

Natrix® CH Chromatography Membrane

For single-use flow through aggregate removal

Aggregate removal using cation-exchange (CEX) chromatography can be a significant downstream bottleneck for manufacturers of monoclonal antibodies (mAbs). Natrix® CH chromatography membrane devices address this challenge by removing aggregates via frontal chromatography mode with a loading capacity of up to 1000 g/L and shorter loading times than standard CEX resins. Operating in a frontal chromatography mode also eliminates high salt elution buffers and reduces overall buffer consumption typically associated with a bind and elute CEX chromatography step. If preferred, these single-use chromatography membrane devices can also be used in bind-elute mode for effective aggregate removal. Dependent on your process needs, Natrix® CH chromatography membrane devices deliver improved productivity, flexibility and process robustness.

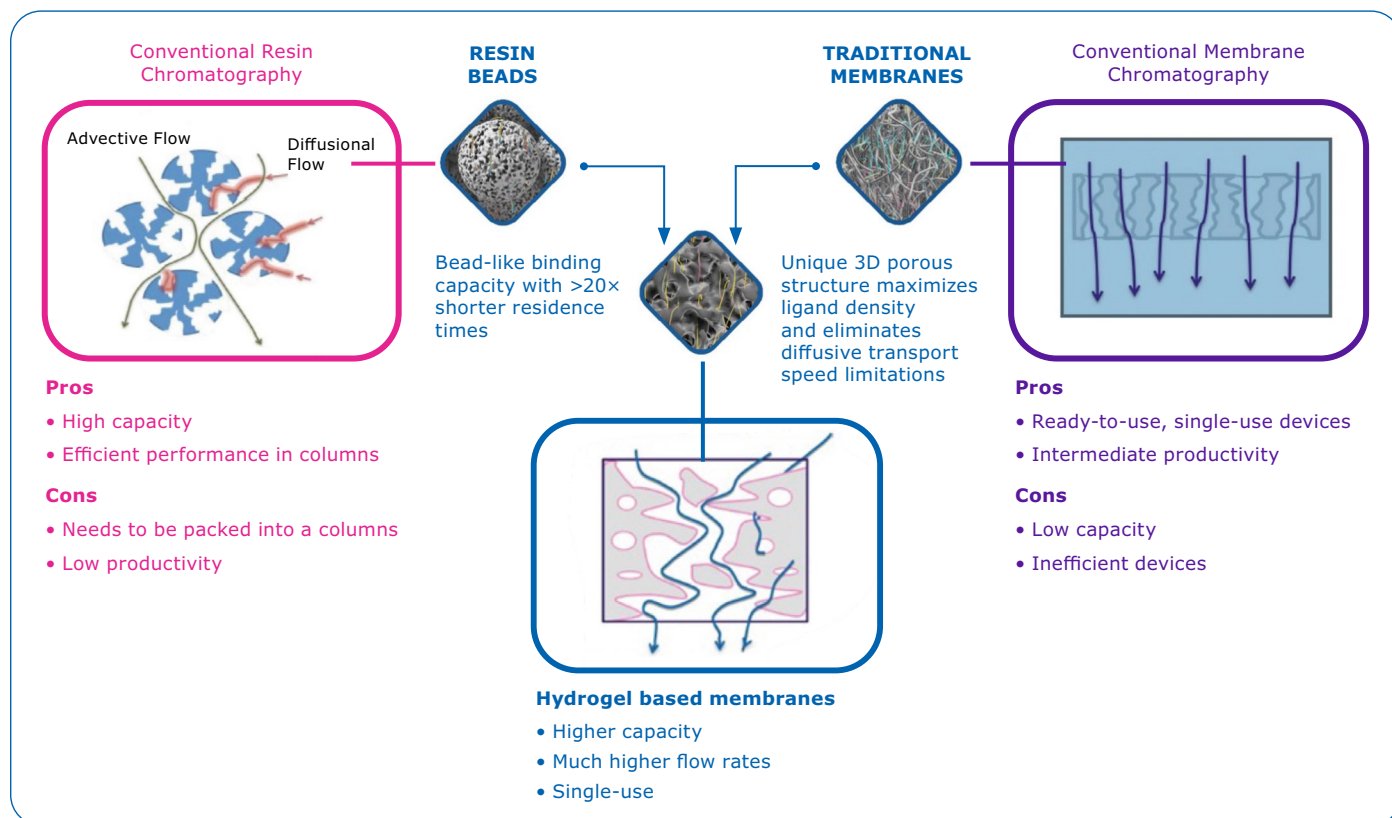
Key Benefits

- Faster Purification**
High binding at high flow rate results in unprecedented productivity compared to standard CEX resin.
- Improved Performance**
Unique selectivity provides superior aggregate removal in both frontal or bind and elute modes compared to alternative chromatography membrane devices, across a wide range of operating conditions.
- Maximize Efficiency and Flexibility**
Plug-and-play device eliminates column packing and lowers labor costs. The compact size of the devices minimizes facility footprint.



Innovative membrane technology

Natrix® CH chromatography membrane is part of the Natrix® family of single-use chromatography membrane devices. Combining the best of resin beads and traditional membranes, Natrix® chromatography membranes utilize convective mass transfer to achieve high binding at fast flow rates. Compared to resin beads, which rely on slow diffusive mass transfer, Natrix® CH chromatography membrane's mechanism offers faster purification and easy implementation. These characteristics make Natrix® CH chromatography membrane well suited for intensified mAb processes where speed and flexibility are critical. Natrix® CH has a three-dimensional hydrogel membrane structure, which maximizes the surface area and available binding sites, for unprecedented aggregate removal performance.



Technical Information

Definitions

Membrane volume (MV) is the quantity of membrane available for binding within the device. In this document, MV describes both fluid volumes and flow rates (in MV/min). The use of MV is analogous to the use of column volume (CV) in column chromatography.

Natrix® CH membrane primary characteristics

Membrane material	Polyacrylamide hydrogel (microporous polymer) reinforced with polybutylene terephthalate substrate
Ligand/Functional group	95% Sulfonic acid (strong cation exchanger), 5% t-butyl
Membrane configuration	Flat sheet
Number of layers	9
Nominal membrane bed thickness	1.8 mm
Typical membrane flow pore diameter	1 µm
Membrane cytotoxicity	ISO 10993-5
Typical lysozyme binding capacity*	90 g/L
Typical mAb binding capacity*	80 g/L

Natrix® CH membrane primary characteristics

Typical mAb loading capacity (frontal mode)**	1000 g/L
Chemical compatibility	Compatible w/ most buffers & solvents commonly used in chromatographic biomolecule purification process***
Incompatible chemicals	Hypochlorite (1%), SDS (1%)
Shipment conditions	Dry, free of preservatives or wetting agents
Storage conditions	Store at room temperature

* 10% breakthrough dynamic binding capacity in 20 mM sodium phosphate buffer, pH 7.0.

** Loading capacity is not limited to 1 kg/L and depends on the feed stream composition and target aggregate removal.

*** Complete & detailed information disclosed in Emprove® dossiers.

Natrix® CH Micro



Catalogue No.	NXCH002MCR, NXCH010MCR
Pack size	2 devices, 10 devices
Nominal unit membrane volume	1.06 mL
Maximum operating pressure & temperature (liquids)	75 psi/5 bar
Nominal unit weight	10.2 g
Height (with Luer caps)	3.5 cm
Height (without Luer caps)	2.8 cm
Diameter	3.6 cm
Connectors	PEEK tubing no less than 0.030 inch internal diameter 2× 10-32 coned adapters 2× 10-32 female to male Luer adapters 2× zero volume Luer connectors
Housing material & biological reactivity	Polyethylene/polypropylene copolymer, ISO-10993-5 and USP <87> Cytotoxicity

Natrix® CH Bench



Catalogue No.	NXCH001BEN
Pack size	1 device
Nominal unit membrane volume	8.8 mL
Maximum operating pressure & temperature (liquids)	75 psi/5 bar
Nominal unit weight	216 g
Length	11.5 cm
Height	9 cm
Depth	5 cm
Connectors	Tubing 1/8 inch O.D. 2× Flangeless male nut 1/8 inch 2× Tubing connectors 1/8 inch 2× PEEK threaded adapters 1/4-28 × 10-32 4× Flangeless Ferrules 1/8 inch
Housing material & biological reactivity	Styrene/phenylene ether copolymer, ISO-10993-5 and USP <87> Cytotoxicity

Natrix® CH Pilot



Catalogue No.	NXCH001PLT
Pack size	1 device
Nominal unit membrane volume	124 mL
Maximum operating pressure & temperature (liquids)	75 psi/5 bar
Nominal unit weight	1.3 kg
Length	37.3 cm
Height	22.4 cm
Depth	3.9 cm
Connectors	Use Natrix® Process fittings (NXPF001PR0) with Tri-Clamp (TC) connections
Housing material & biological reactivity	Styrene/phenylene ether copolymer, ISO-10993-5 and USP <87> Cytotoxicity

Natrix® CH Process



Catalogue No.	NXCH001PR0
Pack size	1 device
Nominal unit membrane volume	372 mL
Maximum operating pressure & temperature (liquids)	75 psi/5 bar
Nominal unit weight	2.6 kg
Length	37.3 cm
Height	22.4 cm
Depth	8 cm
Connectors	Use Natrix® Process fittings (NXPF001PR0) with Tri-Clamp (TC) connections
Housing material & biological reactivity	Styrene/phenylene ether copolymer, ISO-10993-5 and USP <87> Cytotoxicity

Natrix® CH device properties

Device format	Intended use	Flow rate [mL/min]	Typical mAb polishing capacity at 1 kg/L load* [g]	Minimum standardized Lysozyme binding capacity [g]	Nominal membrane volume [mL]
Natrix® CH Micro	Screening tool to define optimized OP conditions	≤10.6	1.06	0.09	1.06
Natrix® CH Bench	Medium scale to adjust OP parameters. May be used for small scale clinical runs	≤88	8.8	0.79	8.8
Natrix® CH Pilot	Clinical & Commercial manufacturing activities	≤1240	124	11.2	124
Natrix® CH Process	Clinical & Commercial manufacturing activities	≤3720	372	33.4	372

* Based on typical process streams and loading up to 1000 g mAb/L membrane. Loading capacity is not limited to 1000 g/L and depends on the aggregates and impurities content.

Quality Standards and Documentation

Natrix® CH Chromatography membrane devices are part of the Emprove® program that supports product qualification, risk assessment and process optimization. The dossiers consolidate comprehensive product-specific testing data, quality statements, and regulatory information to simplify your compliance needs. Learn more at SigmaAldrich.com/emprove.

Ordering information

Description	Membrane volume [mL]	Quantity/Pack	Catalogue No.
Natrix® CH Micro (2/pack)	1.06	2	NXCH002MCR
Natrix® CH Micro (10/pack)	1.06	10	NXCH010MCR
Natrix® CH Bench	8.8	1	NXCH001BEN
Natrix® Bench holder	–	1	NXBH001BEN
Natrix® CH Pilot	124	1	NXCH001PLT
Natrix® CH Process	372	1	NXCH001PR0
Natrix® Process Holder	–	1	NXPH001PR0
Natrix® Process Fittings	–	4 (2 open + 2 blank)	NXPF001PR0

For additional information, please visit SigmaAldrich.com
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