



Contents and storage

Gel type	Amount	Storage
Bolt™ Bis-Tris Plus Gels	Box of 10 gels	Store at 2–8°C for up to 16 months. Do not freeze.



Product description

Bolt™ Bis-Tris Plus Gels are precast polyacrylamide gels designed for optimal separation and resolution of small- to medium-sized proteins (6–400 kDa) under denaturing gel electrophoresis conditions. The gels feature wedge-shaped WedgeWell™ sample wells with a capacity of up to 60 µL of sample per well.

Bolt™ Bis-Tris Plus Mini Gels are available with the following specifications:

- **Polyacrylamide percentage:** 8%, 10%, 12%, and 4–12%
- **Well format:** 10, 12, 15, and 17 wells
- **Thickness:** 1.0 mm



Required materials

- Protein sample and protein ladder
- Bolt™ MES or MOPS SDS Running Buffer (20X)
- Bolt™ Antioxidant (for reduced samples)
- Bolt™ LDS Sample Buffer (4X)
- Bolt™ Sample Reducing Agent (10X) (for reduced samples)
- Novex™ Power Supply Adapters (Cat. No. ZA10001) if not using a Thermo Fisher Scientific™ power supply
- Mini Gel Tank (Cat. No. A25977) or XCell SureLock™ Mini-Cell (Cat. No. EI0001)



Online resources

- Visit [thermofisher.com/proteingels](https://www.thermofisher.com/proteingels) for additional information and protocols.
- For support, visit [thermofisher.com/support](https://www.thermofisher.com/support).

Choosing a well format

Well type	Recommended loading volume	Maximum loading volume	Maximum protein load
10-well	40 µL	60 µL	0.5 µg/band
12-well	30 µL	45 µL	0.4 µg/band
15-well	20 µL	35 µL	0.25 µg/band
17-well	15 µL	30 µL	0.2 µg/band

Choosing a protein ladder for your application

Type	Marker	Cat. No.
Pre-Stained	PageRuler™ Prestained Protein Ladder	26616
	PageRuler™ Plus Prestained Protein Ladder	26619
Unstained	PageRuler™ Unstained Protein Ladder	26614
	PageRuler™ Unstained Broad Range Protein Ladder	26630
Western blot	iBright™ Prestained Protein Ladder	LC5615
	MagicMark™ XP Western Protein Standard	LC5602

Go to [thermofisher.com/proteinladders](https://www.thermofisher.com/proteinladders) for more information on protein ladders.

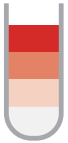

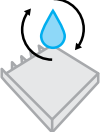

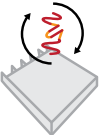

Choosing buffers for your application

Buffer	Application	Cat. No.
Bolt™ MOPS SDS Running Buffer	Resolve mid-size proteins	B0001
Bolt™ MES SDS Running Buffer	Resolve small molecular weight proteins	B0002
Bolt™ Transfer Buffer	Wet transfer	BT0006

Limited product warranty and licensing information

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Perform denaturing protein gel electrophoresis using Bolt™ Bis-Tris Plus Mini Gels

Step		Action																		
<p>1</p> 	<p>Prepare samples</p>	<p>Prepare 1X Sample Buffer for dilutions of samples if needed. Volumes are provided for a 10-μL sample size. Scale volumes proportionally for larger sample sizes.</p> <table border="1"> <thead> <tr> <th>Components</th> <th>Reduced sample</th> <th>Non-reduced Sample</th> </tr> </thead> <tbody> <tr> <td>Sample</td> <td>x μL</td> <td>x μL</td> </tr> <tr> <td>Bolt™ LDS Sample Buffer (4X)</td> <td>2.5 μL</td> <td>2.5 μL</td> </tr> <tr> <td>Bolt™ Reducing Agent (10X)</td> <td>1 μL</td> <td>—</td> </tr> <tr> <td>Deionized Water</td> <td>to 6.5 μL</td> <td>to 7.5 μL</td> </tr> <tr> <td>Total Volume</td> <td>10 μL</td> <td>10 μL</td> </tr> </tbody> </table> <p>Heat samples at 70°C for 10 minutes.</p>	Components	Reduced sample	Non-reduced Sample	Sample	x μL	x μL	Bolt™ LDS Sample Buffer (4X)	2.5 μL	2.5 μL	Bolt™ Reducing Agent (10X)	1 μL	—	Deionized Water	to 6.5 μL	to 7.5 μL	Total Volume	10 μL	10 μL
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<p>2</p> 	<p>Prepare buffers</p>	<p>Add 50 mL of 20X Bolt™ MES or MOPS SDS Running Buffer to 950 mL of deionized water to prepare 1X SDS Running Buffer.</p> <p>For reduced samples, add 1 mL of Bolt™ Antioxidant to 400 mL 1X SDS Running Buffer.</p>																		
<p>3</p> 	<p>Prepare gel</p>	<p>a. Remove the comb, and rinse the gel wells three times using 1X Running Buffer.</p> <p>b. Remove the white tape near the bottom of the gel cassettes.</p> <p>c. Place the gels in the mini gel tank.</p>																		
<p>4</p> 	<p>Load buffers</p>	<p>Fill the chambers with the appropriate 1X running buffer.</p> <p>Mini Tank: Add 400 mL of buffer to each chamber.</p> <p>XCell SureLock™ Mini-Cell: Add 600 mL of buffer to the lower chamber, and 200 mL to the upper chamber (for reduced samples, use running buffer with antioxidant in the upper chamber).</p>																		
<p>5</p> 	<p>Load samples and ladders</p>	<p>a. Load the appropriate volume of your samples in the appropriate wells.</p> <p>b. Load your protein ladder in the appropriate well.</p>																		
<p>6</p> 	<p>Run the gel</p>	<p>Optimal run times vary depending on gel percentage and power supply used for electrophoresis.</p> <p>If using MES Running Buffer, run for 22 minutes at 200 V constant.</p> <p>If using MOPS Running Buffer, run for 32 minutes at 200 V constant.</p> <p>Note: If you are not using a Thermo Fisher Scientific™ power supply, install Novex™ Power Supply Adapters</p>																		

Buffer formulation

The following recipes are provided to allow preparation of buffers from scratch.

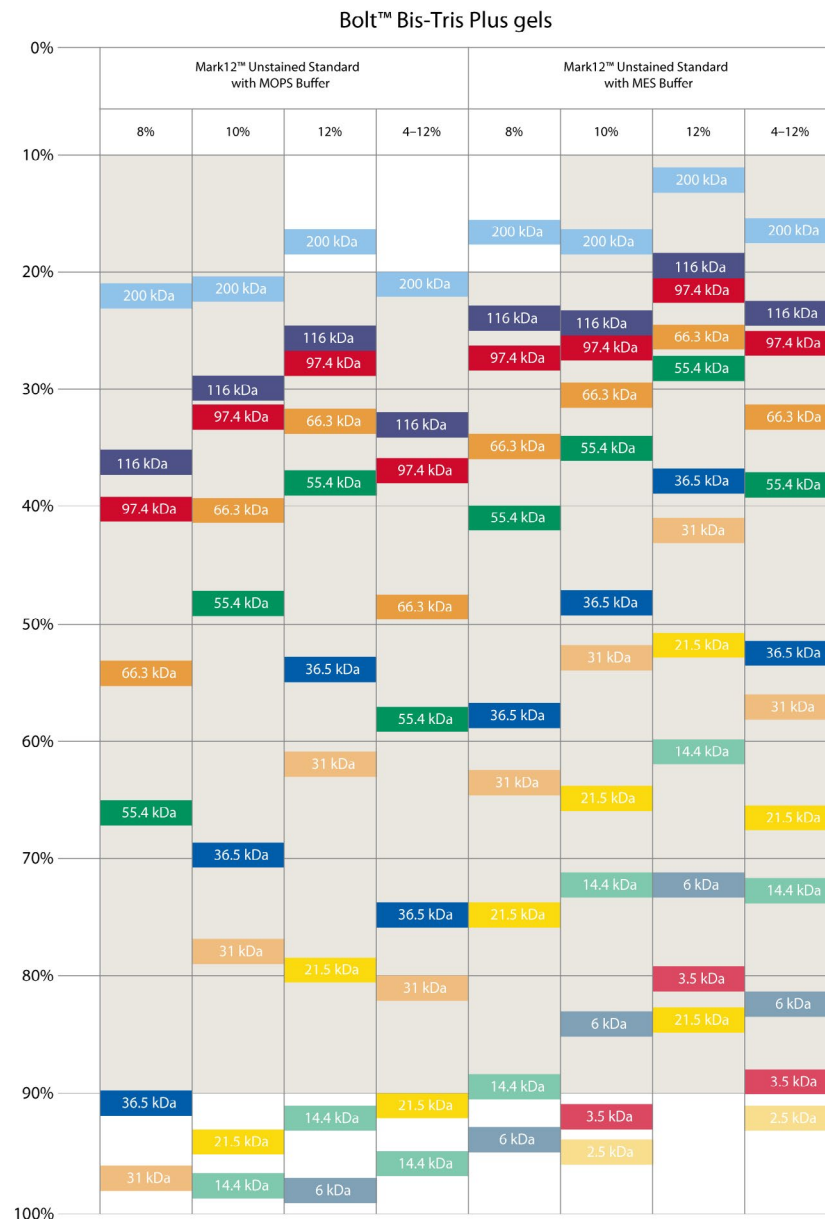
The pH listed for each buffer is for the 1X solution. **Do not use acid or base to adjust the pH.** Buffers are stable for 6 months when stored at 4°C.

Prepare 500 mL of 20X MES SDS Running Buffer	Prepare 500 mL of 20X MOPS SDS Running Buffer																				
50 mM MES, 50 mM Tris Base, 0.1% SDS, 1 mM EDTA, pH 7.3	50 mM MOPS, 50 mM Tris Base, 0.1% SDS, 1 mM EDTA, pH 7.7																				
1. Dissolve the following reagents in 400 mL ultrapure water.	1. Dissolve the following reagents in 400 mL ultrapure water.																				
<table border="1"> <thead> <tr> <th>Reagent</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>MES</td> <td>97.6 g</td> </tr> <tr> <td>Tris Base</td> <td>60.6 g</td> </tr> <tr> <td>SDS</td> <td>10.0 g</td> </tr> <tr> <td>EDTA</td> <td>3.0 g</td> </tr> </tbody> </table>	Reagent	Amount	MES	97.6 g	Tris Base	60.6 g	SDS	10.0 g	EDTA	3.0 g	<table border="1"> <thead> <tr> <th>Reagent</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>MOPS</td> <td>104.6 g</td> </tr> <tr> <td>Tris Base</td> <td>60.6 g</td> </tr> <tr> <td>SDS</td> <td>10.0 g</td> </tr> <tr> <td>EDTA</td> <td>3.0 g</td> </tr> </tbody> </table>	Reagent	Amount	MOPS	104.6 g	Tris Base	60.6 g	SDS	10.0 g	EDTA	3.0 g
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2. Mix well and adjust the volume to 500 mL with ultrapure water.	2. Mix well and adjust the volume to 500 mL with ultrapure water.																				
3. Before electrophoresis, dilute buffer to 1X with water.	3. Before electrophoresis, dilute buffer to 1X with water.																				

Prepare 125 mL of 20X Bis-Tris Transfer Buffer								
25 mM Bicine, 25 mM Bis-Tris (free base), 1 mM EDTA, pH 7.2								
1. Dissolve the following reagents in 100 mL ultrapure water.								
<table border="1"> <thead> <tr> <th>Reagent</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>Bicine</td> <td>10.2 g</td> </tr> <tr> <td>Bis-Tris (free base)</td> <td>13.1 g</td> </tr> <tr> <td>EDTA</td> <td>0.75 g</td> </tr> </tbody> </table>	Reagent	Amount	Bicine	10.2 g	Bis-Tris (free base)	13.1 g	EDTA	0.75 g
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Bicine	10.2 g							
Bis-Tris (free base)	13.1 g							
EDTA	0.75 g							
2. Mix well and adjust the volume to 125 mL with ultrapure water.								
3. Before western transfer, dilute buffer to 1X with water.								

Migration patterns of protein standards on Bolt™ Bis-Tris Plus gels

Refer to the migration chart to find the gel best suited for your application. Your proteins of interest should migrate through ~70% of the length of the gel for the best resolution.



Choosing the right gel type for your application

Thermo Fisher Scientific protein gels					
Gel type	Gel % available	Separation range	Shelf life	Average run time	Applications
Bolt™ Bis-Tris Plus	8%, 10%, 12%, 4–12%	6 to 400 kDa	up to 16 months	22–45 min	Best choice for separation of small- to medium-sized proteins. Neutral pH environment minimizes protein modifications. Wedge well design can accommodate large sample volumes. Ideal for Western blot transfer and analysis, and all techniques in which protein integrity is crucial.
NuPAGE™ Bis-Tris	8%, 10%, 12%, 4–12%	1.5 to 300 kDa	12 months	35–50 min	Separation of small- to medium-sized proteins. Neutral pH environment minimizes protein modifications.
NuPAGE™ Tris-Acetate	7%, 3–8%	36 to 500 kDa	6 months	60 min	Separation of larger proteins.
Novex™ Tricine	10%, 16%	2 to 200 kDa	1–2 months	90 min	Separation of small proteins and peptides.
NativePAGE™ Bis-Tris	3–12%, 4–16%	15 to 10,000 kDa	12 months	90–120 min	Separation of native proteins.
Novex™ Tris-Glycine	6%, 8%, 10%, 12%, 4–20%, 4–12%, 14%, 16%, 8–16%, 10–20%	8 to 250 kDa	up to 12 months	90 min	Separation of small- to medium-sized proteins using traditional Laemmli-style gels.
E-PAGE™	E-PAGE™ 96 6% E-PAGE™ 48 8%	10 to 220 kDa	6 months	14–25 min	High-throughput for recombinant production analysis and protein profiling.
IEF	pH 3–7, pH 3–10	pI 3.5 to pI 8.5	2 months	150 min	Separation of proteins based on isoelectric point.
Zymogram	10% (gelatin)	10 to 220 kDa	2 months	90 min	Separation of proteins based on size and activity.