



Mixed-Mode Resins/Media Selection Guide

Bio-Rad offers a wide range of mixed-mode resins/media, which can be used for purification of antibodies, proteins, and viruses as well as removal of aggregates, endotoxins, host cell proteins, and DNA.

Use this guide to select the optimal resin/media for your purification project.

Optimal Mixed-Mode Resins/Media for Multiple Purification Applications

Property	Process Purification Resin Type					
Resin/media type	CHT Ceramic Hydroxyapatite	CHT Ceramic Hydroxyapatite XT	CFT Ceramic Fluoroapatite	MPC Ceramic Hydroxyfluoroapatite	Nuvia cPrime	Nuvia aPrime 4A
Chromatography type	Mixed-mode (cation exchange and calcium affinity)	Mixed-mode cation exchange and calcium affinity)	Mixed-mode (cation exchange and calcium affinity)	Mixed-mode (cation exchange and calcium affinity)	Mixed-mode (HIC and cation exchange)	Mixed-mode (HIC and anion exchange)
Particle size	20 ± 2, 40 ± 4, 80 ± 8 µm	40 ± 4 µm	40 ± 4 µm	40 ± 4 µm	70 ± 10 µm	50 ± 10 µm
Ionic capacity	—	—	—	—	103–143 µeq/ml	100 ± 20 µeq/ml
Dynamic binding capacity (DBC)	≥25 mg lysozyme/g* 25–60 mg IgG/ml**	17–25 mg lysozyme/g* >60 mg/ml mAb (pI 9.2)***	14–21 mg lysozyme/g† 33 mg IgG/ml**	≥25 mg lysozyme/g* 25–50 mg IgG/ml**	>40 mg hIgG/ml >60 mg lactoferrin/ml	≥50 mg/ml mAb††
Recommended linear flow rate	50–300 cm/hr	50–300 cm/hr	50–300 cm/hr	50–300 cm/hr	50–600 cm/hr	50–300 cm/hr
pH stability	6.5–14	6.5–14	5–14	6.5–14	Short-term: 3–14 Long-term: 4–13	Short-term: 2–14

HIC, hydrophobic interaction chromatography; hIgG, human IgG; mAb, monoclonal antibody.

* At 500 cm/hr with 10 mM sodium phosphate, pH 6.8.

** 40 µm particles, 300 cm/hr, 5 mM sodium phosphate, 25 mM sodium chloride, pH 6.5.

*** At 100 cm/hr with 5 mM sodium phosphate, 25 mM sodium chloride, pH 7.

† At 100 cm/hr with 10 mM sodium phosphate, pH 6.8.

†† 10% breakthrough capacity determined with 1.0 mg/ml of an acidic mAb (pI ~6.9) in 20 mM sodium phosphate, pH 7.8.

To see how these mixed-mode resins/media have been used in various purification applications, refer to the following bulletins:

- mAb purification: **6875**
- Protein purification: **6810**
- IgG purification: **6793**
- Aggregate removal: **6808**
- Adenovirus purification: **6807**
- Endotoxin removal: **6813**
- Mammalian virus purification: **6790**
- Host DNA removal: **6881**

Ordering Information

CHT Ceramic Hydroxyapatite			CHT Ceramic Hydroxyapatite XT			Nuvia aPrime 4A		
Catalog #	Size		Catalog #	Size		Catalog #	Size	
732-4716	40 µm, 2 x 96-well, 20 µl	Foresight CHT Type I Plates	12003151	40 µm, 2 x 96-well, 20 µl	Foresight CHT XT Plates	12007411	2 x 96-well, 20 µl	Foresight Nuvia aPrime 4A Plates
732-4718	40 µm, 2 x 96-well, 20 µl	Foresight CHT Type II Plates	12003152	40 µm, 200 µl	Foresight CHT XT RoboColumn Unit	12007394	200 µl	Foresight Nuvia aPrime 4A RoboColumn Unit
732-4822	40 µm, 200 µl	Foresight CHT Type I RoboColumn Unit	12003148	40 µm, 600 µl	Foresight CHT XT Column	12007392	1 ml	Foresight Nuvia aPrime 4A Column
732-4823	40 µm, 600 µl	Foresight CHT Type II RoboColumn Unit	12003150	40 µm, 1 ml	CHT XT Media, 40 µm	12007393	5 ml	Nuvia aPrime 4A Resin
732-4825	40 µm, 200 µl	Foresight CHT Type II RoboColumn Unit	12003149	40 µm, 5 ml		12007396	100 ml	
732-4826	40 µm, 600 µl	Foresight CHT Type I Column	12002457	10 g		12007379	500 ml	
732-4735	40 µm, 1 ml	Foresight CHT Type II Column	12002454	100 g		12007380	5 L	
732-4755	40 µm, 5 ml	CHT Type I Media, 20 µm	12002456	1 kg		12007391	10 L	
732-4736	40 µm, 1 ml	CHT Type I Media, 40 µm	12002455	5 kg				
732-4756	40 µm, 5 ml	CHT Type I Media, 80 µm			Nuvia cPrime	Catalog #	Size	
1582000	10 g	CHT Type II Media, 20 µm	732-4705	2 x 96-well, 20 µl	Foresight Nuvia cPrime Plates	732-4807	200 µl	Foresight MPC Hydroxyfluorapatite Type I Plates
1570020	100 g	CHT Type II Media, 40 µm	732-4808	600 µl	Foresight Nuvia cPrime RoboColumn Unit	732-4808	600 µl	Foresight MPC Type I RoboColumn Unit
157-0021	1 kg	CHT Type II Media, 80 µm	732-4722	1 ml	Foresight Nuvia cPrime Column	732-4742	5 ml	
1584000	10 g	CHT Type II Media, 20 µm	732-4742	5 ml	Nuvia cPrime Resin	1563401	25 ml	
1570040	100 g	CHT Type II Media, 40 µm	1563402	100 ml		156-3403	500 ml	
157-0041	1 kg	CHT Type II Media, 80 µm	156-3404	1 L		156-3404	1 L	
157-0045	5 kg	CFT Ceramic Fluoroapatite	156-3405	5 L		156-3405	5 L	
1588000	10 g	CFT Type II Media, 40 µm	156-3406	10 L				
1570080	100 g	CFT Type II Media, 80 µm						
157-0081	1 kg							
157-0085	5 kg							
1582200	10 g							
1572000	100 g							
157-2100	1 kg							
1584200	10 g							
1574000	100 g							
157-4100	1 kg							
157-4500	5 kg							
1588200	10 g							
1578000	100 g							
157-8100	1 kg							
157-8500	5 kg							

Note: Larger volumes and special packaging for industrial applications available upon request.

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Nuvia aPrime 4A Resin is covered by U.S. Patent Number 9,669,402 and foreign counterparts.



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