

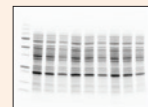



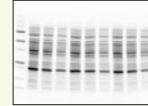

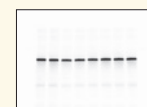
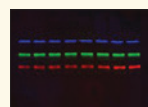

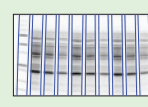


# Bio-Rad Stain-Free Western Blotting Workflow

## Faster Results, Better Data

Compared to conventional methods, this improved workflow incorporating Stain-Free gel technology saves time and increases the accuracy and reliability of your western blot results.

Sample Preparation	Data	Benefit
<p><b>1</b></p> 	—	<p><b>One-stop shop for consumables and reagents that span the complete electrophoresis and western blotting workflow</b></p> <ul style="list-style-type: none"> <li>Convenient premixed electrophoresis gel-forming reagents and buffers are the perfect solutions for electrophoresis and blotting needs</li> </ul>
Electrophoresis (and Imaging)	Data	Benefit
<p><b>2</b></p> <p>TGX Stain-Free Gel, Criterion Cell, and ChemiDoc™ Go or ChemiDoc MP Imaging System</p> 	 <p>Stain-Free image of pre-transfer gel</p>	<p><b>Visualize separation for all lanes in 1 min</b></p> <ul style="list-style-type: none"> <li>Coomassie-like performance with no background variability and no staining/destaining</li> <li>Speed with flexibility: TGX Stain-Free Gel chemistry available in precast and handcast formats</li> </ul>
Transfer (and Imaging)	Data	Benefit
<p><b>3</b></p> <p>Trans-Blot™ Turbo Transfer System, and ChemiDoc Go or ChemiDoc MP Imaging System</p> 	 <p>Stain-Free image of post-transfer gel</p>	<p><b>Efficient and uniform protein transfer in 3 min</b></p> <ul style="list-style-type: none"> <li>Throughput: transfer 4 mini or 2 midi gels at once</li> <li>Convenience: choose from ready-to-use transfer packs (nitrocellulose or polyvinylidene difluoride [PVDF]) or ready-to-assemble kits (nitrocellulose, PVDF, or low fluorescence [LF] PVDF)</li> </ul>
Immunodetection	Data	Benefit
<p><b>4</b></p> <p>EveryBlot Blocking Buffer, Clarity™ and Clarity Max Western ECL Substrates, and StarBright™ Blue Fluorescent Secondary Antibodies</p> 	 <p>Stain-Free image of blot</p>	<p><b>Quickly check transfer efficiency</b></p> <ul style="list-style-type: none"> <li>Verify transfer quality for all lanes in 2 min</li> <li>EveryBlot Blocking Buffer provides 5 min blocking and maximum sensitivity</li> <li>Easy multiplexing</li> <li>Use western blot-validated, highly specific PrecisionAb™ Primary Antibodies and StarBright Blue Fluorescent Secondary Antibodies to detect multiple targets on the same blot</li> </ul>
Image Acquisition	Data	Benefit
<p><b>5</b></p> <p>ChemiDoc Go or ChemiDoc MP Imaging System</p> 	 <p>Target protein detection with chemiluminescence</p>  <p>Target protein detection with fluorescence</p>	<p><b>Compatible with chemiluminescence and fluorescence detection</b></p> <ul style="list-style-type: none"> <li>No need to strip and reprobe or to cut the blot</li> <li>Smart Tray Technology* automatically recognizes your application</li> </ul>
Image Analysis	Data	Benefit
<p><b>6</b></p> <p>ChemiDoc Go or ChemiDoc MP Imaging System with Image Lab Software</p> 	 <p>Stain-Free blot (from step 4) for normalization</p>	<p><b>More accurate protein normalization</b></p> <ul style="list-style-type: none"> <li>Stain-Free technology eliminates inconsistencies of normalizing to HKPs by using total protein normalization (TPN) for more accurate protein quantitation and western blotting results</li> <li>Maintain electronic records for U.S. FDA 21 CFR Part 11 compliance with Image Lab Software, Security Edition</li> </ul>

\* U.S. patent 8,913,127.

## FAQs

### How does Stain-Free technology work?

The embedded compound in Stain-Free gels is activated by UV light, and emits a fluorescent signal with sensitivity equivalent to that of Coomassie staining. The Stain-Free signal transfers to the proteins during blotting, which enables the assessment of transfer efficiency and provides a total protein signal for use in normalization.

### How do total protein stains compare to normalizing with a housekeeping protein (HKP)?

Advantages of total protein stains vs. HKP normalization include:

1. HKP expression may change depending on experimental conditions and sample type. Total protein is more stable and less prone to change with experimental conditions.
2. Total protein normalization using Stain-Free technology eliminates the need to strip and reprobe for HKPs. Stripping and reprobing for HKPs is a very time-consuming process, adding hours to detection, whereas Stain-Free total protein detection can be done in minutes.
3. Compared to HKPs, total protein stains exhibit superior linearity and reproducibility.

### How does Stain-Free fluorescence compare to other total protein stains for blots?

Stain-Free technology provides higher detection sensitivity and a wider linear dynamic range than other available total protein stains. Stain-Free technology eliminates staining and destaining manipulation, ensuring proteins remain intact from gel to membrane. Other total protein stains, including Ponceau S and SYPRO Ruby, can introduce errors in the staining/destaining procedure.

### What resources are available?

Tips on normalization with Stain-Free technology are available at [bio-rad.com](https://www.bio-rad.com).

[Bulletin 3429](#)  
[Bulletin 6434](#)  
[Bulletin 6390](#)  
[Bulletin 6360](#)

The Complete Guide to Stain-Free Western Blotting  
 Western Blot Normalization Using Image Lab Software  
 General Stain-Free Western Blotting Protocol  
 A Method for Greater Reliability in Western Blot Loading  
 Controls: Stain-Free Total Protein Quantitation  
 Selected Publications List: Total Protein Normalization in Western Blotting Using Stain-Free Technology

[Bulletin 6351](#)

Tips for good quantitative western blotting are available at [bio-rad.com](https://www.bio-rad.com).

[Bulletin 2895](#) Protein Blotting Guide

## Ordering Information

Catalog # Description

### Protein Standards

1610373	Precision Plus Protein All Blue Prestained Protein Standards
1610374	Precision Plus Protein Dual Color Standards, 500 µl
1610363	Precision Plus Protein Unstained Protein Standards, Strep-tagged recombinant, 1 ml
1610377	Precision Plus Protein Dual Xtra Prestained Protein Standards

### Buffers

1610732	10x Tris/Glycine/SDS Buffer
1610737	2x Laemmli Sample Buffer
1610747	4x Laemmli Sample Buffer
1706435	10x Tris Buffered Saline (TBS)

### Electrophoresis Cells

1656001	Criterion Cell, includes electrophoresis buffer tank, lid with power cables, 3 sample loading guides
1658004	Mini-PROTEAN™ Tetra Vertical Electrophoresis Cell for Mini Precast Gels, 4-gel vertical electrophoresis system, includes electrode assembly, companion running module, tank, lid with power cables, mini cell buffer dam

### Blotting Systems

17001917	Trans-Blot Turbo Transfer Starter System, mini PVDF
17001919	Trans-Blot Turbo Transfer Starter System, midi PVDF
17001918	Trans-Blot Turbo Transfer Starter System, mini nitrocellulose
17001915	Trans-Blot Turbo Transfer Starter System, midi nitrocellulose
1704156	Trans-Blot Turbo Mini 0.2 µm PVDF Transfer Packs, pkg of 10
1704157	Trans-Blot Turbo Midi 0.2 µm PVDF Transfer Packs, pkg of 10
1704158	Trans-Blot Turbo Mini 0.2 µm Nitrocellulose Transfer Packs, pkg of 10
1704159	Trans-Blot Turbo Midi 0.2 µm Nitrocellulose Transfer Packs, pkg of 10
1704272	Trans-Blot Turbo RTA Mini 0.2 µm PVDF Transfer Kit, for 40 blots
1704273	Trans-Blot Turbo RTA Midi 0.2 µm PVDF Transfer Kit, for 40 blots
1704274	Trans-Blot Turbo RTA Mini 0.45 µm LF PVDF Transfer Kit, for 40 blots
1704275	Trans-Blot Turbo RTA Midi 0.45 µm LF PVDF Transfer Kit, for 40 blots
1704270	Trans-Blot Turbo RTA Mini 0.2 µm Nitrocellulose Transfer Kit, for 40 blots
1704271	Trans-Blot Turbo RTA Midi 0.2 µm Nitrocellulose Transfer Kit, for 40 blots

### Imaging Systems

12009077	GelDoc Go Gel Imaging System with Image Lab Touch Software
12003153	ChemiDoc Imaging System
12003154	ChemiDoc MP Imaging System
12018025	ChemiDoc Go Imaging System

### Detection Reagents

1705060	Clarity Western ECL Substrate, 200 ml
1705061	Clarity Western ECL Substrate, 500 ml
1705062	Clarity Max Western ECL Substrate, 100 ml
12004158	StarBright Blue 700 Goat Anti-Mouse IgG, 400 µl
12004161	StarBright Blue 700 Goat Anti-Rabbit IgG, 400 µl
12005866	StarBright Blue 520 Goat Anti-Mouse IgG, 400 µl
12005869	StarBright Blue 520 Goat Anti-Rabbit IgG, 400 µl
12004163	hFAB Rhodamine Anti-Actin Primary Antibody, 200 µl
12004165	hFAB Rhodamine Anti-Tubulin Primary Antibody, 200 µl
12004167	hFAB Rhodamine Anti-GAPDH Primary Antibody, 200 µl

### TGX Stain-Free Precast Gels

Description	10-Well 30 µl	10-Well 50 µl	12-Well 20 µl	15-Well 15 µl	IPG Well 7 cm IPG Strip
<b>Mini-PROTEAN TGX Stain-Free Precast Gels</b>					
7.5% Resolving Gel	4568023	4568024	4568025	4568026	4568021
10% Resolving Gel	4568033	4568034	4568035	4568036	4568031
12% Resolving Gel	4568043	4568044	4568045	4568046	4568041
4–15% Resolving Gel	4568083	4568084	4568085	4568086	4568081
4–20% Resolving Gel	4568093	4568094	4568095	4568096	4568091
8–16% Resolving Gel	4568103	4568104	4568105	4568106	4568101
Any kD Resolving Gel	4568123	4568124	4568125	4568126	4568121

Description	12+2-Well* 45 µl	18-Well 30 µl	26-Well 15 µl	Prep+2-Well* 700 µl	IPG+1-Well* 11 cm IPG Strip
<b>Criterion TGX Stain-Free Precast Gels**</b>					
7.5% Gel	5678023	5678024	5678025	—	—
10% Gel	5678033	5678034	5678035	—	—
12% Gel	5678043	5678044	5678045	—	—
4–15% Gel	5678083	5678084	5678085	5678082	5678081
4–20% Gel	5678093	5678094	5678095	5678092	5678091
8–16% Linear Gradient	5678103	5678104	5678105	5678102	5678101
Any kD Gel	5678123	5678124	5678125	5678122	5678121

\* Reference wells accommodate 15 µl of markers/standards.

\*\* Criterion TGX Stain-Free Gels are sold singly.

Visit [bio-rad.com/StainFree](https://www.bio-rad.com/StainFree) for more information.

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TGX Stain-Free Precast Gels are covered by U.S. Patent Numbers 7,569,130 and 8,007,646.

Clarity Max Western ECL Substrate is manufactured for Bio-Rad by Cyanagen Srl and is the subject of U.S. and ex-U.S. patents, including US7855287, EP1950207, US9040252, AU2011202658, CA2742025, US8129136, EP1962095, and CN102313732.

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