

## Lab Scale Chromatography

Sample Preparation Selection Guide

### Separations: Simplicity, Selection, and Solutions

Browse through a selection of our chromatography media for sample clean-up and preparation.

#### What Distinguishes Our Products

##### Simplicity

Media are available in easy-to mix powder or gel forms or in time-saving, prepacked disposable columns.

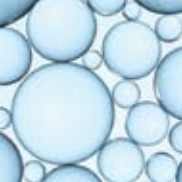
##### Selection

An assortment of media choices are offered to perform laboratory applications ranging from contaminant removal to protein purification.

##### Solutions

Bio-Rad has been providing chromatography solutions for life science researchers for over 40 years. Combined with our outstanding technical support, we continue to uphold our tradition of excellence.

**BIO-RAD**



**Purification/  
Cleanup  
Techniques**

	<b>Method</b>	<b>Products</b>	<b>Commonly Cited Applications</b>
<b>Buffer Treatment</b>	<b>Contaminant Removal From Buffers and Reagents</b>	AG® 501-X8 Resin AG 1 Resin AG 50W Resin Chelex® 100 Resin Affi-Prep® Polymyxin Support Bio-Beads® Support and Adsorbents	Removal of ionic contaminant in non-ionic reagent Anionic contaminant removal Cationic contaminant removal Metal cation contaminant removal Endotoxin removal Removal of UV absorbing organic contaminants and polar compounds in organic solvents
	<b>Desalting and Buffer Exchange</b>	Bio-Gel® P Gel AG 11 A8 Resin AG 50W Resin Bio-Beads Support and Adsorbents	Peptide, protein, and carbohydrate desalting Desalting non-ionic substances Separation of high molecular weight molecules and metal ions Fractionation of low molecular weight organic polymers and hydrophobic substances
<b>Sample Cleanup</b>	<b>Protein Sample Cleanup</b>	Bio-Rex™ 70 Resin Bio-Gel P Gel Bio-Scale™ Mini Affi-Gel® Blue Cartridge	Purification and fractionation of peptides and proteins Purification of peptides, proteins, and carbohydrates Antibody and protein (albumin) cleanup
	<b>Nucleic Acid Cleanup</b>	Chelex 100 Resin Bio-Gel P Gel AG 50W Resin Bio-Beads Support and Adsorbents	Removal of PCR-inhibiting contaminants Removal of nucleotides or other ionic contaminants Ethidium bromide removal Ethidium bromide removal
<b>Contaminant Removal</b>	<b>Detergent Removal</b>	AG 50W Resin AG 11 A8 Resin AG 1 Resin Bio-Beads Support	Cationic detergent removal Anionic detergent removal Anionic detergent removal Non-ionic detergent removal
	<b>Deionization</b>	AG 501-X8 Resin AG 11 A8 Resin	Deionization of buffers, reagents, water, and carbohydrate and protein samples Deionization of protein samples
	<b>Organic Compound Removal</b>	Bio-Beads Support AG 50W Resin AG 11 A8 Resin	Separation of organic molecules in organic solvents and non-ionic organic molecules from proteins and nucleic acids Separation of ionic organic molecules from proteins and nucleic acids Separation of ionic organic molecules from proteins
<b>Protein Purification*</b>	<b>Ion Exchange</b>	UNOsphere™ Q and S Media Macro-Prep® Q, S, and DEAE Media	Separation of molecules based on net charge
	<b>Affinity</b>	Bio-Scale Mini Profinity™ IMAC, GST, and eXact™ Cartridges Affi-Prep Protein A Support, DEAE Affi-Gel Blue Support	Serum protein, IgG, and recombinant tagged-protein purification
	<b>Size Exclusion</b>	Bio-Gel P Gel	Desalting separation of molecules by size
	<b>Multi-Mode Separation</b>	CHT™ ceramic hydroxyapatite Type I and Type II	Antibody purification, aggregate removal, and viral clearance

\* Media are available in bottles, prepacked columns, and prepacked cartridges.

## Recent Applications\*

## Reference #

Soluble silicate removal from Bindzil silica nanoparticles	1
Preconcentration of glyphosate from water	2
Radiochemical separation (lead, barium, radium elution)	3
Exchange $\text{Cu}^{2+}$ and $\text{Zn}^{2+}$ from aqueous solutions	4
Removal of endotoxins on isolated protein (glutathione S-transferase)	5
Lipid removal from fish blubber sample	6
Treatment of food samples (determination of inulin)	7
Salt and acid removal from pyridinium dichromate and carbohydrate solution	8
Strontium and neodymium isotope separation	9
Fractionation of polycyclic aromatic hydrocarbons	10
In-line sample cleanup of chloride and sulfate in natural waters	11
Junctional protein desalting	12
Purification of monoclonal antibodies from ascitic fluids	13
DNA purification	14
Post-PCR cleanup	15
Primer purification	16
Polycyclic aromatic hydrocarbon extraction from otter livers	17
Rare earth element separation	18
Separation of small organic molecules from dissolved organic nitrogen	19
Surfactin purification (lipopeptide)	20
Purification of lanolin through pesticide extraction	21
Formamide deionization	22
Saliva sample cleanup	23
Isolation and reconstitution of carnitine and acylcarnitine transporter	24
Organic acid analysis (HPLC)	25
Surfactant removal from single-walled carbon nanotubes (SWNT) composites and nucleic acids	26
Purification of protein from spinach photosystem II	27
Purification of a specific form of UDP by anion exchange	28
Purification of polymerase I from yeast RNA using HA-tag	29
Purification of resistant cells induced with doxycycline using nickel affinity column	30
Soybean calmodulin isoform desalting	31
Desalting of oxidized protein ( $\text{PrxSO}_2$ )	32
Desalting and buffer exchange following affinity column purification	33
Protein adsorption chromatography (clathrin)	34

\* Contact Tech Support at 1-800-4BIORAD (1-800-424-6723) for specific application questions.

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## Ordering Information

A complete listing of Bio-Rad media can be found in the catalog.

Catalog #	Description	Hydrated Bead Size (µm)	Molecular Weight Fractionation Range	Comments
150-4114	Bio-Gel P-2 gel, fine, 100 g	45-90	100-1,800	Rapid carbohydrate, peptide, and protein desalting
150-4115	Bio-Gel P-2 gel, fine, 500 g	45-90	100-1,800	
150-4118	Bio-Gel P-2 gel, extra fine, 100 g	<45	100-1,800	
150-4120	Bio-Gel P-4 gel, medium, 100 g	90-180	800-4,000	Carbohydrate and peptide separations, protein desalting
150-4124	Bio-Gel P-4 gel, fine, 100 g	45-90	800-4,000	
150-4128	Bio-Gel P-4 gel, extra fine, 100 g	<45	800-4,000	
150-4130	Bio-Gel P-6 gel, medium, 100 g	90-180	1,000-6,000	Purification of proteins and polypeptides
150-4134	Bio-Gel P-6 gel, fine, 100 g	45-90	1,000-6,000	
150-0738*	Bio-Gel P-6DG gel, 100 g	90-180	1,000-6,000	Rapid carbohydrate, peptide, and protein desalting; also available in prepacked columns and cartridges
150-0739	Bio-Gel P-6DG gel, 1 kg	90-180	1,000-6,000	
150-4140	Bio-Gel P-10 gel, medium, 100 g	90-180	1,500-20,000	Purification of proteins and polypeptides
150-4144	Bio-Gel P-10 gel, fine, 100 g	45-90	1,500-20,000	
150-4150	Bio-Gel P-30 gel, medium, 100 g	90-180	2,500-40,000	
150-4154	Bio-Gel P-30 gel, fine, 100 g	45-90	2,500-40,000	
150-4160	Bio-Gel P-60 gel, medium, 100 g	90-180	3,000-60,000	
150-4164	Bio-Gel P-60 gel, fine, 100 g	45-90	3,000-60,000	
150-4170	Bio-Gel P-100 gel, medium, 100 g	90-180	5,000-100,000	
150-4174	Bio-Gel P-100 gel, fine, 100 g	45-90	5,000-100,000	

\* Also available as prepacked Econo-Pac® columns and as prepacked Bio-Scale™ Mini cartridges.

Catalog #	Description	Bead Size (µm)	Bed Volume (ml/dry g)*	Application**
152-2150	Bio-Beads S-X1 Support, 100 g	40-80	7.5	1% crosslinked; for lipophilic polymers of MW 600-14,000
152-2151	Bio-Beads S-X1 Support, 1 kg			
152-2750	Bio-Beads S-X3 Support, 100 g	40-80	4.75	3% crosslinked; for organic compounds of MW ≤2,000
152-3350	Bio-Beads S-X8 Support, 100 g	40-80	3.1	8% crosslinked; for organic compounds of MW ≤1,000
152-3650	Bio-Beads S-X12 Support, 100 g	40-80	2.5	12% crosslinked; for organic compounds of MW ≤400
152-3920	Bio-Beads SM-2 Adsorbents, 100 g			
152-8920	Bio-Beads SM-2 Adsorbents, biotechnology grade, 25 g			

\* Swollen in benzene. \*\* MW range is for beads fully swollen in benzene.

Larger volumes and special packaging are available on request.

### Pre-packed Bio-Spin, Poly-Prep, and Econo-Pac Columns

Ion exchange, size exclusion, and desalting media are also available in conveniently packed columns for spin and gravity separations. Refer to the Bio-Rad catalog for specific catalog items.

Description	2 x 1 ml	4 x 1 ml	5 x 1 ml	1 x 5 ml	5 x 5 ml	1 x 10 ml	5 x 10 ml	1 x 50 ml
<b>Prepacked Bio-Scale Mini Cartridges</b>								
UNOsphere Q Support	—	—	732-4100	732-4102	732-4104	—	—	—
UNOsphere S Support	—	—	732-4110	732-4112	732-4114	—	—	—
Macro-Prep High Q Support	—	—	732-4120	732-4122	732-4124	—	—	—
Macro-Prep High S Support	—	—	732-4130	732-4132	732-4134	—	—	—
Macro-Prep DEAE Support	—	—	732-4140	732-4142	732-4144	—	—	—
Affi-Prep Protein A Support	—	—	732-4600	732-4602	—	—	—	—
Profinity IMAC Ni-Charged Support	—	—	732-4610	732-4612	732-4614	—	—	—
Profinity GST Support	—	—	732-4620	732-4622	732-4624	—	—	—
Bio-Scale Mini Profinity eXact Cartridges	732-4646	732-4647	—	732-4648	—	—	—	—
DEAE Affi-Gel Blue Support	—	—	—	732-4632	732-4634	—	—	—
Affi-Gel Blue Support	—	—	—	732-4642	732-4644	—	—	—
CHT Type I, 40 µm Support	—	—	—	732-4322	732-4324	—	—	—
CHT Type II, 40 µm Support	—	—	—	732-4332	732-4334	—	—	—
Bio-Gel P-6 Support (Desalting), 5 ml	—	—	—	732-4052	732-4504	—	—	—
Bio-Gel P-6 Support, 10 ml	—	—	—	—	—	732-5304	732-5314	—
Bio-Gel P-6 Support, 50 ml	—	—	—	—	—	—	—	732-5312

Catalog # Description

### Adaptor Fittings

732-0111	Luer to M6 Adaptor Fittings Kit, includes luer to M6 fittings to connect 1 cartridge to a BioLogic LP or FPLC system
732-0112	Luer to 10-32 Adaptor Fittings Kit, includes luer to 10-32 fittings to connect 1 cartridge to a BioLogic DuoFlow or HPLC system
732-0113	Luer to BioLogic System Fittings Kit, includes 1/4-28 female to male luer and 1/4-28 female to female luer to connect 1 cartridge to a BioLogic DuoFlow system

Larger package sizes of media are available for process-scale chromatography. For more information, contact your local Bio-Rad representative.

## Ordering Information

A complete listing of Bio-Rad media can be found in the catalog.

Catalog #	Description	Ionic Form	Dry Mesh Size	Wet Bead Size (µm)	Nominal Shipping % Water
<b>AG Resins</b>					
140-1231	AG 1-X2 Resin, 500 g	Chloride	50-100	180-500	70-78
140-1241	AG 1-X2 Resin, 500 g	Chloride	100-200	106-250	70-78
140-1251	AG 1-X2 Resin, 500 g	Chloride	200-400	75-180	70-78
140-1253	AG 1-X2 Resin, 500 g	Acetate	200-400	75-180	70-78
140-1331	AG 1-X4 Resin, 500 g	Chloride	50-100	180-425	59-65
140-1341	AG 1-X4 Resin, 500 g	Chloride	100-200	106-250	59-65
140-1351	AG 1-X4 Resin, 500 g	Chloride	200-400	63-150	59-65
140-1421	AG 1-X8 Resin, 500 g	Chloride	20-50	300-1,180	39-45
140-1431	AG 1-X8 Resin, 500 g	Chloride	50-100	180-425	39-45
140-1441*	AG 1-X8 Resin, 500 g	Chloride	100-200	106-180	39-45
140-1451*	AG 1-X8 Resin, 500 g	Chloride	200-400	45-106	39-45
140-1422	AG 1-X8 Resin, 500 g	Hydroxide	20-50	300-1,180	39-45
140-1443	AG 1-X8 Resin, 500 g	Acetate	100-200	106-180	39-45
140-1453	AG 1-X8 Resin, 500 g	Acetate	200-400	45-106	39-45
140-1444**	AG 1-X8 Resin, 500 g	Formate	100-200	106-180	39-45
140-1454	AG 1-X8 Resin, 500 g	Formate	200-400	45-106	39-45
142-1231	AG 50W-X2 Resin, 500 g	Hydrogen	50-100	300-1,180	75-83
142-1241**	AG 50W-X2 Resin, 500 g	Hydrogen	100-200	106-300	75-83
142-1251	AG 50W-X2 Resin, 500 g	Hydrogen	200-400	75-180	75-83
142-1331	AG 50W-X4 Resin, 500 g	Hydrogen	50-100	180-425	64-72
142-1341	AG 50W-X4 Resin, 500 g	Hydrogen	100-200	106-250	64-72
142-1351**	AG 50W-X4 Resin, 500 g	Hydrogen	200-400	63-150	64-72
142-1421	AG 50W-X8 Resin, 500 g	Hydrogen	20-50	300-1,180	50-56
142-1431	AG 50W-X8 Resin, 500 g	Hydrogen	50-100	180-425	50-56
142-1441*****	AG 50W-X8 Resin, 500 g	Hydrogen	100-200	106-250	50-56
142-1451*****	AG 50W-X8 Resin, 500 g	Hydrogen	200-400	63-150	50-56
142-1641	AG 50W-X12 Resin, 500 g	Hydrogen	100-200	106-250	42-48
142-1651	AG 50W-X12 Resin, 500 g	Hydrogen	200-400	53-106	42-48
142-6424*****†	AG 501-X8 Resin, 500 g	H <sup>+</sup> + OH <sup>-</sup>	20-50	300-1,180	43-55
142-6425*****	AG 501-X8(D) Resin, 500 g	H <sup>+</sup> + OH <sup>-</sup>	20-50	300-1,180	43-55
142-7834**	AG 11 A8 Resin, 500 g	Self-adsorbed	50-100	180-425	—
<b>Bio-Rex Resins</b>					
142-5822	Bio-Rex 70 Resin, 500 g	Sodium	20-50	300-1,180	65-74
142-5832**	Bio-Rex 70 Resin, 500 g	Sodium	50-100	150-300	65-74
142-5842	Bio-Rex 70 Resin, 500 g	Sodium	100-200	75-150	65-74
142-5852**	Bio-Rex 70 Resin, 500 g	Sodium	200-400	45-75	65-74
<b>Chelex Resins</b>					
142-2822	Chelex 100 Resin, 500 g	Sodium	50-100	300-1,180	68-76
142-2832**	Chelex 100 Resin, 500 g	Sodium	100-200	150-300	68-76
142-2842***	Chelex 100 Resin, 500 g	Sodium	200-400	75-150	68-76
142-2825	Chelex 100 Resin, 100 g	Iron	100-200	150-300	—

\* Also available in prepacked Poly-Prep® columns.

\*\* Also available as biotechnology grade resin.

\*\*\* Also available as molecular biology grade resin.

† Also available as reactor grade resin.

Catalog # Description

### Ready-to-Use Affinity Media

153-7301*	Affi-Gel Blue Gel, 100 ml, 50-100 mesh
153-7302	Affi-Gel Blue Gel, 100 ml, 100-200 mesh
156-0010	Affi-Prep Polymyxin Support, 25 ml

\* Also available as prepacked Bio-Scale™ Mini cartridges.



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