit, 10%    | Protein Separation |
| TGX Stain-Free FastCast acrylamide kit, 10%            | Protein Separation |
| TGX Stain-Free FastCast acrylamide starter kit, 12%    | Protein Separation |
| TGX Stain-Free FastCast acrylamide kit, 12%            | Protein Separation |

## Gel Casting Buffers

| Solution                          | Applications              |
|-----------------------------------|---------------------------|
| 1.5 M Tris-HCl, pH 8.8            | Resolving gel preparation |
| 0.5 M Tris-HCl, pH 6.8            | Stacking gel preparation  |
| <b>Acrylamide Solutions</b>       |                           |
| 19:1 Acrylamide/Bis               | DNA sequencing            |
| 29:1 Acrylamide/Bis               | Protein separation        |
| 37.5:1 Acrylamide/Bis             | Protein separation        |
| <b>Crosslinkers and Catalysts</b> |                           |
| TEMED, 5 ml                       | Crosslinker               |
| TEMED, 50 ml                      | Crosslinker               |
| Ammonium persulfate (APS), 10 g   | Catalyst                  |

## Electrophoresis Buffers

With premixed electrophoresis running buffers, standardize your electrophoresis runs and save on preparation time, while avoiding mistakes in buffer concentration. Bio-Rad buffers are made with high-purity water and pure reagents, and are 0.4 µm filtered, ensuring the highest quality. Premixed buffers are available for a variety of protein and nucleic acid electrophoresis protocols.

Our 5 L boxes offer tremendous economical and convenience advantages. They are compact and stackable to save benchspace, and are designed with an easy-pour spout.



## SDS Solutions

Detergents are employed in electrophoresis when it is necessary to disrupt protein-lipid or protein-protein interactions. SDS is the most common detergent used in PAGE analysis because most proteins are readily soluble in it. Bio-Rad SDS solutions are highly purified — an important feature, since impurities in SDS have unpredictable effects on electrophoretic mobilities.



## Electrophoresis Buffers

| Buffer                                      | 1x Working Solution                                                         | Applications                                                                                                                        |
|---------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Protein Electrophoresis Buffers</b>      |                                                                             |                                                                                                                                     |
| 10x Tris/glycine/SDS                        | 25 mM Tris, 192 mM glycine, 0.1% SDS, pH 8.3                                | SDS-PAGE                                                                                                                            |
| 10x Tris/glycine                            | 25 mM Tris, 192 mM glycine, pH 8.3                                          | Native PAGE                                                                                                                         |
| 10x Tris/Tricine/SDS                        | 100 mM Tris, 100 mM Tricine, 0.1% SDS, pH 8.3                               | Peptide SDS-PAGE                                                                                                                    |
| 10x IEF anode buffer                        | 7 mM phosphoric acid                                                        | Analytical isoelectric focusing                                                                                                     |
| 10x IEF cathode buffer                      | 20 mM lysine, 20 mM arginine                                                | Analytical isoelectric focusing                                                                                                     |
| 10x zymogram renaturation buffer            | 2.5% Triton X-100                                                           | Protease analysis; renatures enzymes after electrophoresis                                                                          |
| 10x zymogram development buffer             | 50 mM Tris-HCl, pH 7.5, 200 mM NaCl, 5 mM CaCl <sub>2</sub> , 0.02% Brij 35 | Protease analysis; activates enzymes after electrophoresis                                                                          |
| <b>Nucleic Acid Electrophoresis Buffers</b> |                                                                             |                                                                                                                                     |
| 10x TBE                                     | 89 mM Tris, 89 mM boric acid, 2 mM EDTA, pH 8.3                             | Nucleic acid electrophoresis/sequencing; polyacrylamide or agarose gels                                                             |
| 10x TBE extended range                      | 130 mM Tris, 45 mM boric acid, 2.5 mM EDTA                                  | Nucleic acid electrophoresis/sequencing; polyacrylamide or agarose gels; extends the buffer capacity for longer DNA sequencing runs |
| 50x TAE                                     | 40 mM Tris, 20 mM acetic acid, 1 mM EDTA, pH 8.0                            | Nucleic acid electrophoresis; polyacrylamide or agarose gels                                                                        |

## SDS Solutions

| Solution         | Formulation                      | Applications                                             |
|------------------|----------------------------------|----------------------------------------------------------|
| 10% SDS solution | 10% (w/v) sodium dodecyl sulfate | SDS-PAGE: for preparing sample, gel, and running buffers |
| 20% SDS solution | 20% (w/v) sodium dodecyl sulfate | Northern and Southern hybridization buffer component     |

## Sample Loading Buffers

Premixed loading buffers remove variables that cause lane-to-lane running anomalies, and since no preparation is required, you save valuable time as well. Bio-Rad premixed sample buffers are available for numerous applications, including native PAGE, SDS-PAGE, peptide analysis, analytical IEF, nucleic acid sample preparation (denaturing and nondenaturing), and zymogram gel sample preparation.



## Blot Transfer Buffers

The transfer buffer must facilitate both effective elution from the gel matrix and effective binding of the protein or nucleic acid to the membrane. Determine your choice of buffer by the type of gel or membrane and the physical characteristics of the molecules of interest.



## Blot Processing Buffers

The processing of blots for protein and nucleic acid detection is now even simpler with a variety of premixed wash buffers and blocking solutions. Eliminate the time and effort necessary to solubilize casein or prepare stock solutions of washing buffers.



### Sample Loading Buffers

| Buffer                        | Formulation                                                                                                               | Applications                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 4x Laemmli sample buffer      | 277.8 mM Tris-HCl, pH 6.8, 4.4% LDS, 44.4% (v/v) glycerol, 0.02% bromophenol blue                                         | SDS-PAGE                           |
| 2x Laemmli sample buffer      | 65.8 mM Tris-HCl, pH 6.8, 2.1% SDS, 26.3% (w/v) glycerol, 0.01% bromophenol blue                                          | SDS-PAGE                           |
| Native sample buffer          | 62.5 mM Tris-HCl, pH 6.8, 40% (v/v) glycerol, 0.01% bromophenol blue                                                      | Native-PAGE                        |
| Tricine sample buffer         | 204 mM Tris-HCl, pH 6.8, 2% SDS, 40.8% (v/v) glycerol, 0.04% Coomassie Brilliant Blue G-250                               | Peptide and small protein SDS-PAGE |
| TBE-urea sample buffer        | 89 mM Tris-HCl, pH 8.3, 89 mM boric acid, 2 mM EDTA, 7 M urea, 12% Ficoll, 0.01% bromophenol blue, 0.02% Xylene Cyanol FF | Denaturing ssDNA, RNA              |
| IEF sample buffer             | 50% (v/v) glycerol                                                                                                        | Isoelectric focusing               |
| Zymogram sample buffer        | 65.8 mM Tris-HCl, pH 6.8, 26.3% (w/v) glycerol, 4.2% SDS, 0.01% bromophenol blue                                          | Protease analysis                  |
| 5x Nucleic acid sample buffer | 50 mM Tris-HCl, pH 8.0, 25% (w/v) glycerol, 5 mM EDTA, 0.2% bromophenol blue, 0.2% xylene cyanol FF                       | Nondenaturing dsDNA, TBE gels      |

### Blot Transfer Buffers

| Buffer                            | 1x Working Solution                              | Applications                                                                                                                                                                                                                                                        |
|-----------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Western Blotting</b>           |                                                  |                                                                                                                                                                                                                                                                     |
| 10x Tris/glycine                  | 25 mM Tris, 192 mM glycine, pH 8.3               | <b>SDS-PAGE gels (tank or semi-dry blotting):</b> Add 20% methanol to remove SDS from the protein and improve its affinity for nitrocellulose<br><b>Native PAGE gels (tank blotting):</b> For acidic and neutral proteins, use Tris/glycine buffer without methanol |
| 10x Tris/CAPS                     | 60 mM Tris, 40 mM CAPS                           | <b>SDS-PAGE (semi-dry blotting only):</b> Discontinuous buffer system increases transfer efficiency; to Tris/CAPS buffer add 15% methanol for the anode buffer and 0.1% SDS for the cathode buffer                                                                  |
| <b>Southern/Northern Blotting</b> |                                                  |                                                                                                                                                                                                                                                                     |
| 50x TAE                           | 40 mM Tris, 20 mM acetic acid, 1 mM EDTA, pH 8.0 | Tank blotting of polyacrylamide gels                                                                                                                                                                                                                                |
| 10x TBE                           | 89 mM Tris, 89 mM boric acid, 2 mM EDTA, pH 8.3  | Tank blotting or semi-dry blotting of polyacrylamide gels                                                                                                                                                                                                           |
| 20x SSC                           | 150 mM NaCl, 15 mM sodium citrate, pH 7.0        | Capillary transfer of agarose gels                                                                                                                                                                                                                                  |

### Blot Processing Buffers

| Buffer           | 1x Working Solution                                                     | Applications                                                                                                                     |
|------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 10x PBS          | 10 mM sodium phosphate, 150 mM NaCl, pH 7.4                             | Western blotting wash solution                                                                                                   |
| 10x TBS          | 20 mM Tris, 500 mM NaCl, pH 7.4                                         | Western blotting wash solution, recommended when using alkaline phosphatase                                                      |
| 1x PBS/1% casein | 10 mM sodium phosphate, 150 mM NaCl, pH 7.4, containing 1% (w/v) casein | Western blotting blocking buffer; casein blockers recommended for all applications, including those with biotin-avidin complexes |
| 1x TBS/1% casein | 20 mM Tris, 500 mM NaCl, pH 7.4, containing 1% (w/v) casein             | Western blotting blocking buffer; casein blockers recommended for all applications, including those with biotin-avidin complexes |
| 20x SSC          | 150 mM NaCl, 15 mM sodium citrate, pH 7.0                               | Northern and Southern blotting prehybridization and hybridization solutions                                                      |
| Tween 20         | 10% w/v Tween 20 or 100% Tween 20                                       | Blocking and wash buffer component                                                                                               |

## Ordering Information

Catalog # Description

### FastCast Solutions

|          |                                                      |
|----------|------------------------------------------------------|
| 161-0170 | TGX FastCast Acrylamide Starter Kit, 7.5%            |
| 161-0171 | TGX FastCast Acrylamide Kit, 7.5%                    |
| 161-0172 | TGX FastCast Acrylamide Starter Kit, 10%             |
| 161-0173 | TGX FastCast Acrylamide Kit, 10%                     |
| 161-0174 | TGX FastCast Acrylamide Starter Kit, 12%             |
| 161-0175 | TGX FastCast Acrylamide Kit, 12%                     |
| 161-0180 | TGX Stain-Free FastCast Acrylamide Starter Kit, 7.5% |
| 161-0181 | TGX Stain-Free FastCast Acrylamide Kit, 7.5%         |
| 161-0182 | TGX Stain-Free FastCast Acrylamide Starter Kit, 10%  |
| 161-0183 | TGX Stain-Free FastCast Acrylamide Kit, 10%          |
| 161-0184 | TGX Stain-Free FastCast Acrylamide Starter Kit, 12%  |
| 161-0185 | TGX Stain-Free FastCast Acrylamide Kit, 12%          |

### Gel Casting Solutions and Reagents

|          |                                                   |
|----------|---------------------------------------------------|
| 161-0798 | Resolving Gel Buffer, 1.5 M Tris-HCl, pH 8.8, 1 L |
| 161-0799 | Stacking Gel Buffer, 0.5 M Tris-HCl, pH 6.8, 1 L  |
| 161-0154 | 30% Acrylamide/Bis Solution 19:1, 500 ml          |
| 161-0156 | 30% Acrylamide/Bis Solution 29:1, 500 ml          |
| 161-0158 | 30% Acrylamide/Bis Solution 37.5:1, 500 ml        |
| 161-0144 | 40% Acrylamide/Bis Solution 19:1, 500 ml          |
| 161-0146 | 40% Acrylamide/Bis Solution 29:1, 500 ml          |
| 161-0148 | 40% Acrylamide/Bis Solution 37.5:1, 500 ml        |
| 161-0800 | TEMED, 5 ml                                       |
| 161-0801 | TEMED, 50 ml                                      |
| 161-0700 | Ammonium Persulfate (APS), 10 g                   |

### Electrophoresis Running Buffers

|          |                                           |
|----------|-------------------------------------------|
| 161-0732 | 10x Tris/Glycine/SDS, 1 L                 |
| 161-0772 | 10x Tris/Glycine/SDS, 5 L cube            |
| 161-0734 | 10x Tris/Glycine, 1 L                     |
| 161-0771 | 10x Tris/Glycine, 5 L cube                |
| 161-0744 | 10x Tris/Tricine/SDS, 1 L                 |
| 161-0761 | 10x IEF Anode Buffer, 250 ml              |
| 161-0762 | 10x IEF Cathode Buffer, 250 ml            |
| 161-0765 | 10x Zymogram Renaturation Buffer, 125 ml  |
| 161-0766 | 10x Zymogram Development Buffer, 125 ml   |
| 161-0733 | 10x Tris/Boric Acid/EDTA (TBE), 1 L       |
| 161-0770 | 10x Tris/Boric Acid/EDTA (TBE), 5 L cube  |
| 161-0741 | 10x TBE Extended Range, 1 L               |
| 161-0743 | 50x Tris/Acetic Acid/EDTA (TAE), 1 L      |
| 161-0773 | 50x Tris/Acetic Acid/EDTA (TAE), 5 L cube |

### Blot Processing Buffers

|          |                       |
|----------|-----------------------|
| 170-6435 | 10x TBS, 1 L          |
| 161-0780 | 10x PBS, 1 L          |
| 161-0783 | 1x PBS/1% Casein, 1 L |
| 161-0782 | 1x TBS/1% Casein, 1 L |
| 161-0774 | 20x SSC, 1 L          |
| 161-0775 | 20x SSC, 5 L cube     |
| 161-0781 | 10% Tween 20, 1 L     |
| 170-6531 | Tween 20, 100 ml      |

Catalog # Description

### Sample Loading Buffers

|          |                                      |
|----------|--------------------------------------|
| 161-0737 | 2x Laemmli Sample Buffer, 30 ml      |
| 161-0747 | 4x Laemmli Sample Buffer, 10 ml      |
| 161-0738 | Native Sample Buffer, 30 ml          |
| 161-0739 | Tricine Sample Buffer, 30 ml         |
| 161-0763 | IEF Sample Buffer, 30 ml             |
| 161-0764 | Zymogram Sample Buffer, 30 ml        |
| 161-0767 | 5x Nucleic Acid Sample Buffer, 10 ml |
| 161-0768 | TBE-Urea Sample Buffer, 30 ml        |

### Blotting Transfer Buffers

|          |                            |
|----------|----------------------------|
| 161-0734 | 10x Tris/Glycine, 1 L      |
| 161-0771 | 10x Tris/Glycine, 5 L cube |
| 161-0778 | 10x Tris/CAPS, 1 L         |
| 161-0743 | 50x TAE, 1 L               |
| 161-0773 | 50x TAE, 5 L cube          |
| 161-0733 | 10x TBE, 1 L               |
| 161-0770 | 10x TBE, 5 L cube          |
| 161-0774 | 20x SSC, 1 L               |
| 161-0775 | 20x SSC, 5 L cube          |

### SDS Solutions

|          |                           |
|----------|---------------------------|
| 161-0416 | SDS Solution, 10%, 250 ml |
| 161-0418 | SDS Solution, 20%, 1 L    |

### Buffer Reagents

|          |                          |
|----------|--------------------------|
| 161-0716 | Tris, 500 g              |
| 161-0719 | Tris, 1 kg               |
| 161-0729 | EDTA, 500 g              |
| 161-0717 | Glycine, 250 g           |
| 161-0718 | Glycine, 1 kg            |
| 161-0724 | Glycine, 2 kg            |
| 161-0713 | Tricine, 500 g           |
| 161-0730 | Urea, 250 g              |
| 161-0731 | Urea, 1 kg               |
| 161-0610 | Dithiothreitol, 1 g      |
| 161-0611 | Dithiothreitol, 5 g      |
| 161-0710 | 2-Mercaptoethanol, 25 ml |
| 161-0301 | SDS, 100 g               |
| 161-0302 | SDS, 1 kg                |

Brij and Tween are trademarks of ICI Americas Inc. Ficoll is a trademark of GE Healthcare group companies. Triton is a trademark of Dow Chemical Company. Coomassie is a trademark of BASF Aktiengesellschaft.



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