Millipore®

User Guide

mPAGE™
Bis-Tris Precast SDS-PAGE Gels

This product is for research use only.

MERCK

Contents

Introduction

The mPAGE™ Bis-Tris SDS-PAGE Gel system offers high performance, optimal electrophoretic separation, and better resolution over a wide range of molecular weights. The Bis-Tris SDS-PAGE system helps preserve protein integrity and extends the shelf life of the mPAGE™ Bis-Tris Precast Gel. mPAGE™ Bis-Tris Precast Gels have a versatile design that allows for larger sample loading volumes. The 10 cm x 8 cm mini cassette format makes mPAGE™ Bis-Tris Precast Gels compatible with most popular gel electrophoresis equipment.

mPAGE™ Bis-Tris Precast Gels are designed to work exclusively with MOPS or MES running buffer. Depending on which running buffer is used, very distinct separation patterns can be achieved. MOPS buffer can be used to fine tune the separation of large and medium-sized proteins, whereas MES buffer provides optimal separation of smaller proteins. Refer to the migration charts (Figure 1) to determine which gel running buffer system is best suited for the intended separation range.

The mPAGE™ Bis-Tris Precast SDS-PAGE Gel System includes a specially formulated transfer buffer optimized for transferring proteins from mPAGE™ Bis-Tris Precast Gels to PVDF or nitrocellulose blotting membranes.

Components of the mPAGE™ Bis-Tris SDS-PAGE Precast Gel System

mPAGE™ Bis-Tris Precast Gels

mPAGE™ Bis-Tris Precast Gels are available as 4-12%, 4-20%, and 8-16% gradients and 8%, 10%, and 12% homogeneous compositions. mPAGE™ Bis-Tris Precast Gels are provided as 10-well, 12-well, and 15-well formats, allowing for sample volumes of 80, 60, and 40 µl, respectively.

mPAGE™ 4X LDS Sample Buffer

mPAGE™ 4X LDS Sample Buffer is formulated to complement mPAGE™ Bis-Tris Precast Gels and running buffer systems. The combination will achieve optimal band resolution and sharpness without causing sample degradation. The sample buffer is used for sample preparation prior to denaturing polyacrylamide gel electrophoresis. mPAGE™ 4X LDS Sample Buffer contains lithium dodecyl sulfate (LDS) at pH 8.4, to ensure optimal protein separation. Reduction of disulfide bonds can be performed at 70 °C using dithiothreitol (DTT) or β-mercaptoethanol (BME).

mPAGE™ MES SDS or MOPS SDS Running Buffer Powder

Running buffers are optimized for use with the mPAGE™ Bis-Tris Precast Gels. Ready to dissolve premeasured reagent packets make buffer preparation quick and easy. Each packet makes 1L of 1X buffer when dissolved in deionized water.

mPAGE™ Transfer Buffer Powder

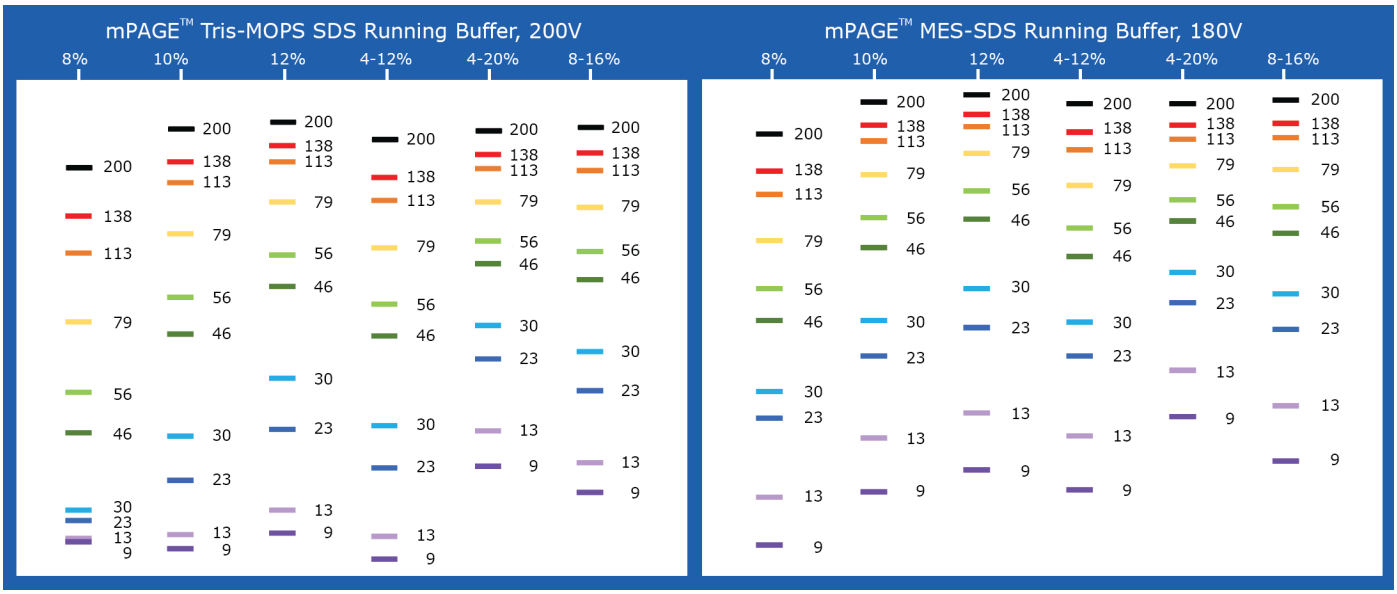
mPAGE™ Transfer Buffer is formulated for best transfer efficiency of proteins from mPAGE™ Bis-Tris Precast Gels to PVDF or nitrocellulose blotting membranes. The transfer buffer is provided as an easy to dissolve powder in premeasured packets. Upon reconstitution with 10% methanol, each packet yields 1L of 1X mPAGE™ Transfer Buffer. Review semi dry transfer section for preparation of semi dry transfer buffers.

Storage and Stability

mPAGE™ gels feature an extended shelf-life of up to 12 months from the date of manufacture when stored at 2–8 °C.

Protein Separation using mPAGE™ Bis-Tris Precast Gels

Figure 1. Migration Charts with Unstained Protein Standard



Instructions for Using mPAGE™ Bis-Tris Precast Gel System

For optimal results only use mPAGE™ formulated buffers and reagents when preparing and running samples with mPAGE™ Bis-Tris Precast Gels.

CAUTION: Do not use Tris-glycine SDS running buffer with mPAGE™ Bis-Tris Precast Gels.

Running Buffer Preparation

For best results, it is recommended to prepare fresh 1X buffer for every run. To prepare 1L of 1X running buffer, simply dissolve one packet of running buffer powder with 1L of deionized water.

mPAGE™ Bis-Tris Precast Gel Preparation

1. Remove mPAGE™ Bis-Tris Precast Gel from the package, peel off the sealing tape at the bottom of the gel cassette.

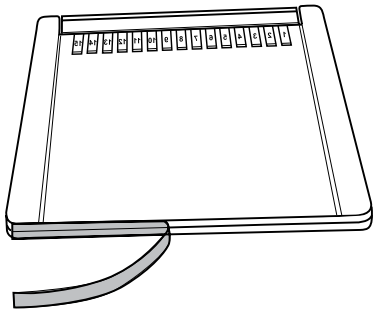


Figure 2. Remove Sealing Tape from Gel Cassette

2. Gently remove the comb from the gel cassette.

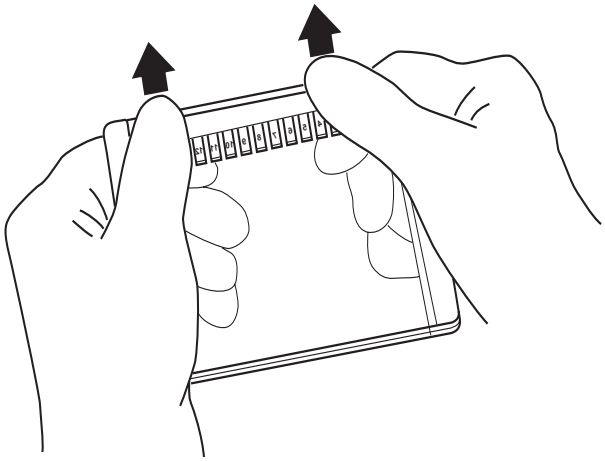


Figure 3. Remove Comb

3. Choose an electrophoresis tank and insert the gel cassette.

When using Bio-Rad electrophoresis tanks (Bio-Rad Mini-PROTEAN® II and 3 and Bio-Rad Mini-PROTEAN® Tetra System), reverse the green gasket to its flat back side. If not done, the buffer core will leak into the anode (outer) chamber. (Figure 4) When performing SDS-PAGE on a single gel while using a Bio-Rad electrophoresis tank, reverse both gaskets and use the mPAGE™ Buffer Dam.

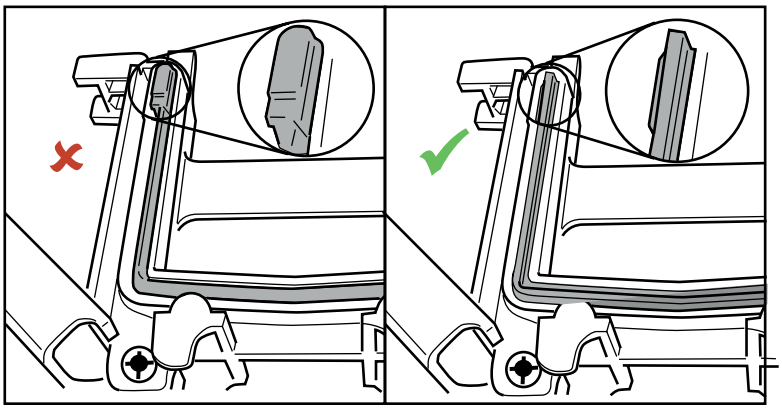


Figure 4. Flipping the Bio Rad Gasket.

Additional electrophoresis tanks listed below are compatible by using mPAGE™ Adapter Plates. Use one adapter per gel. Position the adapters against the tall plate of the gel cassette before assembling gel tank. (Figure 5)

- Sigma-Aldrich® Dual Run and Blot System
- Thermo XCell I, II, & Surelock™ mini-cell
- LONZA PAGEr® Minigel Chamber

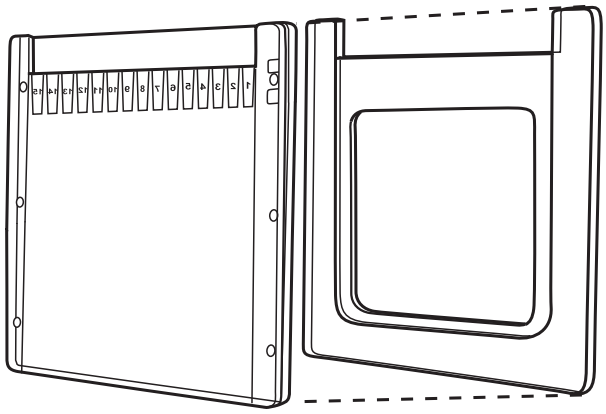


Figure 5. Using mPAGE™ Adapter Plates

4. Fill the buffer core with 1X running buffer to check for a proper seal prior to filling the anode (outer) chamber to the recommended level.

Sample Preparation and Gel Loading

1. Samples should be prepared just prior to electrophoresis

Table 1. Preparation of Electrophoresis Samples

Reagent	Reduced Sample (µl)	Non-reduced Sample (µl)
Protein Sample	X	X
mPAGE™ 4X Sample Buffer	2.5	2.5
1M-DTT[1]	1	N/A
Deionized Water	6.5-X	7.5-X
Total Volume	10	10

[1] *DDT or β-mercaptoethanol (BME) can be used as a reducing agent (DTT to a final concentration of 100 mM or add BME to a final concentration of 25 mM).*

Note: Do not store reduced samples for >2 hours as they may reoxidize.

2. Heat samples for 10 minutes at 70 °C (Do not boil samples). Centrifuge samples prior to loading.
3. To load the samples into the wells, vertically insert tip for optimal sample loading results (Figure 6). Do not exceed well capacity when loading samples: 80 µL for 10-well gels; 60 µL for 12-well gels; and 40 µL for 15-well gels.

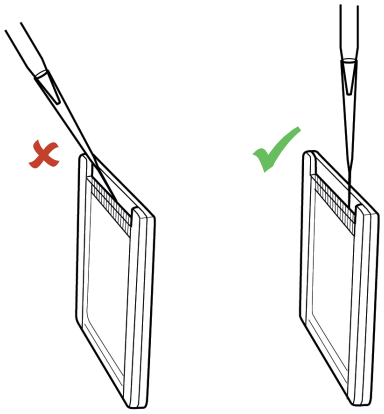


Figure 6. Gel Loading

Running the Gel

1. Once the samples are loaded and buffer chambers are filled, place the cover onto the electrophoresis tank and plug the electrical leads into the power supply.
2. Run the gel at constant voltage until the dye front reaches 2 mm from the bottom of the gel cassette. Run time can vary depending on the gel percentage, running buffer, and equipment used. Refer to Table 2 for optimal voltage and typical run times best suited for the chosen gel and running buffer.
3. When running more than one gel per electrophoresis tank, all gels should be of the same composition.

Table 2. Running Conditions

% Acrylamide	mPAGE™ MES SDS Running Buffer 180 V		mPAGE™ MOPS SDS Running Buffer 200 V	
	Typical Amperage (Starting-Ending)	Typical Run Time	Typical Amperage (Starting-Ending)	Typical Run Time
8%	109-55 mA	22 min	103-47 mA	27 min
10%	105-50 mA	26 min	97-48 mA	31 min
12%	100-46 mA	30 min	97-42 mA	34 min
4-12%	107-53 mA	26 min	97-41 mA	36 min
4-20%	106-44 mA	40 min	87-40 mA	34 min
8-16%	113-48 mA	32 min	93-44 mA	31 min

Removing the Gel from the Cassette

Once electrophoresis is finished, remove the gel cassette from the gel tank. Insert the mPAGE™ Gel Cassette Opener into the gap between the two plates at one of the three contact points along each side of the cassette (see Figure 7). Repeat for all six contact points of the cassette until the two plates are separated.

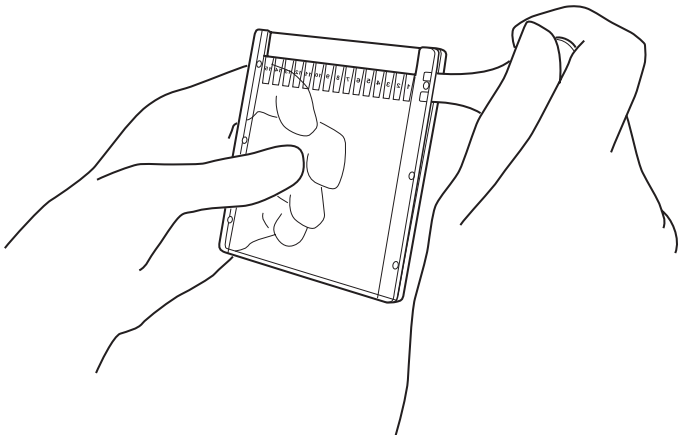


Figure 7. Opening the Gel Cassette

Gel Staining

mPAGE™ Bis-Tris Precast Gels are compatible with popular gel staining protocols. When using commercially available staining reagents, follow the manufacturer's instructions.

Western Blotting

Gels perform best when using mPAGE™ Transfer Buffer for wet as well as semi dry transfer (see special preparation instructions in semi-dry transfer section).

Blotting Membrane Activation

- If using PVDF blotting membranes such as Immobilon®-P or PSQ, activate the membrane with 70% methanol, ethanol or isopropyl alcohol. Rinse membranes in deionized water to remove residual solvent prior to incubating in mPAGE™ Transfer Buffer containing 10% methanol. Incubate blotting membranes for a minimum of 5 minutes.
- If using nitrocellulose or Immobilon®-E blotting membranes, add mPAGE™ Transfer Buffer containing 10% methanol to an appropriately sized container and gently float membrane on the transfer buffer to avoid air locking. Incubate for a minimum of 5 minutes.

Wet Transfer Guidelines

mPAGE™ Bis-Tris Precast Gels are compatible with many wet transfer systems. Please review the specific manufacturer's setup instructions for buffer volumes and transfer conditions.

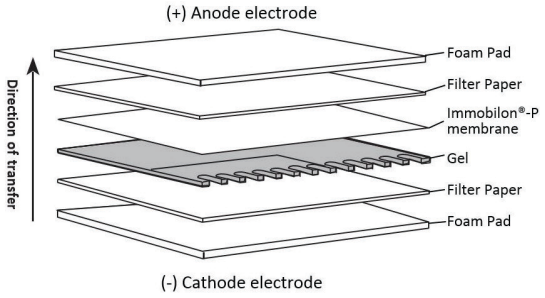


Figure 8. Wet Transfer System

1. Prepare 1X mPAGE™ Transfer Buffer solution containing 10% methanol by mixing reagents:
   - Methanol: 100mL
   - Deionized Water: 900mL
   - mPAGE™ Transfer Buffer Powder: 1 packet
2. For each gel to be transferred, wet two pieces of filter paper in mPAGE™ Transfer Buffer containing 10% methanol.
   Note: Wet transfer stacks are typically assembled on the cathode portion of the blot module. In most cases, fiber pads are used to assure the gel and membrane stay in contact at all time during the transfer process. Refer to blot module user guide for the exact number of fiber pads to be used.
3. Submerge fiber pads in mPAGE™ Transfer Buffer containing 10% methanol and remove air bubbles. Place the appropriate number of pads onto the blot module cathode plate.
4. Open the gel cassette. (See Figure 7). To maintain consistent orientation, carefully remove the short plate, allowing the gel to remain on the tall plate. Remove the stacker by cutting 5 mm below the well bottom.
5. Place one prewetted piece of filter paper on top of the gel. Using a roller or serological pipette, remove any air bubbles.
6. Turn the tall plate over, holding over the removed short plate (or gloved hand), carefully separate the gel from the tall plate.
7. Transfer the gel/filter paper assembly onto the fiber pad with the gel facing up and the filter paper contacting the fiber pads. Add a small amount of mPAGE™ Transfer Buffer on the gel before placing the blotting membrane. Using a roller or serological pipette, remove any air bubbles between gel and membrane.
8. Place a second piece of prewetted filter paper on top of the membrane. Using a roller or serological pipette, remove any air bubbles.
9. Place an additional fiber pad(s) on top of the filter paper. Close the assembly and place into the electrophoresis tank. Due to differences in transfer systems refer to blot module user guide for further instructions.
10. Connect tank to a power supply and transfer as outlined in the blot module instructions. Depending on molecular weight of the protein of interest, further optimization of transfer time may be required. See Table 3 for examples of typical transfer times for popular wet transfer systems.

Table 3. Popular Wet Transfer Systems

Electrophoresis Tank	Blot Module	Typical Transfer Condition
mini-PROTEAN® Tetra Cell	Tetra Blotting Module	100 V/1 Hour
XCell Surelock™	XCell IIM Blot Module	30 V/1 Hour

11. Remove the blot from the blot module and rinse the membrane in deionized water to remove transfer buffer and residual gel debris.
12. To visualize the transferred proteins prior to immunodetection, the membrane may be stained with any reversible blot stain compatible with immunodetection. Follow the reagent manufacturer's staining protocol.
13. The blot may be dried or used immediately in a desired immunodetection protocol.

Semi Dry Transfer Guidelines

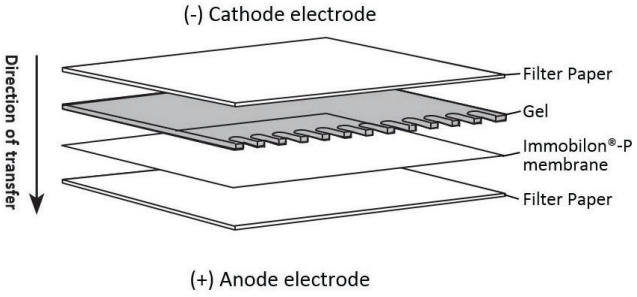


Figure 9. Semi Dry Transfer System

Note: This protocol was developed on a Bio-Rad Trans-Blot® Semi-Dry Transfer Cell; other systems may require further optimization.

1. Prepare 10X mPAGE™ Transfer Buffer stock solution by dissolving 1 packet of mPAGE™ Transfer Buffer in 100 mL deionized water.
2. Prepare 100 mL 2X mPAGE™ Transfer Buffer containing 10% methanol:
   - Methanol: 10 mL
   - Deionized Water: 70mL
   - 10X mPAGE™ Transfer Buffer Stock Solution

   Note: If transferring high molecular weight proteins, buffer may be supplemented with 0.025-0.05% SDS.
3. Prepare 100 mL mPAGE™ gel equilibration buffer containing no methanol:
   - Deionized Water: 80mL
   - 10X mPAGE™ Transfer Buffer Stock Solution: 20 mL

   Note: If transferring high molecular weight proteins, buffer may be supplemented with 0.025-0.05% SDS.
4. Soak two pieces of extra thick filter paper (or eight pieces of Immobilon® Blotting Filter Paper, 7 cm x 8.4 cm sheet (Cat#: IBFP0785C)) in 2X mPAGE™ Transfer Buffer containing 10% methanol for each gel to be transferred.
5. Open gel cassette. (See Figure 7). For best transfer performance, the stacker of mPAGE™ Bis-Tris Precast Gels must be removed by cutting 5 mm below the well bottom before performing semi dry transfer.
6. Immerse the gel in the mPAGE™ gel equilibration buffer containing no methanol and incubate while shaking for no longer than 5 minutes.
7. Assemble the transfer stack on the semi dry transfer system's anode plate:
   - Place a piece of extra thick filter paper (or four sheets of Immobilon® Blotting Filter Paper, 7 cm x 8.4 cm sheet) prewetted with 2X mPAGE™ Transfer Buffer containing 10% methanol onto the anode plate. Using a roller or a serological pipette, remove air bubbles between the anode plate and filter paper.
   - Place the blotting membrane prewetted with 2X mPAGE™ Transfer Buffer containing 10% methanol on top of the blotting paper. Using a roller or a serological pipette, remove air bubbles.
   - Remove gel from the equilibration buffer and place on top of the blotting membrane. Using a roller or a serological pipette, gently remove air bubbles between gel and membrane.
   - Place the remaining extra thick filter paper (or four sheets of Immobilon® Blotting Filter Paper, 7 cm x 8.4 cm sheet) prewetted with 2X mPAGE™ Transfer Buffer containing 10% methanol on top of the gel. Using a roller or a serological pipette, remove air bubbles.
8. Place the cathode plate and or blotter lid onto the assembled blot sandwich (refer to semi dry transfer system user guide).
9. mPAGE™ Bis-Tris Precast Gels are transferred at 25 volts for 30-45 minutes depending on the molecular weight of the proteins to be transferred. High molecular weight proteins may require extra transfer time.
10. Connect blotter leads to a power supply that is rated for the current being generated. Typically, a high current power supply is required for semi dry blotting. One mPAGE™ Bis-Tris Precast Gel generates an initial amperage up to 900 mA.

11. Remove the blot from the transfer system and briefly rinse the membrane in deionized water to remove gel debris.
12. To visualize the transferred proteins prior to immunodetection, the membrane may be stained with any reversible blot stain compatible with immunodetection. Follow the reagent manufacturer's staining protocol.
13. The blot may be dried or used immediately in a desired immunodetection protocol.

Buffer Formulations

Table 4. mPAGE™ 4X LDS Sample Buffer

Reagent	Amount
Tris-HCl	0.666 g
Tris-Base	0.682 g
Lithium dodecyl sulfate (LDS)	0.800 g
EDTA	0.006 g
Glycerol	4 g
Coomassie® Brilliant Blue G250 (1% solution)	0.75 ml
Phenol Red (1% solution)	0.25 ml
Deionized water	To 10 ml

Store at 2–8 °C.
The pH of the 1X solution is 8.5. Do not adjust the pH with acid or base.

Table 5. mPAGE™ MES SDS Running Buffer

Reagent	Amount
Tris-Base	6.06 g
MES	9.76 g
SDS	1.0 g
EDTA	0.3 g
Deionized water	1000 mL

Table 6. MOPS SDS Running Buffer

Reagent	Amount
Tris-Base	6.06 g
MOPS	10.46 g
SDS	1.0 g
EDTA	0.3 g
Deionized water	1000 mL

Table 7. mPAGE™ 1X Transfer Buffer pH 8.2 for Wet Transfer protocol

Reagent concentration	Amount
25 mL Tris base	3.0 g
25 mM Bicine	4.08 g
10% Methanol	100 mL
Deionized water	900 mL

Table 8. mPAGE™ Transfer Buffer (with Methanol) pH 8.2 for Semi Dry Transfer protocol

Reagent	Amount
50 mM Tris Base	3.0 g
50 mM Bicine	4.08 g
Methanol	50 mL
Deionized water	450 mL

Table 9. mPAGE™ Gel Equilibration Buffer pH 8.2 for Semi Dry Transfer Protocol

Reagent	Amount
50 mM Tris Base	3.0 g
50 mM Bicine	4.08 g
Deionized water	500 mL

Troubleshooting Guide

Problem	Probable Cause	Solution
Distorted protein bands.	Air bubbles in sample wells.	Use a pipette to flush the sample wells with running buffer before sample loading.
	Buffer enters gel because of broken cassette.	Cassette was damaged due to gel tank incompatibility.
Part of the tracking dye changed to yellow.	pH value decreased.	Prepare new running buffer with ultrapure water. Check pH.
Streaking.	Insoluble or weakly charged particles (such as carbohydrates) in sample.	Heat sample in the presence of SDS, centrifuge sample, and load the supernatant.
	Sample contains too much salt.	Reduce salt content by dialysis or ultrafiltration.
	Sample contaminated with DNA.	Centrifuge sample to clarify.
Electrophoresis time is too long.	Sealing tape is not removed from the bottom of the cassette.	Peel the sealing tape off from the bottom of cassette before loading.
	Slow leak in buffer core.	Check the buffer core assembly before adding running buffer to the outer tank.
	Running buffer was not prepared correctly.	Refer to buffer recipe or use premeasured running buffer packets.
	Incorrect running conditions.	Use constant voltage and do not limit the amperage.
		Use a power supply rated for the current generated.
Bands are not well separated.	Incorrect gel percentage.	Use the protein migration table to choose the appropriate gel.
	Incorrect running buffer.	Use the protein migration table to choose the appropriate buffer.
	Incompatible running buffer.	Use only mPAGE™ MES SDS or MOPS SDS Running Buffer.
	Sample overloading.	Reduce sample concentration.
	Incorrect sample buffer.	Use only mPAGE™ 4X LDS Sample Buffer in the sample during preparation.
	Running buffer temperature is too high.	Refer to electrophoresis tank manufacturer's user guide for proper running conditions.
Voltage set point cannot be reached.	Leaking between the inner and outer tank during run.	Check the buffer core assembly before adding running buffer to the outer tank.
	Electrophoresis tank was incorrectly assembled.	Refer to electrophoresis tank manufacturer's user guide for proper running conditions.
	Excess salt in the sample.	Reduce salt content by dialysis or ultrafiltration.
Air bubbles between the gel and the cassette.	Running Buffer temperature is too high.	Refer to electrophoresis tank manufacturer's user guide for proper running conditions.

Product Ordering

Purchase products online at SigmaAldrich.com/products.

mPAGE™ Bis-Tris Precast Gels for SDS-PAGE and Western Blotting

Description	Qty/Pk	Catalogue Number
mPAGE™ 4-12% Bis-Tris Precast Gel, 10x8, 10-well	10 gels	MP41G10
mPAGE™ 4-12% Bis-Tris Precast Gel, 10x8, 12-well	10 gels	MP41G12
mPAGE™ 4-12% Bis-Tris Precast Gel, 10x8, 15-well	10 gels	MP41G15
mPAGE™ 4-20% Bis-Tris Precast Gel, 10x8, 10-well	10 gels	MP42G10
mPAGE™ 4-20% Bis-Tris Precast Gel, 10x8, 12-well	10 gels	MP42G12
mPAGE™ 4-20% Bis-Tris Precast Gel, 10x8, 15-well	10 gels	MP42G15
mPAGE™ 8-16% Bis-Tris Precast Gel, 10x8, 10-well	10 gels	MP81G10
mPAGE™ 8-16% Bis-Tris Precast Gel, 10x8, 12-well	10 gels	MP81G12
mPAGE™ 8-16% Bis-Tris Precast Gel, 10x8, 15-well	10 gels	MP81G15
mPAGE™ 8% Bis-Tris Precast Gel, 10x8, 10-well	10 gels	MP8W10
mPAGE™ 8% Bis-Tris Precast Gel, 10x8, 12-well	10 gels	MP8W12
mPAGE™ 8% Bis-Tris Precast Gel, 10x8, 15-well	10 gels	MP8W15
mPAGE™ 10% Bis-Tris Precast Gel, 10x8, 10-well	10 gels	MP10W10
mPAGE™ 10% Bis-Tris Precast Gel, 10x8, 12-well	10 gels	MP10W12
mPAGE™ 10% Bis-Tris Precast Gel, 10x8, 15-well	10 gels	MP10W15
mPAGE™ 12% Bis-Tris Precast Gel, 10x8, 10-well	10 gels	MP12W10
mPAGE™ 12% Bis-Tris Precast Gel, 10x8, 12-well	10 gels	MP12W12
mPAGE™ 12% Bis-Tris Precast Gel, 10x8, 15-well	10 gels	MP12W15

mPAGE™ Reagents for SDS-PAGE and Western Blotting

Description	Qty/Pk	Catalogue Number
mPAGE™ 4X LDS Sample Buffer	10 mL	MPSB-10ML
mPAGE™ 4X LDS Sample Buffer	250 mL	MPSB-250ML
mPAGE™ MES SDS Running Buffer Powder (Each packet makes 1L)	5 packets	MPMES
mPAGE™ MOPS SDS Running Buffer Powder (Each packet makes 1L)	5 packets	MPM0PS
mPAGE™ Transfer Buffer Powder (Each packet makes 1L)	10 packets	MPTRB
mPAGE™ Western Protein Standard	250 µL	MPSTD2

mPAGE™ Trial Kits for SDS-PAGE and Western Blotting

Description	Qty/Pk	Catalogue Number
mPAGE™ Trial Kit, 4-12%, 12-well, MOPS	2 gels, 1 x 1L Running Buffer Powder, mPAGE™ Adapter Plates, mPAGE™ Cassette Opener	MP41G12TR1
mPAGE™ Trial Kit, 4-12%, 12-well, MES	2 gels, 1 x 1L Running Buffer Powder, mPAGE™ Adapter Plates, mPAGE™ Cassette Opener	MP41G12TR2
mPAGE™ Trial Kit, 4-20%, 12-well, MOPS	2 gels, 1 x 1L Running Buffer Powder, mPAGE™ Adapter Plates, mPAGE™ Cassette Opener	MP42G12TR1
mPAGE™ Trial Kit, 10%, 12-well, MES	2 gels, 1 x 1L Running Buffer Powder, mPAGE™ Adapter Plates, mPAGE™ Cassette Opener	MP10W12TR2
mPAGE™ Trial Kit, 10%, 12-well, MOPS	2 gels, 1 x 1L Running Buffer Powder, mPAGE™ Adapter Plates, mPAGE™ Cassette Opener	MP10W12TR1
mPAGE™ Trial Kit, 12%, 12-well, MES	2 gels, 1 x 1L Running Buffer Powder, mPAGE™ Adapter Plates, mPAGE™ Cassette Opener	MP12W12TR2

mPAGE™ Accessories for SDS-PAGE and Western Blotting

Description	Qty/Pk	Catalogue Number
mPAGE™ Adapter Plates	2 plates	MPTA
mPAGE™ Gel Cassette Opener	1 opener	MPC0
mPAGE™ Buffer Dam	1 dam	MPBD

mPAGE™ Accessories for SDS-PAGE and Western Blotting

Description	Qty/Pk	Catalogue Number
DL-Dithiothreitol solution, 1 M	10 mL	43816-10ML
2-Mercaptoethanol (BME)	25 mL	63689-25ML-F
EZBlue™ Gel Staining Reagent	500 mL	G1041-500ML
InstantBlue™, Ultrafast Protein Stain	1L	ISB1L-1L
Brilliant Blue G solution, Concentrate	1 L working solution	B8522
Immobilon® NOW Dispenser for 8.5 cm x 10 m rolls	1 dispenser	IMDISP
Immobilon®-E Membrane, PVDF, 0.45 µm, 8.5 cm x 10 m	1 roll	IEVH85R
Immobilon®-E PVDF Transfer Membranes, 7 cm x 8.4 cm sheet	50 sheets	IEVH07850
Immobilon®-P Membrane, PVDF, 0.45 µm, 8.5 cm x 10 m	1 roll	IPVH85R
Immobilon®-P PVDF Transfer Membranes, 7 cm x 8.4 cm sheet	50 sheets	IPVH07850
Immobilon®-FL Membrane, PVDF, 0.45 µm, 8.5 cm x 10 m	1 roll	IPFL85R
Immobilon®-PSQ Membrane, PVDF, 0.2 µm, 8.5 cm x 10 m	1 roll	ISEQ85R
Immobilon®-PSQ PVDF Transfer Membranes, 7 cm x 8.4 cm sheet	50 sheets	ISEQ07850
Immobilon® blotting filter paper, 7 cm × 8.4 cm sheet	100 sheets	IBFP0785C
Immobilon®-P Blotting Sandwich, 0.45 µm, 7 cm x 8.4 cm sheet	20 sandwiches	IPSN07852
Immobilon®-E Blotting Sandwich, 0.45 µm, 7 cm x 8.4 cm sheet	20 sandwiches	IESN07852
Immobilon® Signal Enhancer for Immunodetection	500 mL	WBSH0500
Immobilon® Block Noise Cancelling Reagents for chemiluminescence detection	500 mL	WBAVDCH01
Immobilon® ECL Ultra Western HRP substrate	100 mL	WBULS0100
Immobilon® Western HRP substrate	100 mL	WBKLS0100
Immobilon® Forte Western HRP substrate	100 mL	WBLUF0100
Immobilon® Crescendo Western HRP substrate	100 mL	WBLUR0100
Immobilon® Classico Western HRP substrate	100 mL	WBLUC0100
Re-Blot™ Plus Strong Antibody Stripping solution, 10X	50 mL	2504
Ponceau S solution, 0.1% (w/v) in 5% acetic acid	1L	P170

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