

Natrix® Q Chromatography Membrane

For single-use, scalable purification

Natrix® chromatography membrane is a high capacity, high throughput strong anion exchange device designed to purify biomolecules. It combines the capacity of high performing resins with the exceptional flow properties of chromatography membranes. The Natrix® chromatography membrane platform is fully scalable from 0.2 mL devices to production-scale and delivers enhancements in productivity, flexibility, and process robustness for any bioprocess.

Key Benefits

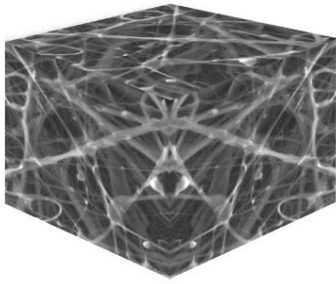
- Best-in-class HCP, DNA, endotoxin and virus removal
- Salt and pH tolerance even in phosphate buffer
- High capacity final polishing with high mAb throughput (>10 kg/L)
- Simple, low-cost purification in a single-use format

Innovative Membrane Technology

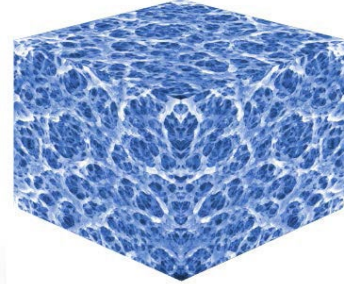
The unique Natrix® Q membrane is a porous polyacrylamide hydrogel containing a high density of pendant quaternary ammonium (Q) binding groups physically reinforced by an inert fiber web (see **Figure 2**). The interconnected pore structure (nominal pore size, 0.4 µm) and high ligand density provides a large surface area for protein binding, high permeability and enables fast flow rates with high throughput to extremely high loads (> 10 kg per liter of membrane for some mAbs) while maintaining excellent impurity clearance at these extreme operating conditions. In combination with the well-established Q ligand chemistry, these features make the Natrix® chromatography membrane an excellent choice for reliable purification in commercial scale.



Figure 1. The Natrix® Q chromatography membrane family offers scalable polishing from R&D to clinical to commercial manufacturing.



Flexible polymeric support web physically reinforces functional hydrogel.



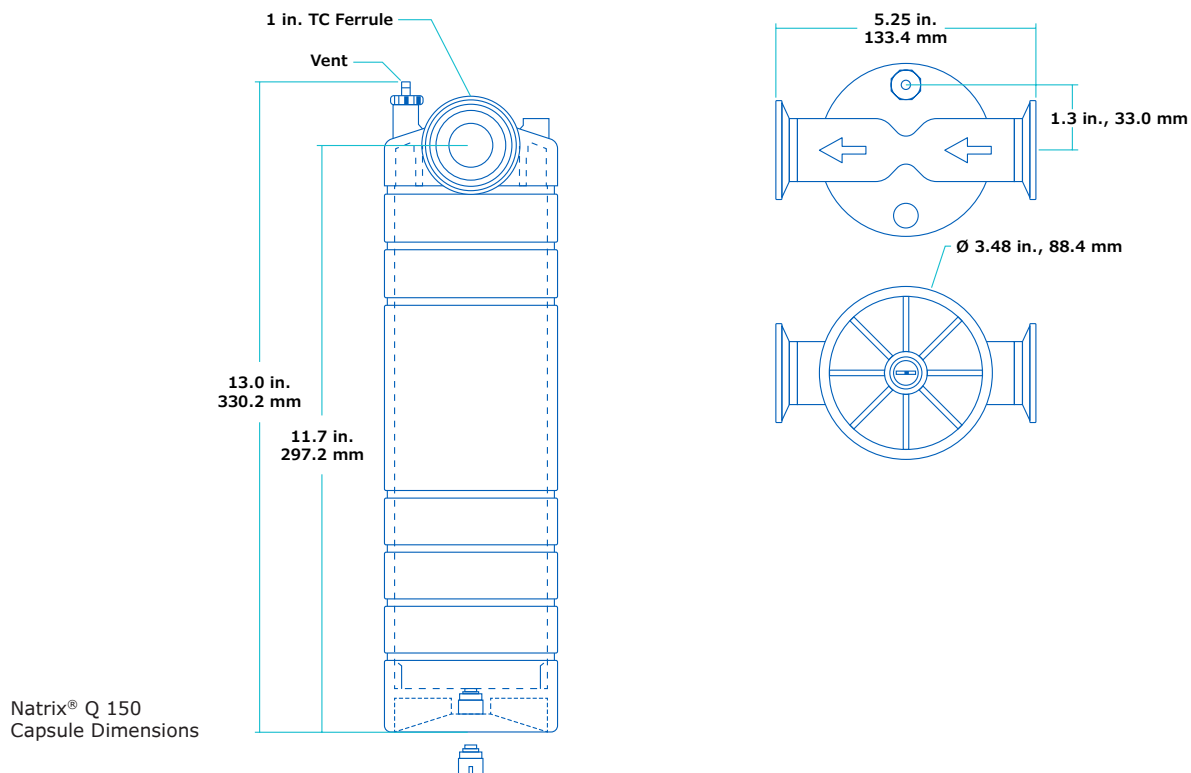
Web is enclosed by and filled with porous functionalized hydrogel, establishing pore size.

Figure 2. Structure of Natrix® membrane technology Composed of a porous, functionalized 3-dimensional hydrogel polymerized within and around a flexible fiber web support.

Specifications

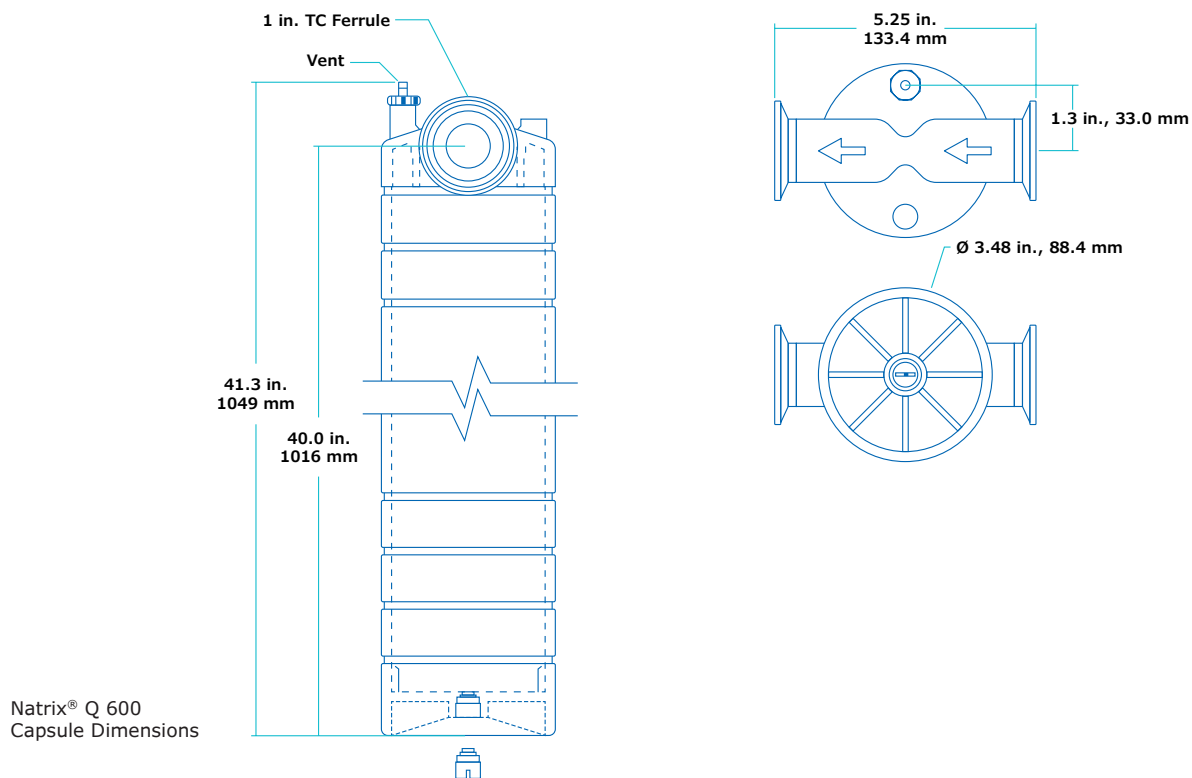
Natrix® Q Pilot

Catalogue No.	NXF-10
Pack size	1 unit
Membrane material	Porous polyacrylamide hydrogel reinforced with inert polymeric web
Ligand	Quaternary amine (Q)
Membrane configuration	Pleated
Number of layers	2
Nominal membrane bed thickness	0.5 mm
Typical membrane bubble point pore diameter	1.4 µm
Typical membrane flow pore diameter	0.4 µm
Nominal unit membrane volume	15 mL
Typical unit flow rate range	75–375 mL/min
Maximum operating pressure & temperature (liquids)	75 psi/5.2 bar at 32–100 °F/0–38 °C
Nominal unit weight	110 g
Length (connector-connector)	Approximately 165 mm/6.5 in.
Width (weld diameter)	Approximately 69.9 mm/2.75 in.
Connectors	Inlet, outlet: 3/4 in. sanitary (TC) Vent: Luer Drain: Luer
Housing material (polypropylene), biological reactivity	USP <88> ClassVI
Membrane cytotoxicity	ISO 10993-5



Matrix® Q Process 150

Catalogue No.	NXF-20
Pack size	1 unit
Membrane material	Porous polyacrylamide hydrogel reinforced with inert polymeric web
Ligand	Quaternary amine (Q)
Membrane configuration	Pleated
Number of layers	2
Nominal membrane bed thickness	0.5 mm
Typical membrane bubble point pore diameter	1.4 µm
Typical membrane flow pore diameter	0.4 µm
Nominal unit membrane volume	115 mL
Typical unit flow rate range	0.6–3.0 L/min
Maximum operating pressure & temperature (liquids)	90 psi/6.2 bar at 32–100 °F/0–38 °C
Nominal unit weight	665 g
Length (base to vent tip)	Approximately 330 mm/13.0 in.
Width (connector-connector)	Approximately 133.4 mm/5.25 in.
Width (diameter)	Approximately 88.4 mm/3.48 in.
Connectors	Inlet, outlet: 1 in. sanitary (TC) Vent: Sanitary Drain: 1/4 in. Sanitary
Housing material (polypropylene), biological reactivity	USP <88> ClassVI
Membrane cytotoxicity	ISO 10993-5



Natrix® Q Process 600

Catalogue No.	NXF-50
Pack size	1 unit
Membrane material	Porous polyacrylamide hydrogel reinforced with inert polymeric web
Ligand	Quaternary amine (Q)
Membrane configuration	Pleated
Number of layers	2
Nominal membrane bed thickness	0.5 mm
Typical membrane bubble point pore diameter	1.4 µm
Typical membrane flow pore diameter	0.4 µm
Nominal unit membrane volume	460 mL
Typical unit flow rate range	2.3–11.5 L/min
Maximum operating pressure & temperature (liquids)	90 psi/6.2 bar at 32–100 °F/0–38 °C
Nominal unit weight	2080 g
Length (base to vent tip)	Approximately 1049 mm/41.3 in.
Width (connector-connector)	Approximately 133.4 mm/5.25 in.
Width (diameter)	Approximately 88.4 mm/3.48 in.
Connectors	Inlet, outlet: 1 in. sanitary (TC) Vent: Sanitary Drain: 1/4 in. Sanitary
Housing material (polypropylene), biological reactivity	USP <88> ClassVI
Membrane cytotoxicity	ISO 10993-5

Table 1. Primary characteristics of the Natrix® Q chromatography membrane technology

Characteristics	
Hydrogel	Porous polyacrylamide
Functional group	Quaternary amine
Typical flow rate	5–25 mL/min
Nominal pore size	0.4 µm
BSA binding capacity	>200 mg/mL
DNA binding capacity	>20 mg/mL
Chemical compatibility	Compatible with most buffers and solvents commonly used in chromatographic biomolecule purification processes (see the Validation Guide for complete and detailed information)
Incompatible chemicals	Hypochlorite (1%); SDS (1%)
Shipment conditions	Dry, ready to use (free of preservatives or wetting agents)
Storage conditions	Store at room temperature prior to use

Table 2. Natrix® Q Chromatography Membrane Properties

Device Format	Intended use	Flow-rate range ²	Membrane configuration	Typical mAb ¹ polishing capacity at 10 kg/L load (g)	Minimum standardized BSA binding capacity (g)	Nominal membrane volume (mL)
Natrix® Q Micro	Scaled down laboratory model to screen and fine-tune parameters.	1–5 mL/min	Flat sheet	2	0.04	0.2
Natrix® Q Pilot	Intermediate scale, intended to verify and adjust operating parameters. Pilot may be used for smallscale clinical or commercial manufacturing.	75–375 mL/min	Pleated	150	3	15
Natrix® Q Process 150	Process scale designed for clinical and commercial manufacturing of proteins.	0.6–3 L/min		1150	23	115
Natrix® Q Process 600		2–10 L/min		4600	92	460

¹ Based on typical process streams and loading up to 10 kg mAb/L-membrane. Loading capacity is not limited to 10 kg/L and depends on the total impurity content.

² Typical flow-rate range is based on 5–25 membrane volumes/minute. Specific flow-rates can be determined to accommodate process requirements (e.g. maximum back pressure, improved process time, etc.).

Ordering Information

Description	Membrane Volume (mL)	Qty/Pk	Catalogue No.
Natrix® Q Micro	0.2	10	NXF-00
Natrix® Q Pilot	15	1	NXF-10
Natrix® Q Process 150	115	1	NXF-20
Natrix® Q Process 600	460	1	NXF-50

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For additional information
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