

# Bolt™ Bis-Tris Plus Mini Gels

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**WARNING!** Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. SDSs are available from [thermofisher.com/support](http://thermofisher.com/support).

## Product description

Bolt™ Bis-Tris Plus Gels are ready-to-use polyacrylamide gels specifically engineered for the effective separation and resolution of small to medium-sized proteins (ranging from 1.5 to 300 kDa) in denaturing gel electrophoresis.

Specifications of Bolt™ Bis-Tris Plus Gels include:

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

## Contents and storage

Item	Amount	Storage
Bolt™ Bis-Tris Plus Gels	Box of 10 gels	Store at 4–25°C for up to 16 months. Do not freeze.

## Required materials

Unless otherwise indicated, all materials are available through [thermofisher.com](http://thermofisher.com).

- Protein sample and protein ladder
- Bolt™ and NuPAGE™ MES or MOPS SDS Running Buffer
- Bolt™ Antioxidant (for reduced samples) (Cat. No. [BT0005](#))
- Bolt™ LDS Sample Buffer, 4X (Cat. No. [B0007](#))
- Bolt™ Sample Reducing Agent, 10X (for reduced samples) (Cat. No. [B0009](#))
- 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](#))

**Note:** Visit [thermofisher.com/proteingels](http://thermofisher.com/proteingels) for additional information and protocols.

## Choosing a well format

Well type	Maximum loading volume
10-well	60 µL
12-well	45 µL
15-well	35 µL
17-well	30 µL

## Choosing a protein ladder for your application

Type	Marker	Cat. No.
Pre-Stained	PageRuler™ Prestained Protein Ladder	<a href="#">26616</a>
	PageRuler™ Plus Prestained Protein Ladder	<a href="#">26619</a>
Unstained	PageRuler™ Unstained Protein Ladder	<a href="#">26614</a>
	PageRuler™ Unstained Broad Range Protein Ladder	<a href="#">26630</a>
Western blot	iBright™ Prestained Protein Ladder	<a href="#">LC5615</a>
	MagicMark™ XP Western Protein Standard	<a href="#">LC5602</a>

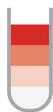
**Note:** Go to <http://thermofisher.com/proteinladders> for more information on protein ladders.

## Choosing buffers for your application

Buffer	Application	Cat. No.
Bolt™ MOPS SDS Running Buffer, 20X	Resolve mid-size proteins	<a href="#">B0001</a>
Bolt™ MES SDS Running Buffer, 20X	Resolve small molecular weight proteins	<a href="#">B0002</a>
NuPAGE™ MOPS SDS Running Buffer (Powder Packet for 1 L)	Resolve mid-size proteins	<a href="#">NP000205</a>
NuPAGE™ MES SDS Running Buffer (Powder Packet for 1 L)	Resolve small molecular weight proteins	<a href="#">NP000105</a>
Bolt™ Transfer Buffer, 20X	Wet transfer	<a href="#">BT0006</a>

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

### 1 Prepare samples



Prepare 1X Sample Buffer for sample dilutions if necessary. Use the provided volumes for a 10 µL sample size and scale them proportionally for larger sample sizes.

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

**Note:** Heat samples at 70°C for 10 minutes.

### 2 Prepare buffers



1. Add 50 mL of 20X Bolt™ MES or MOPS SDS Running Buffer to 950 mL of deionized water to prepare 1X SDS Running Buffer.
2. Alternatively, dissolve one packet of dry MES or MOPS SDS Running Buffer into 1000 mL of deionized water.
3. (Optional) For reduced samples, add 1 mL of Bolt™ Antioxidant to 400 mL 1X SDS Running Buffer.

### 3 Prepare gel



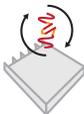
1. Remove the comb and rinse the gel wells three times using 1X Running Buffer.
2. Remove the white tape at the bottom of the gel cassettes.
3. Place the gels in the mini gel tank.

### 4 Load buffers



1. Fill the chambers with the appropriate 1X Running Buffer.
2. Mini Gel Tank: Add 400 mL of buffer to each chamber.
3. 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).

### 5 Load samples and ladders



1. Load the appropriate volume of your samples in the appropriate wells.
2. Load your protein ladder in the appropriate well.

### 6 Run the gel



1. Optimal run times vary depending on gel percentage and power supply used for performing electrophoresis.
2. Run for 22 minutes at a constant 200 V if using MES Running Buffer.
3. Run for 28 minutes at a constant 200 V if using MOPS Running Buffer.

**Note:** If you are not using a Thermo Fisher Scientific power supply, install Novex™ Power Supply Adapters.

## Buffer formulation

**IMPORTANT!** The below procedures are listed to enable the preparation of buffers from basic ingredients. 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

1. Dissolve the following reagents in 400 mL ultrapure water:

Reagent	Amount
MES	97.6 g
Tris Base	60.6 g
SDS	10.0 g
EDTA	3.0 g

2. Mix well and adjust the volume to 500 mL with ultrapure water.
3. Before electrophoresis, dilute buffer to 1X with water (Final concentration: 50 mM MES, 50 mM Tris Base, 0.1% SDS, 1 mM EDTA, pH 7.3).

### Prepare 500 mL of 20X MOPS SDS Running Buffer

1. Dissolve the following reagents in 400 mL ultrapure water.

Reagent	Amount
MOPS	104.6 g
Tris Base	60.6 g
SDS	10.0 g
EDTA	3.0 g

2. Mix well and adjust the volume to 500 mL with ultrapure water.
3. Before electrophoresis, dilute buffer to 1X with water (Final concentration: 50 mM MOPS, 50 mM Tris Base, 0.1% SDS, 1 mM EDTA, pH 7.3).

### Prepare 125 mL of 20X Bis-Tris Transfer Buffer

1. Dissolve the following reagents in 100 mL ultrapure water:

Reagent	Amount
Bicine	10.2 g
Bis-Tris (free Base)	13.1 g
EDTA	0.75 g

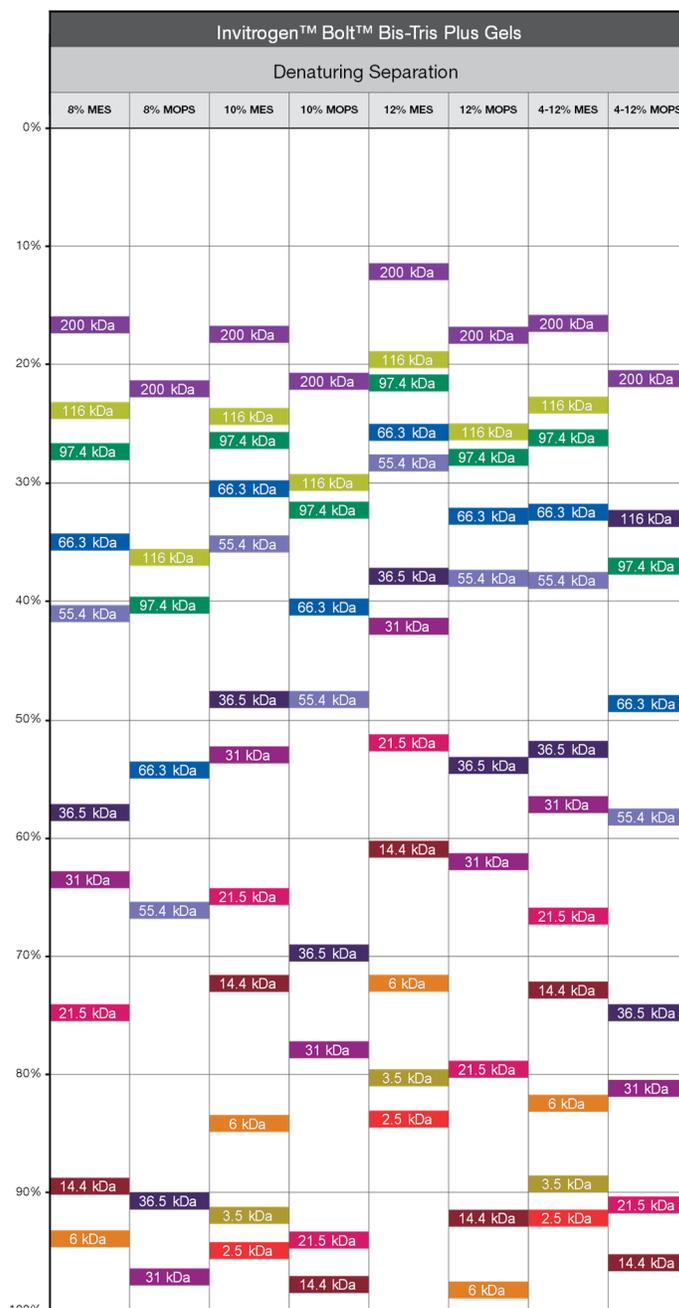
2. Mix well and adjust the volume to 125 mL with ultrapure water.
3. Before western transfer, dilute buffer to 1X with water (Final concentration: 25 mM Bicine, 25 mM Bis-Tris (free base), 1 mM EDTA, pH 7.2).

### Prepare 1 L of 1X MOPS or MES Dry SDS Running Buffer

1. Dissolve one dry buffer pack in 1000 mL of ultrapure water.  
**Note:** Open carefully to avoid spillage.
2. Ensure all dry reagents have dissolved by mixing well.

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

Refer to the migration chart, to identify the most suitable gel for your application.



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