

## ELECTROPHORESIS

# Criterion™ XT Precast Gels

Get unsurpassed results with the Criterion system:

- Separate up to 26 samples on one gel
- Resolve more proteins on every gel
- Never lose track of critical gel information
- Eliminate gel trimming with the patented\* J-foot design
- Load gels quickly and easily with sample loading guides and multichannel pipet-compatible combs
- Open cassettes safely and easily without a separate tool

## All the Benefits of the Criterion™ Format With an Extended Shelf Life

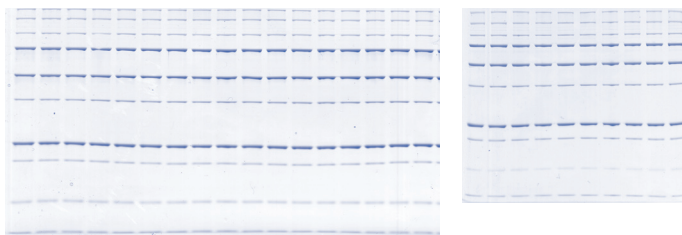
### Introduction

The Criterion system is a convenient, high-quality precast gel system. Its superior features and numerous benefits are ideally suited for use with Criterion XT precast gels, which offer a shelf life of 12 months for Bis-Tris gels and 8 months for Tris-acetate gels.

Criterion XT precast gels are formulated at a near-neutral pH, significantly delaying acrylamide hydrolysis compared to traditional Laemmli systems. Their chemical composition allows maximum stability and consistent results for up to one year.

Criterion XT gels are designed to work with optimized sample and running buffers without the need for antioxidant addition. Like traditional Laemmli systems, Criterion XT gels use discontinuous buffer ion fronts that form moving boundaries to stack and then separate proteins (see diagram to right).

This high-performance, versatile system allows separation of small to large proteins using just two types of gels: Criterion XT Bis-Tris gels for small to midsized proteins and Criterion XT Tris-acetate gels for large proteins.

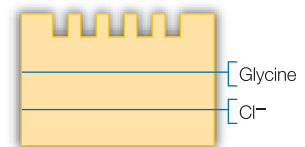


### Criterion XT gels separate more samples with comparable resolution.

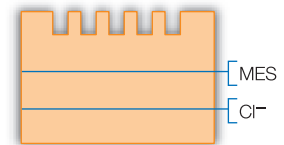
Precision Plus Protein™ standards separated on a Criterion XT 12% Bis-Tris 18-well gel with XT MOPS buffer (left) and a competitor's 12% Bis-Tris 10-well mini gel (right). Both gels were stained with Bio-Safe™ Coomassie stain and imaged on a Molecular Imager® GS-800™ calibrated densitometer.

\* U.S. patent 6,093,301.

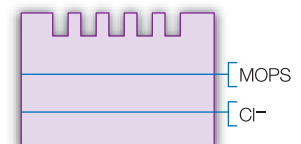
### Leading and Trailing Ions



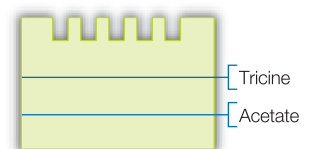
Tris-HCl gel with Tris/glycine buffer (Laemmli system)



Bis-Tris gel with XT MES running buffer for small proteins (Criterion XT system)



Bis-Tris gel with XT MOPS running buffer for midsized proteins (Criterion XT system)



Tris-acetate gel with XT Tricine running buffer for large proteins (Criterion XT system)

**BIO-RAD**

## Choice of Separation Mechanism

### Bis-Tris Gels

Criterion XT Bis-Tris gels are formulated using a Bis-Tris-HCl buffer system (pH 6.4) for separation of proteins by molecular weight. By selecting from two running buffers, you can expand the separation capability of a single Bis-Tris gel type. To further refine your resolution range, refer to the migration chart on the right for the acrylamide concentration appropriate for your proteins of interest.

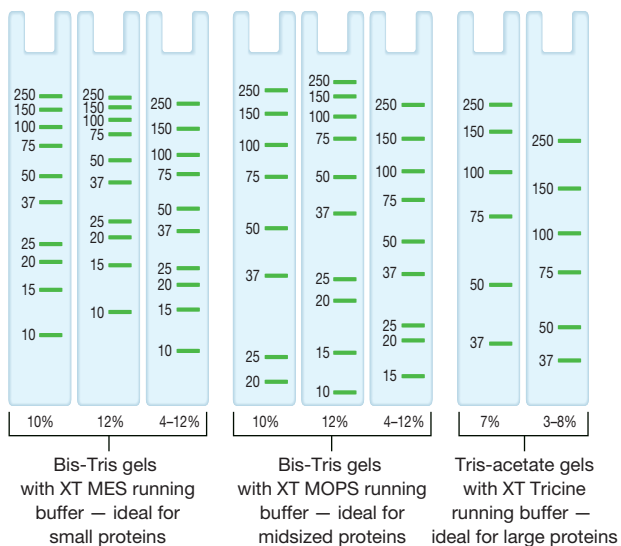
### Tris-Acetate Gels

Criterion XT Tris-acetate gels are formulated using a Tris-acetate buffer system (pH 7.0) that separates large denatured proteins by molecular weight when run with XT Tricine running buffer. These gels are made without SDS, so they can also be used with nondenaturing sample and running buffers (native PAGE conditions) to separate proteins by mass-to-charge ratio. The nonreducing, nondenaturing conditions of native PAGE preserve biological activity and can improve antibody detection. Native PAGE can also resolve multiple protein bands where molecular mass separation by SDS-PAGE would reveal only one.

For native PAGE on Criterion XT gels, nonreducing, nondenaturing native sample buffer and Tris/glycine running buffer can be used to maintain protein secondary structure and native charge density.

## Gel and Buffer Selection Guide

The banding patterns below indicate the optimal separation ranges (in kD) for each acrylamide percentage in combination with the buffer system specified.



## Recommended Standards

Because of the pH differences between traditional Laemmli and Criterion XT buffer systems, some prestained protein standards may migrate differently. The standards listed below are recommended with Criterion XT gels.

For molecular weight determination:

- Precision Plus Protein unstained standards
- Unstained SDS-PAGE standards

For molecular weight estimation:

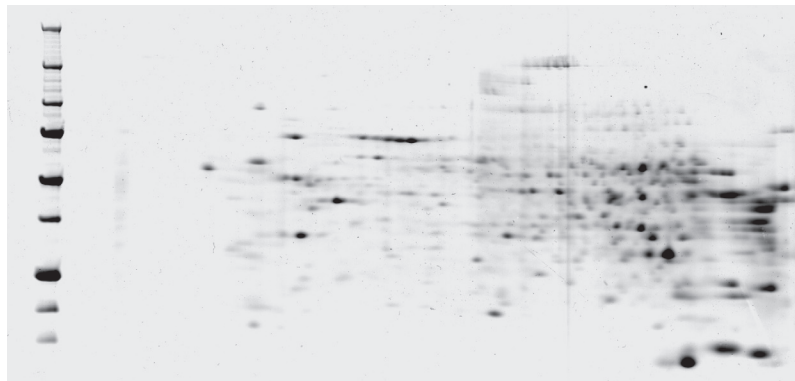
- Precision Plus Protein all blue standards
- Kaleidoscope™ prestained standards
- Prestained SDS-PAGE standards



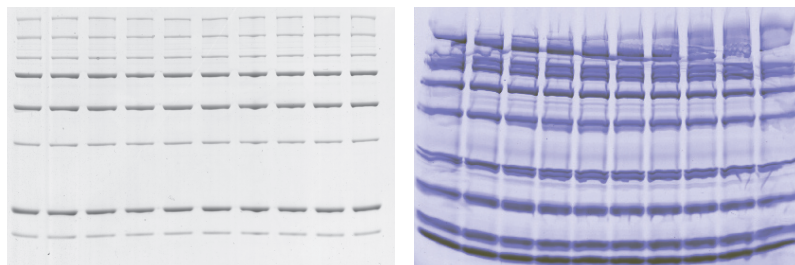
The Criterion precast gel system.

## Greater Resolving Area for 1-D and 2-D Electrophoresis

Compared to traditional mini formats, the Criterion system provides 60% more resolving area in the first dimension and 24% more resolving area in the second dimension.\* Use existing IPG strip equilibration protocols for second-dimension analysis on Criterion XT gels.



**Criterion XT gels yield excellent 2-D electrophoresis results.** Mouse liver extract separated on an 11 cm ReadyStrip™ IPG strip, pH 3–10, followed by second-dimension separation on a 4–12% Criterion XT Bis-Tris gel with Precision Plus Protein standards. The gel was run with XT MES running buffer, stained with SYPRO Ruby protein gel stain, and imaged on the Molecular Imager FX™ system.



**Improvement of shelf life and gel quality with neutral pH formulation.** Left, a typical neutral-pH gel at 20 weeks; right, a typical Tris-HCl (Laemmli system) gel at 14 weeks.

## Converting to Criterion XT Gels

Existing Gel	Criterion XT Gel
10–20%, 16.5% peptide/Tricine	10%, 12%, 4–12% Bis-Tris with XT MES buffer
10% Tris-HCl	10% Bis-Tris with XT MOPS buffer
12% Tris-HCl	12% Bis-Tris with XT MOPS buffer
15%, 4–15%, 4–20% Tris-HCl	4–12% Bis-Tris with XT MOPS buffer
5% Tris-HCl	3–8% Tris-acetate with XT Tricine buffer
7.5% Tris-HCl	7% Tris-acetate with XT Tricine buffer

## Blotting Criterion XT Gels

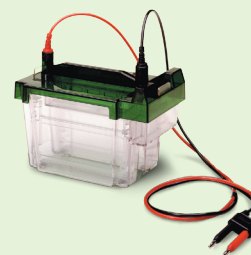
Criterion XT gels provide excellent transfer efficiency when blotting with standard Tris/glycine and Towbin buffer in the Criterion blotter. For instructions and tips on blotting Criterion gels, refer to the Criterion Blotter Instruction Manual.

\* Criterion XT gels and buffers are formulated at near-neutral pH, resulting in better protein stability (ideal for downstream applications such as mass spectrometry).



### Criterion Gel Cassette

The Criterion gel cassette (15.0 x 10.5 cm) with integral buffer chamber runs exclusively on Criterion cells. The Criterion gel is 13.3 cm wide x 8.5 cm long (1.0 mm thick).



### Criterion Cell

The Criterion cell runs 1 or 2 Criterion gels. Lower buffer chamber holds 720 ml; upper buffer chamber/gel cassette chamber holds 60 ml.



### Criterion™ Dodeca™ Cell

The Criterion Dodeca cell runs up to 12 gels and uses 6 L of buffer.








### Criterion Blotter

The Criterion blotter is highly efficient, transferring most proteins in 30–60 min using 1.3 L of buffer. The unique gel blot assembly tray facilitates setup.

## Specifications

Gel dimensions	13.3 x 8.7 cm (W x L), 1.0 mm thick	Gel shelf life	12 months for Bis-Tris gels
Cassette dimensions	10.6 x 15.0 cm (W x L)	(from date of manufacture)	8 months for Tris-acetate gels
Cassette material	Styrene copolymer		12 weeks for Tris-HCl, Tris-Tricine, zymogram, TBE, TBE-urea gels
Comb material	Polycarbonate		26 weeks for IEF gels
Storage tray material	PET	Buffer volume	Upper, 60 ml; lower, 400 ml
Gel storage conditions	Store flat; do not freeze Ambient temperature for Bis-Tris gels 4°C for all other gel types		

## Ordering Information

Description	 12+2 Well*, ** 45 µl	 18-Well 30 µl	 26-Well* 15 µl	 Prep+2 Well 800 µl	 IPG+1 Well** 11 cm IPG Strip
<b>Criterion XT Bis-Tris Gels</b>					
10% Resolving Gel	345-0111	345-0112	345-0113	—	345-0115
12% Resolving Gel	345-0117	345-0118	345-0119	345-0120***	345-0121
4–12% Resolving Gel	345-0123	345-0124	345-0125	345-0126***	345-0127
<b>Criterion XT Tris-Acetate Gels</b>					
7% Resolving Gel	345-0135	345-0136***	345-0137***	—	—
3–8% Resolving Gel	345-0129	345-0130	345-0131	—	345-0133***

### Criterion XT Buffers and Reagents

Catalog #	Description
161-0788	XT MOPS Running Buffer, 20x, 500 ml
161-0789	XT MES Running Buffer, 20x, 500 ml
161-0790	XT Tricine Running Buffer, 20x, 500 ml
161-0791	XT Sample Buffer, 4x, 10 ml
161-0792	XT Reducing Agent, 20x, 1 ml
161-0793	XT MOPS Buffer Kit, includes 500 ml of 20x XT MOPS running buffer, 10 ml of 4x XT sample buffer, 1 ml of 20x XT reducing agent
161-0796	XT MES Buffer Kit, includes 500 ml of 20x XT MES running buffer, 10 ml of 4x XT sample buffer, 1 ml of 20x XT reducing agent
161-0797	XT Tricine Buffer Kit, includes 500 ml of 20x XT Tricine running buffer, 10 ml of 4x XT sample buffer, 1 ml of 20x XT reducing agent
161-0738	1x Native Sample Buffer, 3 ml
161-0734	10x Tris/Glycine, 1 L

### Criterion Cell and Systems

Catalog #	Description
165-6001	Criterion Cell, includes electrophoresis buffer tank, lid with power cables, 3 sample loading guides (12+2 well, 18-well, 26-well), instructions
165-6024	Criterion Cell/Plate Blotter System, includes Criterion cell and Criterion blotter with plate electrodes
165-6025	Criterion Cell/Wire Blotter System, includes Criterion cell and Criterion blotter with wire electrodes

### Criterion Dodeca Cell

Catalog #	Description
165-4130	Criterion Dodeca Cell, includes electrophoresis buffer tank with built-in cooling coil, lid with power cables, instructions

### Criterion Accessories

Catalog #	Description
345-9921	Criterion Staining/Blotting Trays, with lids, 2
345-9920	Criterion Staining/Blotting Trays, with lids, 12
<b>Criterion Membrane/Filter Paper Sandwiches</b>	
162-0232	Nitrocellulose/Filter Paper Sandwiches, 0.2 µm, 8.5 x 13.5 cm, 20 pack
162-0234	Nitrocellulose/Filter Paper Sandwiches, 0.45 µm, 8.5 x 13.5 cm, 20 pack
162-0238	Immun-Blot PVDF/Filter Paper Sandwiches, 8.5 x 13.5 cm, 20 pack
162-0236	Sequi-Blot PVDF/Filter Paper Sandwiches, 8.5 x 13.5 cm, 20 pack

### Bio-Safe Coomassie Stain

Catalog #	Description
161-0786	Bio-Safe Coomassie Stain, 1 L
161-0787	Bio-Safe Coomassie Stain, 5 L

### Protein Standards

Catalog #	Description
161-0324	Kaleidoscope Prestained Standards, broad range, 500 µl
161-0309	Prestained SDS-PAGE Standards, high range, 500 µl
161-0305	Prestained SDS-PAGE Standards, low range, 500 µl
161-0318	Prestained SDS-PAGE Standards, broad range, 500 µl
161-0363	Precision Plus Protein Unstained Standards, 1 ml, 100 applications
161-0373	Precision Plus Protein All Blue Standards, 500 µl, 50 applications
161-0303	SDS-PAGE Standards, high range, 200 µl
161-0304	SDS-PAGE Standards, low range, 200 µl
161-0317	SDS-PAGE Standards, broad range, 200 µl

\* Multichannel pipet compatible. \*\* Includes reference well(s). \*\*\* Please allow up to 2 weeks for delivery.

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Purchase of Criterion XT Bis-Tris gels, XT MOPS running buffer, XT MES running buffer, XT MOPS buffer kit, and XT MES buffer kit is accompanied by a limited license under U.S. Patent Numbers 6,143,154; 6,096,182; 6,059,948; 5,578,180; 5,922,185; 6,162,338; and 6,783,651 and corresponding foreign patents.

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