

# 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.

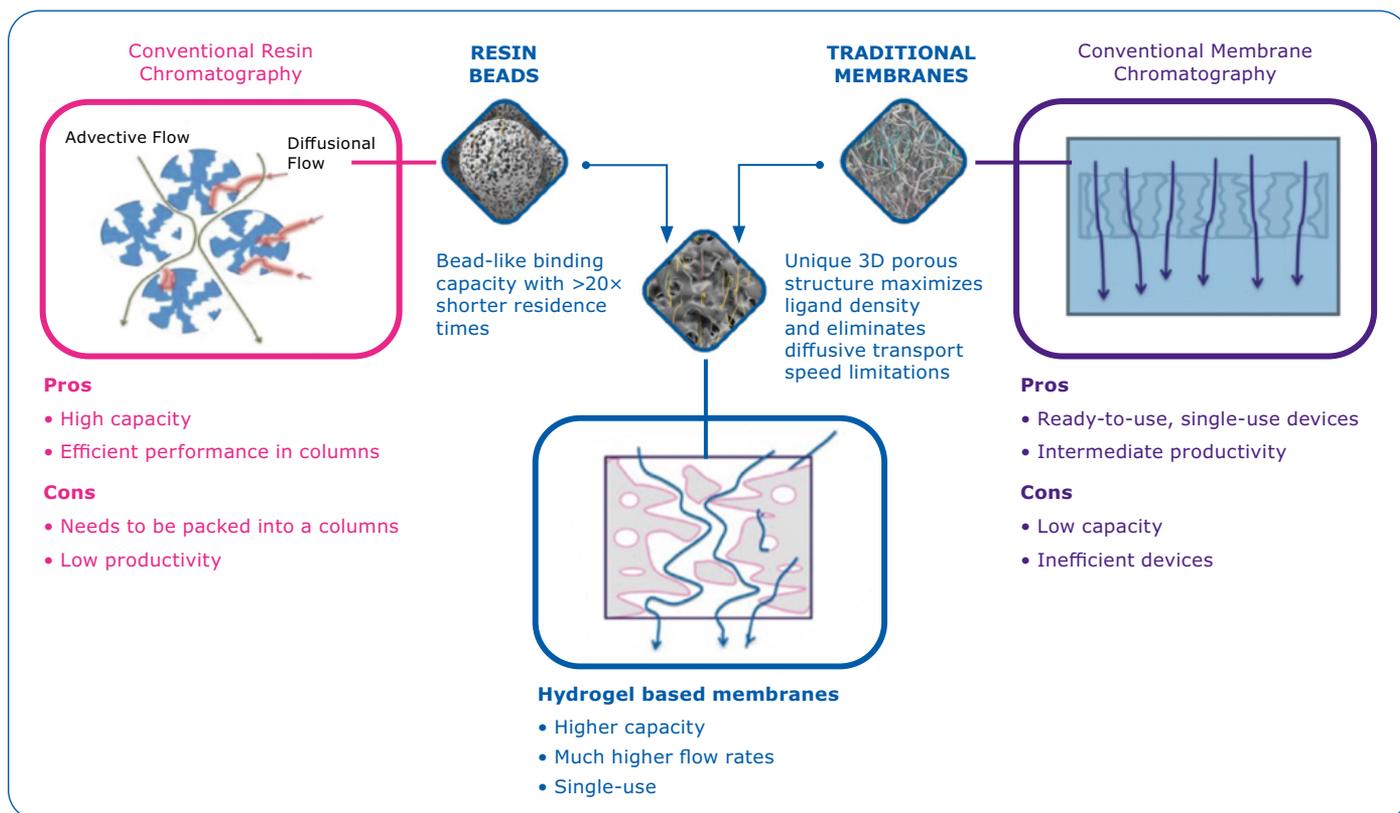
## Key Benefits

- **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	Sulfonic acid (strong cationic), small amount of 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

## Matrx® 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.

## Matrx® 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

## Matrx® 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

## Matrx® 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 Matrx® 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

\* 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](https://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® Process Holder	–	1	NXPH001PRO
Natrix® Process Fittings	–	4 (2 open + 2 blank)	NXPF001PRO

For additional information, please visit [SigmaAldrich.com](https://SigmaAldrich.com)  
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