



Electrophoresis and Blotting: Isoelectric Focusing

PROTEAN® i12™ IEF System	120
ReadyPrep™ Reagents for IEF	123
Tube Gel IEF 2-D Systems	124
Mini Format Analytical IEF	125
Ordering Information	126

IEF Systems

IEF is primarily used as the first dimension of separation in 2-D analysis; 2-D electrophoresis is used to separate complex proteins samples based on pI and MW. IEF separations can be performed using two techniques: either with an IPG strip with ampholytes covalently bound to the gel or with carrier ampholytes that move through the gel to generate a pH gradient. Bio-Rad offers products for both techniques. Bio-Rad's first-dimension products are compatible with second-dimension SDS-PAGE system in mini, midi, and large formats. For more information, see pages 153–167. For preparative IEF products see pages 204–205.

New PROTEAN® i12™ IEF System

Order Info: Pg 126

The PROTEAN i12 IEF system offers individual lane control — a novel feature that allows multiple lanes to be run simultaneously, each with a different sample, pH gradient and protocol, resulting in time savings and improved reliability. The flexible system works with ReadyStrip™ IPG strips to provide many separation range options. The PROTEAN i12 IEF system provides a unique solution for first-dimension separations with the following features:



PROTEAN i12 IEF system components:

1. PROTEAN i12 IEF cell.
2. Focusing trays with strip retainers.
3. Cleaning brushes.
4. Pair of electrodes.
5. ReadyStrip IPG Strips.
6. Leveling bubble.
7. Forceps.
8. Styluses.
9. USB flash drives.
10. Electrode wicks.
11. Rehydration trays.
12. ReadyPrep 2-D starter kit. rehydration/sample buffer.
13. Cleaning concentrate.
14. Mineral oil.

See Also

Protein sample preparation products: pages 2–12.

ReadyStrip IPG strips: page 122.

Vertical electrophoresis: pages 153–178.

Individual Lane Control

- Optimize experiments in fewer runs
- Run multiple experiments at once
- Obtain better quality data with less experimental risk — one irregular sample cannot compromise the entire run

Touch-Screen User Interface

- Easily run programs and edit and create protocols

USB Port

- Export focusing data to Excel or upload to the PROTEAN i12 Reporter (www.i12reporter.com), a free web-based application that easily graphs data, compares lanes, and creates reports

Flexible Electrode and Tray Design

- Run IPG strips gel-side-down, gel-side-up, or load sample with cups, all within the same tray
- Durable polycarbonate trays supply sufficient heat transfer for accurate and reproducible pI determination

For More Information

Web: www.bio-rad.com/i12IEF

Request or download bulletins: 2651, 6097, 6138, 6139, and 6140



PROTEAN i12 IEF system touch-screen user interface.

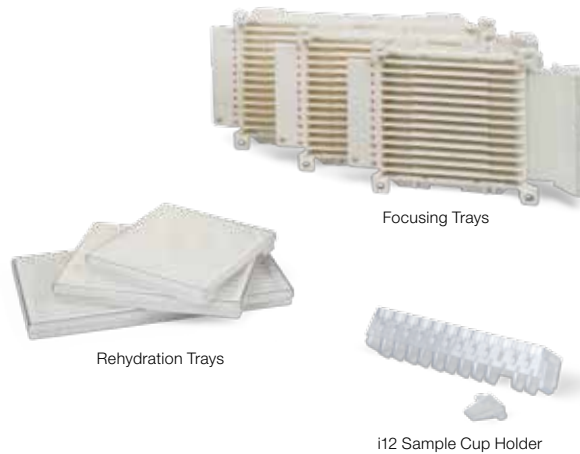
PROTEAN i12 IEF System Specifications

Input power	100–240 VAC, 50/60 Hz	Available focusing tray lengths	7 cm, 11 cm, 13 cm, 17 cm, 18 cm, 24 cm
Voltage per lane	0, 50–10,000 V, 1 V increments	Focusing tray capacity	1–12 IPG strips per tray
Current per lane	0–100 μ A, 1 μ A intervals	Dimensions (W x D x H)	46 x 34.5 x 18.5 cm
Power per lane	0–1 W	Weight	8.6 kg (19 lbs)
Peltier platform temperature	10–25°C	Display	QVGA resolution (320 x 240) touch screen or mouse control

PROTEAN® i12™ IEF System Accessories

Accessories for the PROTEAN i12 system can also be purchased individually. Six sizes of focusing and rehydration/equilibration trays are available as well as replacement electrodes, cleaning supplies, and other system-related items.

Cup loading is an option for improving your 2-D results, especially for proteins in extreme pH ranges. The i12 sample cup holder can be used with all of the i12 focusing trays. It effortlessly clips onto the tray and forms a secure seal that prevents leaking but won't damage the IPG strip. The disposable sample cups prevent sample contamination.

**PROTEAN® IEF Accessories**

Order Info: Pg 126

Accessories for the discontinued PROTEAN IEF cell (catalog #165-4000 and #165-4001) are still available and include focusing trays, electrode wicks, cup loading accessories, and thermal printers. Rehydration/equilibration trays, cleaning supplies, forceps, and reagents are interchangeable with the PROTEAN® i12™ IEF system.

Focusing Trays

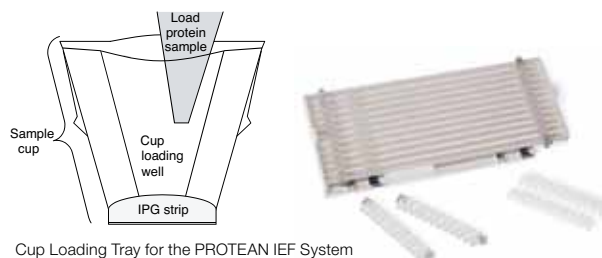
- Focusing trays hold 1–12 ReadyStrip™ IPG strips for flexibility and streamlined handling
- Platinum electrode is physically embedded into the running tray to ensure the integrity of each well and sample
- Durable polycarbonate trays ensure sufficient heat transfer for accurate and reproducible pI determination
- Numbered channels aid in strip identification and sample tracking

**Tray Specifications**

	IPG Strip Length				
	7 cm	11 cm	17 cm	18 cm	24 cm
Focusing Trays					
Electrode distance	6.5 cm	10.2 cm	16.2 cm	17.1 cm	22.7 cm
Total strip length accommodated	8.2 cm	12.1 cm	18.1 cm	20.1 cm	25.3 cm
ReadyStrip IPG strip length	7.9 cm	11.8 cm	17.8 cm	19.0 cm	24.7 cm
Rehydration/Equilibration Trays					
Total strip length accommodated	8.0 cm	12.7 cm	18.6 cm	20.4 cm	25.3 cm
Maximum volume	6.8 ml	9.6 ml	14.2 ml	16.0 ml	19.0 ml

Cup Loading Tray for the PROTEAN IEF System

Cup loading expands the versatility and range of applications for first-dimension IEF using the PROTEAN IEF cell. This loading method can improve focusing results, especially for proteins with pIs in the extreme pH ranges. Load up to 150 µl of sample with easy-to-use disposable sample cups. Moveable electrodes provide the flexibility to run IPG strips from 7 to 24 cm in length.



Cup Loading Tray for the PROTEAN IEF System

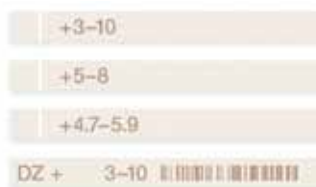
See Also

PROTEAN i12 IEF system: pages 120–122.
ReadyPrep 2-D starter kit: page 123.

ReadyStrip™ IPG Strips

Order Info: Pg 127

ReadyStrip IPG strips are available in five different strip lengths and in a wide selection of pH gradients, with 1, 3, or 7 pH units per strip. Shorter strips are useful for method development, while longer strips provide the best separation possible with higher protein loads. ReadyStrip IPG strips are thoroughly tested for quality and performance to deliver 2-D gel-to-gel reproducibility.



ReadyStrip IPG strips are preprinted to indicate anode end (+) and pH range; in addition, a bar code is printed on the 24 cm strip.

Design Features

- Stringent gel length tolerances of ±2 mm
- Anode and pH range clearly printed on each strip, with bar coding on 24 cm strips
- Consistent backing lengths for self-centering on 2-D gels

Gradient Selection

- Standard broad-range pH gradients for maximum separation on a single gel
- Narrow-range gradients for greater resolution (more cm of gel per pH unit)
- Micro-range gradients for maximum resolution
- Comprehensive offering that increases resolving power in the first dimension with overlapping pH ranges

Relative Focusing Power

The 7 cm pH 3–10 strip is arbitrarily assigned a baseline focusing power of 1.0 in order to calculate the relative focusing power of the other strips.

- **Strips with the same pH range but different length** — the ratio of the strip lengths. Compared to a 7 cm strip, an 11 cm strip has a relative focusing power of 11/7 cm = 1.6
- **Strips with the same length but different pH range** — the ratio of the pH ranges. Compared to a pH 3–10 strip (7 pH units), a pH 5–8 strip (3 pH units) has a relative focusing power of 7/3 = 2.3

For More Information

Web: www.bio-rad.com/readystripIPG
Request or download bulletin: 2442

Relative Focusing Power of IPG Strips

Strip Range*	pH										Relative Focusing Power					ReadyStrip IEF Buffer					
	3	4	5	6	7	8	9	10	7 cm	11 cm	17 cm	18 cm	24 cm	3-10	7-10	3.9-5.1	4.7-5.9	5.5-6.7	6.3-8.3		
Broad Range																					
3-10	[Green bar]										1x	1.6x	2.4x	2.6x	3.4x	•					
3-10 nonlinear (NL)	[Green bar]										1x	1.6x	2.4x	2.6x	3.4x	•					
Narrow Range																					
3-6	[Green bar]										2.3x	3.7x	5.7x	6.0x	8.0x	•					
5-8	[Green bar]										2.3x	3.7x	5.7x	6.0x	8.0x	•					
7-10	[Green bar]										2.3x	3.7x	5.7x	6.0x	8.0x		•				
4-7	[Green bar]										2.3x	3.7x	5.7x	6.0x	8.0x	•					
Micro Range																					
3.9-5.1	[Green bar]										5.8x	9.2x	14.2x	15.0x	20.0x			•			
4.7-5.9	[Green bar]										5.8x	9.2x	14.2x	15.0x	20.0x				•		
5.5-6.7	[Green bar]										5.8x	9.2x	14.2x	15.0x	20.0x					•	
6.3-8.3	[Green bar]										3.5x	5.5x	8.5x	9.0x	12.0x						•

* Strips are designed with sufficient overlap to allow spot matching while limiting the extent of redundant data.

ReadyPrep™ Reagents for IEF

ReadyPrep reagents ensure success with first- and second-dimension separations. The 2-D starter kit is the ideal tool for setting up the PROTEAN® i12™ IEF cell and ReadyStrip™ IPG strips. The kit contains tested premixed reagents required for first and second dimension separations, and a reference manual with technical tips. The ReadyPrep 2-D starter kit includes all reagents needed to:

ReadyPrep™ 2-D Starter Kit

Order Info: Pg 127

The ReadyPrep 2-D starter kit is intended for first-time users of the PROTEAN® i12™ IEF cell and ReadyStrip™ IPG strips. The kit contains tested premixed reagents required for first and second dimension separations, and a reference manual with technical tips. The ReadyPrep 2-D starter kit includes all reagents needed to:

- Prepare an *E. coli* protein sample
- Rehydrate IPG strips with sample
- Equilibrate IPG strips for SDS-PAGE
- Overlay IPG strips with agarose on SDS-PAGE gels

For More Information

Web: www.bio-rad.com/readyprep2d



2-D Starter Kit Contents

	Vials/Kit
<i>E. coli</i> protein sample, 2.7 mg	1
ReadyPrep 2-D starter kit rehydration/sample buffer, 10 ml	1
ReadyPrep equilibration buffer I, 20 ml	2
ReadyPrep equilibration buffer II, 20 ml	2
30% glycerol solution, 70 ml	1
ReadyPrep overlay agarose, 50 ml	1
Iodoacetamide, 0.5 g	2
Nanopure water, 15 ml	1

See Also

ReadyStrip IPG strips and IEF buffers: pages 122–123.

Ready Gel system: page 158.

Criterion system: pages 160–163.

2-D Premixed Buffers and Individual Reagents

Order Info: Pg 127

Streamline 2-D experiments and reduce variables with Bio-Rad's convenient premixed buffers and protein sample, tested for consistent 2-D performance with IPG strips:

- **ReadyPrep™ 2-D starter kit rehydration/sample buffer** — a standard formulation appropriate for many protein samples
- **ReadyPrep 2-D starter kit equilibration buffer I** — premixed with DTT for the first equilibration step in the DTT/iodoacetamide alkylation method
- **ReadyPrep 2-D starter kit equilibration buffer II** — add iodoacetamide and use for the second equilibration step in the DTT/iodoacetamide alkylation method; this buffer can also be used for single-step alkylation by adding TBP and acrylamide
- ***E. coli* protein sample** — this complex protein sample is performance tested to give a consistent pattern when used with ReadyPrep 2-D starter kit rehydration/sample buffer; use this sample as a control to validate your 2-D system and protocol before running more difficult experimental samples

Reducing and Alkylating Agents

Either DTT or TBP can be used for IEF and during equilibration prior to SDS-PAGE. Alkylation with iodoacetamide is the standard method to prevent reoxidation during second-dimension SDS-PAGE. Reduction and alkylation can also occur at the sample preparation stage. See the ReadyPrep reduction-alkylation kit, page 9.

Overlay Agaroses

Save time when setting up second-dimension SDS-PAGE samples with the convenience of overlay agarose. Bromophenol blue tracking dye is incorporated into these solutions to allow monitoring of electrophoresis runs. Use ReadyPrep overlay agarose, a low melting point agarose, to secure IPG strips in place for most applications. For second-dimension runs in the PROTEAN® Plus cell, in which the IPG strip is oriented perpendicularly to the laboratory bench, firmer PROTEAN Plus overlay agarose is recommended to secure the IPG strip.

Individual Reagents and Detergent

Urea and Tris, as well as CHAPS detergent are available.

For More Information

Web: www.bio-rad.com/2dreagents

See Also

Protein sample preparation products: pages 2–12.

ReadyPrep reduction-alkylation kit: page 9.

Tube Gel IEF 2-D Systems

Bio-Rad offers several options for first-dimension tube gel separations using ampholytes.

See Also

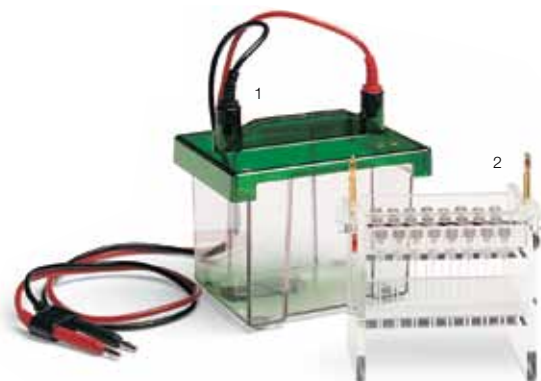
AnyGel stands:
page 167.
PowerPac HV and
PowerPac Universal
power supplies:
page 151.
Acrylamide
gel-casting reagents:
page 141.

Mini-PROTEAN® 2-D Electrophoresis Cell

Order Info: Pg 127

The Mini-PROTEAN tube cell module transforms the Mini-PROTEAN 3 cell into a miniature 2-D electrophoresis cell. The Mini-PROTEAN 2-D electrophoresis cell runs both tube gel IEF and vertical electrophoresis applications. First-dimension IEF typically takes 3.5 hours, and second-dimension SDS-PAGE takes 45 minutes. The entire 2-D procedure, including silver staining, can be completed in less than a day.

- Up to 16 tube gels can be cast in the glass tubes, then attached to molded sample reservoirs for the IEF run
- Following first-dimension IEF, the gels are easily removed using the mini 2-D tube gel ejector and are ready to slide between the plates of the slab gel for the second-dimension run
- The cell is IEC 1010 safety certified



Mini-PROTEAN 2-D electrophoresis cell components:
1. Buffer tank and lid with cables.
2. Tube cell module.

For More Information

Web: www.bio-rad.com/tubegellIEF

See Also

PowerPac HV and
PowerPac Universal
power supplies:
page 151.
Acrylamide
gel-casting reagents:
page 141.
PROTEAN II second-
dimension systems:
pages 164-167.

PROTEAN® II xi 2-D Tube Gel Cell

Order Info: Pg 128

The PROTEAN II xi 2-D cell provides all the components required for 2-D electrophoresis using polyacrylamide tube gels. The PROTEAN II xi 2-D cell:

- Runs both tube gels for first-dimension IEF and slab gels for second-dimension SDS-PAGE in the same cell
- Can focus up to 16 first-dimension IEF tube gels in a single run using the tube gel adaptors
- Can run up to four* 16 x 16 cm or 16 x 20 cm slab gels (using the 20 cm length for greater resolution)
- Makes it easy to position tube gels on the slab gel without an agarose overlay due to the beveled plates and the accessibility of the slab gel surface



PROTEAN II xi 2-D cell components:
1. Tube gel central cooling core.
2. Electrophoresis central cooling core with gaskets.
3. Buffer tank and lid with cables.
4. Slab gel casting stand, glass plates, and sandwich clamps.
5. Grommets and stoppers.
6. Glass tubes.

For More Information

Web: www.bio-rad.com/tubegellIEF

* For higher throughput, the PROTEAN II xi multi-cell provides 8-gel capacity for second-dimension runs.

Model 175 Tube Gel Accessories

Order Info: Pg 128

See Also

PowerPac HV and PowerPac Universal power supplies: page 151.

PROTEAN II xi multi-cell: page 166.

Bio-Lyte Ampholytes: page 145.

Acrylamide gel-casting reagents: page 141.

Glass Tubes for IEF

Bio-Rad's hand cut and polished borosilicate glass tubes may be used for any tube gel electrophoresis application.

Model 225 Tube Gel Casting Stand

The Model 225 tube gel casting stand aids casting of 4–8 mm OD tube gels and features leveling legs and stainless-steel fingers to hold 24 tubes.

Grommet and Stopper Sets

Grommets and stoppers are available in two sizes; they work with both the Model 175 tube cell and the tube gel adaptors for the PROTEAN® II xi cells.

For More Information

Web: www.bio-rad.com/model175



Glass Tubes



Model 225 Tube Gel Casting Stand

Mini-Format Analytical IEF

Model 111 Mini IEF Cell

Order Info: Pg 128

See Also

PowerPac HV and PowerPac Universal power supplies: page 151.

IEF standards: page 136.

Bio-Lyte Ampholytes: page 145.

Acrylamide gel-casting reagents: page 141.

Agarose: page 142.

This compact cell performs analytical IEF including isoenzyme separation, forensic applications, and clinical determinations. Use it to screen large numbers of samples or for quickly running a few samples to determine the pI of a protein of interest. It only requires a 500 V power supply. Please note that this unit does not use IPG strips. Features include:

- Unique inverted format — condensation cannot disrupt electrophoresis results
- No external cooling required
- Bufferless operation — no wicks required
- Casting tray suitable for both agarose and polyacrylamide gels
- Easy-to-clean, removable graphite electrodes
- Small footprint of 21 x 11.5 x 4.2 cm

For More Information

Web: www.bio-rad.com/model111

Request or download bulletin: M1702975



IEF Systems

Catalog # Description

PROTEAN i12 IEF System **Pg 120**

164-6000	PROTEAN i12 IEF system , includes basic unit, 90–240 VAC positive and negative electrode assemblies, 7 cm, 11 cm, and 17 cm focusing trays, 1 pack each of 7 cm, 11 cm, and 17 cm rehydration/equilibration trays, 2 pairs of forceps, 2 packs of electrode wicks for gel-side down and gel-side up applications, mineral oil, 2 cleaning brushes, cleaning concentrate, 2 USB flash drives, 3 styluses, pH 3–10 ReadyStrip IPG strips (7, 11, and 17 cm lengths), rehydration/sample buffer, leveling bubble, and instruction manual. 13, 18, and 24 cm trays and cup loading accessories can be purchased separately
164-6001	PROTEAN i12 IEF Cell , includes PROTEAN i12 IEF cell, 90–240 VAC basic unit, positive and negative electrode assemblies and 3 styluses. Focusing trays and other accessories sold separately

PROTEAN i12 IEF System Accessories

164-6107	i12 7 cm Focusing Tray , includes 2 IPG strip retainers
164-6111	i12 11 cm Focusing Tray , includes 2 IPG strip retainers
164-6113	i12 13 cm Focusing Tray , includes 2 IPG strip retainers
164-6117	i12 17 cm Focusing Tray , includes 2 IPG strip retainers
164-6118	i12 18 cm Focusing Tray , includes 2 IPG strip retainers
164-6124	i12 24 cm Focusing Tray , includes 2 IPG strip retainers
165-4035	i12 7 cm Rehydration/Equilibration Tray , includes lids, 25
165-4025	i12 11 cm Rehydration/Equilibration Tray , includes lids, 25
164-6313	i12 13 cm Rehydration/Equilibration Tray , includes lids, 25
165-4015	i12 17 cm Rehydration/Equilibration Tray , includes lids, 25
165-4041	i12 18 cm Rehydration/Equilibration Tray , includes lids, 25
165-4043	i12 24 cm Rehydration/Equilibration Tray , includes lids, 25
164-6040	IPG Strip Retainers , 2
164-6020	i12 Sample Cup Holder , includes 25 sample cups
164-6021	i12 Sample Cups , 25
164-6030	Gel-Side Up Electrode Wicks , 100
164-6031	Gel-Side Down Electrode Wicks , 500
164-6012	Negative Electrode Assembly
164-6011	Positive Electrode Assembly
164-6010	Electrode Assembly Pair , includes 1 positive and 1 negative electrode assembly
165-4072	Cleaning Brushes , 2
161-0722	Cleaning Concentrate , 1 L
164-6060	USB Flash Drive , 2
164-6050	Stylus , 3
163-2129	Mineral Oil , 500 ml
165-4070	Forceps , 1

PROTEAN IEF System Accessories **Pg 121****Trays**

165-4030	7 cm Focusing Tray with Lid
165-4020	11 cm Focusing Tray with Lid
165-4010	17 cm Focusing Tray with Lid
165-4040	18 cm Focusing Tray with Lid
165-4042	24 cm Focusing Tray with Lid

Cup Loading Tray*

165-4050	Cup Loading Tray , includes 1 tray base, 1 pair movable electrodes, 1 pack each of large and small replacement cups
165-4055	Cup Loading Tray with Forceps

Accessories

165-4071	Electrode Wicks , precut, 500
165-4080	Thermal Printer , 100 V, includes cable and power adaptor
165-4082	Thermal Printer , 120 V, includes cable and power adaptor
165-4085	Thermal Printer , 220 V, includes cable and power adaptor
170-2412	Thermal Printer Paper , 10 rolls
165-4051	Large Replacement Cups , 150 µl, 120
165-4052	Small Replacement Cups , 100 µl, 120
165-4053	Replacement Movable Electrodes , 1 pair
165-4054	Replacement Cup Loading Tray Base

* The cup loading tray is not intended or designed for active or passive rehydration of IPG strips. Use the appropriate rehydration/equilibration tray that matches your IPG strip's length.

ReadyStrip IPG Strips

Pg 122

pH Range	7 cm	11 cm	17 cm	18 cm	24 cm
ReadyStrip IPG Strips, 12 per Package					
pH 3–10	163-2000	163-2014	163-2007	163-2032	163-2042
pH 3–10 NL*	163-2002	163-2016	163-2009	163-2033	163-2043
pH 3–6	163-2003	163-2017	163-2010	163-2035	163-2045
pH 4–7	163-2001	163-2015	163-2008	163-2034	163-2044
pH 5–8	163-2004	163-2018	163-2011	163-2036	163-2046
pH 7–10	163-2005	163-2019	163-2012	163-2037	163-2047
pH 3.9–5.1	163-2028	163-2024	163-2020	163-2038	163-2048
pH 4.7–5.9	163-2029	163-2025	163-2021	163-2039	163-2049
pH 5.5–6.7	163-2030	163-2026	163-2022	163-2040	163-2050
pH 6.3–8.3	163-2031	163-2027	163-2023	163-2041	163-2051

Catalog # Description

ReadyStrip IEF Buffers** and Accessories

163-2094	Bio-Lyte 3/10 Ampholyte, 100x, 1 ml
163-2093	ReadyStrip 100x pH 7–10 Buffer, includes only ampholytes, 1 ml
163-2098	ReadyStrip 100x pH 3.9–5.1 Buffer, includes only ampholytes, 1 ml
163-2097	ReadyStrip 100x pH 4.7–5.9 Buffer, includes only ampholytes, 1 ml
163-2096	ReadyStrip 100x pH 5.5–6.7 Buffer, includes only ampholytes, 1 ml
163-2095	ReadyStrip 100x pH 6.3–8.3 Buffer, includes only ampholytes, 1 ml
163-2099	ReadyStrip Instruction Manual, free upon request with ReadyStrip purchase

*NL, nonlinear gradient. **Dilute ReadyStrip buffers to 1x in each sample to obtain a final concentration of 0.2% ampholyte.

ReadyPrep Reagents for IEF

ReadyPrep 2-D Starter Kit

Pg 123

163-2105	ReadyPrep 2-D Starter Kit, includes <i>E. coli</i> protein sample and reagents sufficient to rehydrate, focus, and transfer to second-dimension gels (six 17 cm, ten 11 cm, or sixteen 7 cm ReadyStrip IPG strips), ReadyStrip IPG strips and precast SDS-PAGE gels or gel stains not included
163-2110	<i>E. coli</i> Protein Sample, lyophilized, 2.7 mg

2-D Premixed Buffers and Individual Reagents

Pg 123

163-2106	ReadyPrep 2-D Starter Kit Rehydration/Sample Buffer, 10 ml, 8 M urea, 2% CHAPS, 50 mM DTT, 0.2% Bio-Lyte 3/10 ampholyte, 0.001% bromophenol blue
163-2107	ReadyPrep 2-D Starter Kit Equilibration Buffer I, with DTT, 10 ml, 375 mM Tris-HCl, pH 8.8, 6 M urea, 2% SDS, 2% DTT
163-2108	ReadyPrep 2-D Starter Kit Equilibration Buffer II, without DTT or iodoacetamide, 20 ml, 375 mM Tris-HCl, pH 8.8, 6 M urea, 2% SDS
163-2091	ReadyPrep Proteomics Grade Water, 500 ml
161-0610	Dithiothreitol (DTT), 1 g
161-0611	Dithiothreitol (DTT), 5 g
163-2101	Tributylphosphine (TBP), 200 mM, 0.6 ml
163-2109	Iodoacetamide, 30 g
161-0731	Urea, 1 kg
161-0719	Tris, 1 kg

Control Sample

163-2110	<i>E. coli</i> Protein Sample, lyophilized, 2.7 mg
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Overlay Agaroses

163-2111	ReadyPrep Proteomics Grade Overlay Agarose, 50 ml, 0.5% low melting point agarose in 1x Tris/glycine/SDS and 0.003% bromophenol blue
163-2092	PROTEAN Plus Proteomics Grade Overlay Agarose, 125 ml, 0.75% agarose in 1x Tris/glycine/SDS and 0.003% bromophenol blue

Detergent for IEF

161-0460	CHAPS, 1 g
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Tube Gel IEF 2-D Systems

Mini-PROTEAN 2-D Electrophoresis Cell

Pg 124

165-2960	Mini-PROTEAN 2-D Cell, includes tube adaptor, 16 sample reservoirs and stoppers, 50 sample reservoir/capillary tube connectors, 200 capillary tubes with casting tube, tube gel ejector, Mini-PROTEAN II slab cell with electrode assembly and gaskets, lower buffer chamber, lid with cables, 10 sets of glass plates, 2 clamp assemblies, two 2-D combs with 1 standard well, four 1.0 mm thick spacers, casting stand with gaskets, leveling bubble
165-2961	Mini-PROTEAN Tube Cell, includes tube adaptor, 16 sample reservoirs and stoppers, 50 sample reservoir/capillary tube connectors, 200 capillary tubes with casting tube, lower buffer chamber, lid with cables, tube gel ejector
165-2965*	Mini-PROTEAN Tube Cell Module, same as 165-2961, without lower buffer chamber and lid

Ordering Information

Mini Format Analytical IEF

www.bio-rad.com

Catalog # Description

Accessories

165-2966	Capillary Tubes with Casting Tube, 200
165-2967	Mini 2-D Tube Gel Ejector
165-2968	Mini-PROTEAN Tube Gel Sample Reservoirs, 8
165-2969	Mini-PROTEAN Tube Module Stoppers, 8
165-2970	Mini-PROTEAN Tube Module Tube Connectors, 50
164-5056**	PowerPac HV Power Supply, 100–120/220–240 V

* The Mini-PROTEAN tube cell module may be used with the tank and lid of the Mini Trans-Blot cells of older Mini-PROTEAN II or Mini-PROTEAN 3 systems; the tube cell module is not compatible with the Mini-PROTEAN Tetra system. The Mini-PROTEAN tube cell (for casting tube gels and performing first-dimension IEF) and the tube cell module (for casting tube gels) are also available separately.

** Recommended for use with the Mini-PROTEAN 2-D electrophoresis cell.

PROTEAN II xi 2-D Tube Gel Cell*

Pg 124

165-1931	PROTEAN II xi 2-D Cell, 1.0 mm, 16 cm
165-1932	PROTEAN II xi 2-D Cell, 1.5 mm, 16 cm
165-1933	PROTEAN II xi 2-D Cell, 1.0 mm, 20 cm
165-1934	PROTEAN II xi 2-D Cell, 1.5 mm, 20 cm

Accessories and Replacement Parts

165-1940	Tube Gel Adaptor, with gasket, grommets (4–8 mm OD tubes), stoppers
165-1943	Tube Gel Loading Needles, 18 cm, 22 gauge, blunt tip, luer hub (for casting monomer in small-diameter tubes), 2
165-1944	Tube Gel Extrusion Needles, 9 cm, 26 gauge, beveled tip, luer hub (for removing gels from tubes), 2
165-1947	Replacement Gaskets, for tube gel adaptor, 2
165-1859	PROTEAN II Comb Conversion Screws,** includes 10 comb conversion screws, 10 standard comb screws
165-1827	Beveled Inner Glass Plates, for 2-D tube gel procedures, 16 cm bevel length, 16 x 20 cm, 2, for PROTEAN II xi 2-D cells only
165-1828	Beveled Inner Glass Plates, for 2-D tube gel procedures, 16 cm bevel length, 20 x 20 cm, 2, for PROTEAN II xi 2-D cells only

* Each PROTEAN II xi 2-D cell includes a central cooling core with gaskets, lower buffer chamber, lid with cables, 2 sets of glass plates (with beveled inner plates), 4 sandwich clamps, twenty-four 180 mm long glass tubes (tube diameter = spacer thickness), 2 tube gel adaptors, 16 grommets, 16 stoppers, two 2-D combs, 4 spacers, upper buffer dam, casting stand with gaskets, leveling bubble, and instructions. Sandwich clamps are sized to fit the gel length appropriate for the cell (16 cm or 20 cm). 1.0 mm and 1.5 mm indicate the thickness of spacers and combs included with the cell.

** For use with agarose gels. Comb conversion screws convert two PROTEAN II xi combs with standard 25 mm well depth to combs with a 10 mm well depth. Double-up stacking gels (4 gels/run) cannot be cast simultaneously when comb conversion screws are used.

Model 175 Tube Gel Accessories

Pg 125

Glass Tubes

165-3136	1.0 mm ID Glass Tubes, 6.0 mm OD, 180 mm length, 24
165-3137	1.5 mm ID Glass Tubes, 7.5 mm OD, 150 mm length, 24
165-3138	1.5 mm ID Glass Tubes, 7.5 mm OD, 180 mm length, 24
165-3155	2.4 mm ID Glass Tubes, 4.0 mm OD, 160 mm length, 24
165-3150	3.4 mm ID Glass Tubes, 5.0 mm OD, 125 mm length, 24
165-3122	5.0 mm ID Glass Tubes, 7.0 mm OD, 125 mm length, 24

Model 225 Tube Gel Casting Stand

165-2020	Model 225 Tube Gel Casting Stand
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Grommet and Stopper Sets*

165-1984	Grommets and Stoppers, for 4–5 mm OD tubes, 12 each
165-1985	Grommets and Stoppers, for 6–7.5 mm OD tubes, 12 each

* Grommet and stopper sets work with both the Model 175 and Model 225 tube gels, and the tube gel adaptors for the PROTEAN II xi cells.

Mini Format Analytical IEF

Model 111 Mini IEF Cell

Pg 125

170-2975	Model 111 Mini IEF Cell, includes chamber and lid, graphite electrodes, casting tray, 5 glass plates, 50 sheets of gel support film for polyacrylamide, 5 sample templates
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Accessories

170-2980	Graphite Electrodes, 2
170-2981	Mini Casting Tray
170-2982	Glass Plates, 12.5 cm x 6.5 cm x 1.5 mm, 5
170-2983	Gel Support Film for Polyacrylamide, 12.5 x 6.5 cm, 50 sheets
170-2984	Gel Support Film for Agarose, 12.5 x 6.5 cm, 50 sheets
170-2985	Sample Templates, 5