

Polar MC Ion Exchange Bulk Resins

Product Description

Polar MC ion-exchange resins are composed of hydrophilic polymethacrylate polymer (also referred to as PMA) beads with average particle sizes of 30 and 60 μm and pore size of 800 \AA . The support of Polar MC ion-exchange resins has high physical and chemical stability. **The resin surface of Polar MC ion-exchange media is highly hydrophilic, which minimizes non-specific bindings with biological analytes. For comparison, Generik MC ion-exchange resins have certain degree of hydrophobicity, which enables a mixed mode separation of ion-exchange and hydrophobic interaction.**

Polar MC-SCX, WCX, SAX, and WAX ion-exchange resins are synthesized via chemical bonding of ion-exchange functional groups on the top of the hydrophilic PMA surface. Polar MC-SCX resin is a strong cation exchanger with sulfonate functional groups. Polar MC-SAX resin is a strong anion exchanger with quaternary ammonium functional groups. Polar MC-WCX resin is a weak cation exchanger with carboxylic groups. Polar MC-WAX resin is a weak anion exchanger with diethylamine functional groups.

Characteristics

- High accessible surface area and loading capacity
- High separation resolution, efficiency and recovery
- Wide pH tolerance (pH = 2-13)
- High chemical stability for low leaching
- Hydrophilic and negligible non-specific interactions
- Spherical particles with high mechanical strength
- High physical stability for high-pressure operation
- Capable of running high flow rate to speed up separation
- High lot-to-lot consistency
- Available from 1 L to >100 L

Phase Structure

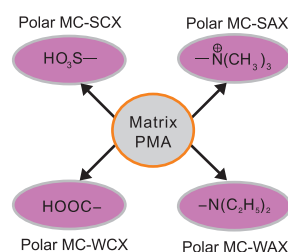


Figure 1. Structure of Polar MC-IEC resin.

Technical Specifications

Resins Type	Polar MC-SCX		Polar MC-WCX		Polar MC-SAX		Polar MC-WAX	
Matrix	Hydrophilic polymethacrylate							
Ionic Capacity	0.12 meq.	0.10 meq.	0.12 meq.	0.10 meq.	0.12 meq.	0.10 meq.	0.09 meq.	0.09 meq.
Particle Size	30	60	30	60	30	60	30	60
Dynamic Binding Capacity*	40 mg Lys.	35 mg Lys.	35 mg Lys.	20 mg Lys.	40 mg BSA	35 mg BSA	35 mg BSA	20 mg BSA
Pore Structure	800 \AA							
Packing	70% (v/v) slurry in 20% ethanol							
Mobile Phase Compatibility	Compatible with aqueous solution, a mixture of water and acetonitrile, acetone, or methanol. Typical buffers: phosphate, Tris, & acetate.							
Linear Flow Rate	Up to 7200 cm/hour		Up to 7200 cm/hour		Up to 7200 cm/hour		Up to 7200 cm/hour	
Operating Temperature	Up to 40 °C		Up to 40 °C		Up to 40 °C		Up to 40 °C	
pH Stability	2-13		2-13		2-13		2-13	
Resin pressure limit	Up to 100 bar		Up to 100 bar		Up to 100 bar		Up to 100 bar	

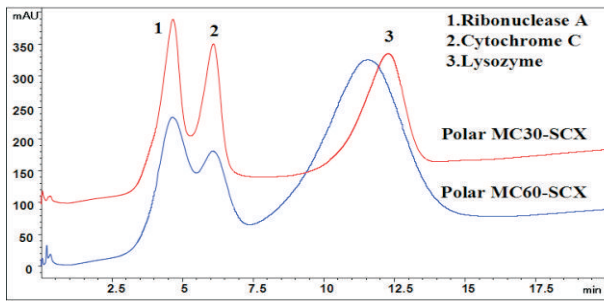
* Polar MC SAX & WAX: 100 cm/hour, 50 mM Tris pH8.5, 2 mg/mL BSA, Polar MC SCX & WCX: 360 cm/hour, 50 mM Sodium phosphate pH6.0, 1 mg/mL Lysozyme

Applications

Polar MC Ion-exchange media offer excellent high efficiency and recovery separation of bio-molecules such as mAb (monoclonal antibody), ADC (Antibody Drug Conjugate) and related protein fragments, DNA and oligonucleotides.

Phase Selectivity

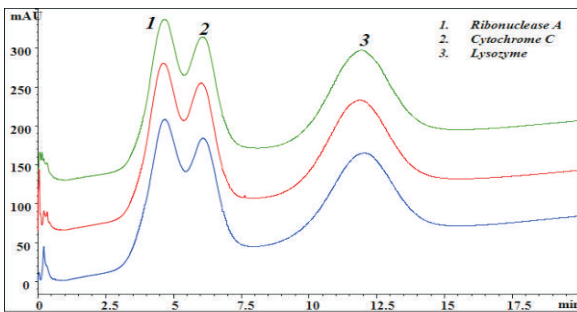
Figure 2. Polar MC30-SCX & Polar MC60-SCX Comparison-Stainless Steel Column



Column: Polar MC30 -SCX, Polar MC60 -SCX (4.6 x 50 mm)
 Mobile Phase A: 20 mM sodium phosphate, pH 6.0
 Mobile Phase B: 20 mM sodium phosphate, pH 6.0 + 1.0 M NaCl
 Injection: 30 μ L
 Flow Rate: 2 mL/min
 Detection: UV 214 nm
 Gradient: 0-25 min 0 -75%B
 Sample: Ribonuclease A, Cytochrome C & Lysozyme (1 mg/mL in water)

Lot-to-Lot Consistency

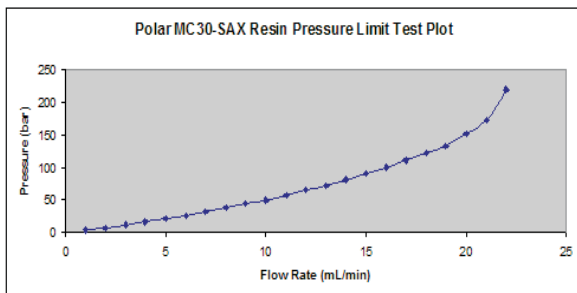
Figure 3. Polar MC60-SCX Lot-to-Lot Consistency



Column: Polar MC60 -SCX (4.6 x 50 mm)
 Mobile Phase A: 20 mM sodium phosphate, pH 6.0
 Mobile Phase B: 20 mM sodium phosphate, pH 6.0 + 1.0 M NaCl
 Injection: 30 μ L
 Flow Rate: 2 mL/min
 Detection: UV 214 nm
 Gradient: 0-25 min 0 -75%B
 Sample: Ribonuclease A, Cytochrome C & Lysozyme (1 mg/mL in water)

Pressure Limit

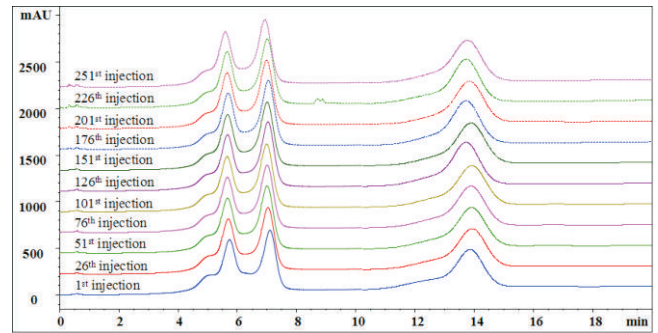
Figure 4. Polar MC30-SAX Pressure Limit Test



Column: Polar MC30 -SAX (4.6 x 250 mm)
 Mobile Phase: H₂O
 Flow rate: 1-22 mL/min
 Instrument: Waters HPLC

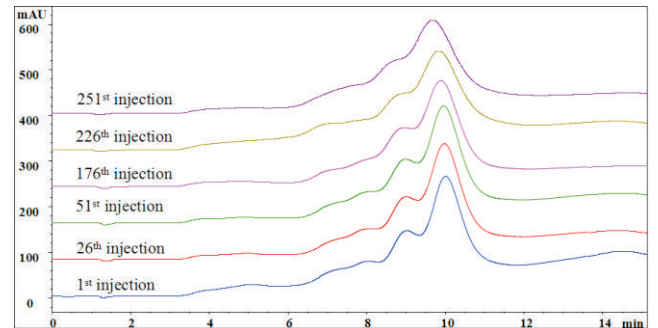
Life Time

Figure 5. Polar MC30-SCX Lifetime Test



Column: Polar MC30 -SCX (4.6 x 50 mm)
 Mobile Phase A: 20 mM sodium phosphate, pH 6.0
 Mobile Phase B: 20 mM sodium phosphate, pH 6.0 + 1.0 M NaCl
 Injection: 30 μ L
 Flow Rate: 1 mL/min
 Detection: UV 214 nm
 Gradient: 0-25 min 0 -75%B
 Sample: Ribonuclease A, Cytochrome C & Lysozyme (1 mg/mL in water)

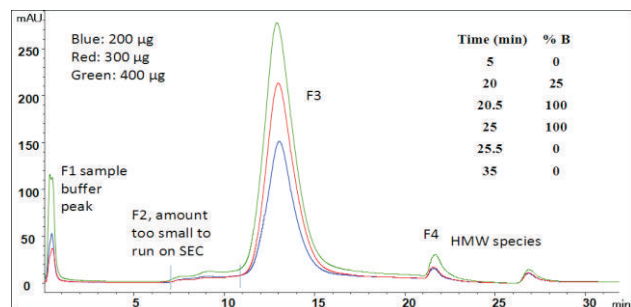
Figure 6. Polar MC30-SAX Lifetime Test



Column: Polar MC30 -SAX (4.6 x 50 mm)
 QC Mobile Phase A: 10 mM Tris buffer, pH 8.0
 QC Mobile Phase B: 10 mM Tris buffer, pH 8.0 + 0.5 M NaCl
 Injection: 3 μ L
 Flow Rate: 0.5 mL/min
 Detection: UV 214 nm
 Gradient: 0-15 min 0 -50% B
 Sample: Ovalbumin (3 mg/mL)

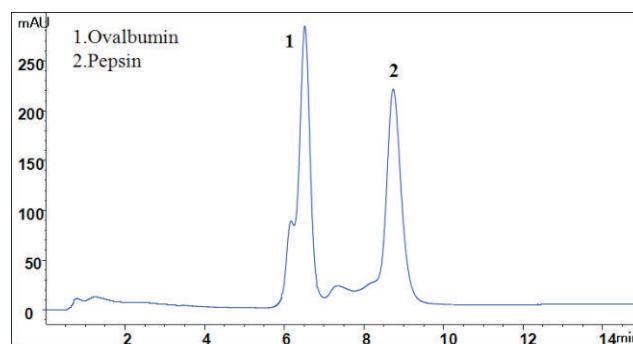
Applications

Figure 7. MAb321 Analysis on Polar MC30-SCX



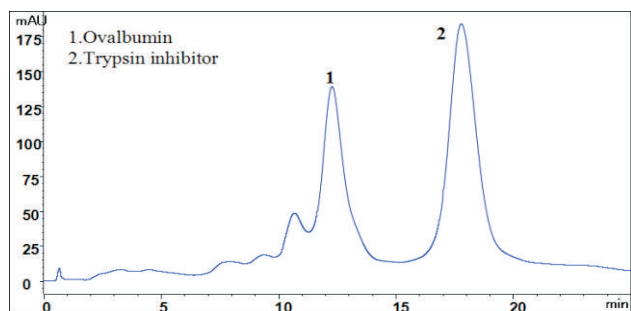
Column: Polar MC30 -SCX (4.6 x 50 mm)
 Mobile Phase A: 50 mM MES, pH 5.6
 Mobile Phase B: 50 mM MES, pH 5.6 + 1 M NaCl
 Injection: 40, 60, 80 µL
 Flow Rate: 1.0 mL/min
 Detection: UV 280 nm
 Gradient: 0-5 min 100%A, 5 -20 min 0 -25%B, 20 -20.5 min 25%
 100%B, 20.5 -25 min 100%B
 Sample: MAb321 (5 mg/mL in water)

Figure 8. Ovalbumin and Pepsin Analysis on Polar MC30-SAX



Column: Polar MC30 -SAX (4.6 x 50 mm)
 Mobile Phase A: 20 mM PBS buffer, pH7.5
 Mobile Phase B: 20 mM PBS buffer, pH7.5 + 1 M NaCl
 Injection: 100 µL
 Flow Rate: 1.0 mL/min
 Detection: UV 280 nm
 Gradient: 0-4 min 100%A; 4 -12 min, 0 -100%B; 12 -14 min, 100 %B
 Sample: Ovalbumin 2.5 mg/ml, Pepsin 1 mg/ml

Figure 9. Ovalbumin and Trypsin Inhibitor Analysis on Polar MC30-SAX



Column: Polar MC30 -SAX (4.6 x 50 mm)
 Mobile Phase A: 50 mM Tris buffer, pH8.6
 Mobile Phase B: 50 mM Tris buffer, pH 8.6 + 0.5 M NaCl
 Injection: 50 µL
 Flow Rate: 1.0 mL/min
 Detection: UV 280 nm
 Gradient: 0-60 min 0 -100%B
 Sample: Ovalbumin 1 mg/ml, Trypsin inhibitor 1 mg/ml

Ordering Information

Polar MC Media

Description	Particle size	Resin volume	P/N
Polar MC30-SCX	30 µm	100 mL	283030-0010
Polar MC30-SCX	30 µm	1 L	283030-0100
Polar MC30-SCX	30 µm	5 L	283030-0500
Polar MC30-WCX	30 µm	100 mL	284030-0010
Polar MC30-WCX	30 µm	1 L	284030-0100
Polar MC30-WCX	30 µm	5 L	284030-0500
Polar MC30-SAX	30 µm	100 mL	285030-0010
Polar MC30-SAX	30 µm	1 L	285030-0100
Polar MC30-SAX	30 µm	5 L	285030-0500
Polar MC30-WAX	30 µm	100 mL	286030-0010
Polar MC30-WAX	30 µm	1 L	286030-0100
Polar MC30-WAX	30 µm	5 L	286030-0500
Polar MC60-SCX	60 µm	100 mL	283060-0010
Polar MC60-SCX	60 µm	1 L	283060-0100
Polar MC60-SCX	60 µm	5 L	283060-0500
Polar MC60-WCX	60 µm	100 mL	284060-0010
Polar MC60-WCX	60 µm	1 L	284060-0100
Polar MC60-WCX	60 µm	5 L	284060-0500
Polar MC60-SAX	60 µm	100 mL	285060-0010
Polar MC60-SAX	60 µm	1 L	285060-0100
Polar MC60-SAX	60 µm	5 L	285060-0500
Polar MC60-WAX	60 µm	100 mL	286060-0010
Polar MC60-WAX	60 µm	1 L	286060-0100
Polar MC60-WAX	60 µm	5 L	286061-0500

Polar MC Column

Description	Dimension	P/N
IEX Screening Kit, 4 different IEX phases, 30 µm	4.6x50 mm	280030-4605 ^[1]
IEX Screening Kit, 4 different IEX phases, 30 µm	7x25 mm	280030-70025 ^[2]
Polar MC30-SCX	7x25 mm	283030-70025 ^[2]
Polar MC30-SCX	16x25 mm	283030-160025 ^[2]
Polar MC30-SCX	7.8x100 mm	283030-7810 ^[1]
Polar MC30-WCX	7x25 mm	284030-70025 ^[2]
Polar MC30-WCX	16x25 mm	284030-160025 ^[2]
Polar MC30-WCX	7.8x100 mm	284030-7810 ^[1]
Polar MC30-SAX	7x25 mm	285030-70025 ^[2]
Polar MC30-SAX	16x25 mm	285030-160025 ^[2]
Polar MC30-SAX	7.8x100 mm	285030-7810 ^[1]
Polar MC30-WAX	7x25 mm	286030-70025 ^[2]
Polar MC30-WAX	16x25 mm	286030-160025 ^[2]
Polar MC30-WAX	7.8x100 mm	286030-7810 ^[1]
IEX Screening Kit, 4 different IEX phases, 60 µm	4.6x50 mm	280060-4605 ^[1]
IEX Screening Kit, 4 different IEX phases, 60 µm	7x25 mm	280060-70025 ^[2]
Polar MC60-SCX	7x25 mm	283060-70025 ^[2]
Polar MC60-SCX	16x25 mm	283060-160025 ^[2]
Polar MC60-SCX	7.8x100 mm	283060-7810 ^[1]
Polar MC60-WCX	7x25 mm	284060-70025 ^[2]
Polar MC60-WCX	16x25 mm	284060-160025 ^[2]
Polar MC60-WCX	7.8x100 mm	284060-7810 ^[1]
Polar MC60-SAX	7x25 mm	285060-70025 ^[2]
Polar MC60-SAX	16x25 mm	285060-160025 ^[2]
Polar MC60-SAX	7.8x100 mm	285060-7810 ^[1]
Polar MC60-WAX	7x25 mm	286060-70025 ^[2]
Polar MC60-WAX	16x25 mm	286060-160025 ^[2]
Polar MC60-WAX	7.8x100 mm	286060-7810 ^[1]

Related Product - Generik[®] FPLC Empty Column

P/N	End-fitting	Column Size (mm)	Bed Height (cm)	Volume (ml)
202000-0615-FF	F/F	6.6 x 150	12	4.1
202000-0615-AF	A/F	6.6 x 150	4-12	1.4-4.1
202000-0625-AA	A/A	6.6 x 250	6-22	2.1-7.5
202000-0625-AF	A/F	6.6 x 250	14-22	4.8-7.5
202000-0640-AA	A/A	6.6 x 400	21-37	7.2-12.7
202000-1015-AF	A/F	10.0 x 150	4-12	3.1-9.4
202000-1025-AA	A/A	10.0 x 250	6-22	3.1-17.3
202000-1025-AF	A/F	10.0 x 250	14-22	11-17.3
202000-1515-AF	A/F	15.0 x 150	4-12	7.1-21.2
202000-1525-AA	A/A	15.0 x 250	6-22	10.6-38.9
202000-1525-AF	A/F	15.0 x 250	14-22	24.7-38.9
202000-2515-AF	A/F	25.0 x 150	4-12	19.6-58.9
202000-2525-AA	A/A	25.0 x 250	6-22	29.4-108.0
202000-2525-AF	A/F	25.0 x 250	14-22	68.7-108.0
202000-3540-AF	A/F	35.0 x 400	29-37	279.0-355.9
202000-5015-AF	A/F	50.0 x 150	4-12	77.5-235.0
202000-5040-AA	A/A	50.0 x 400	21-37	420.5-741.0
202000-5040-AF	A/F	50.0 x 400	29-37	580.7-741.0
202000-5050-AA	A/A	50.0 x 500	31-47	620.8-941.2
202000-5050-AF	A/F	50.0 x 500	39-47	781.0-941.2



*AF: One fixed endpiece and one adjustable endpiece

AA: Two adjustable endpieces

FF: Non-adjustable with two fixed endpieces