



Mustang® XT Acrodisc® Ion Exchange Chromatography Units for Laboratory Use and Process Development

Description

Disposable Membrane Chromatography Units for Scale-down Process Development

Fast, easy-to-use, scale-down Mustang membrane unit facilitates process development work.

- ▶ Device volume of < 1 mL minimizes sample volume requirements.
- ▶ 16 layers of Mustang membrane allows easy scale-up to Mustang membrane pilot- and process-scale capsules.
- ▶ Units achieve flow rates of up to 10 membrane volumes per minute (MV) without affecting performance.
- ▶ Female luer lock inlet and outlet simplifies use with typical low pressure chromatography systems.
- ▶ Disposable 25 mm units.
- ▶ Available in Q and S chemistries.



Mustang Membrane Technology

Mustang XT Acrodisc units, available in Q and S chemistries, are ideal for scale-down process development work in a variety of downstream process applications. A membrane volume of < 1 mL reduces the amount of sample required for evaluation, and the female luer lock inlet and outlet simplifies connection to typical low pressure chromatography systems. The open pore structure eliminates diffusion limitations of conventional macroporous sorbents, allowing biomolecules to access all binding sites by convective flow. In addition, the large pores eliminate the size exclusion effect allowing full access to the binding chemistry for very large proteins, plasmids and viruses.

Each unit contains 16 layers of Mustang membrane, exactly the same as the larger Mustang units, allowing accurate scale-up from process development to pilot and process scale, especially with regards to flow/differential pressure and dynamic binding capacity.

High Quality Standards

Pall Life Sciences certifies that Mustang XT Acrodisc units are:

- ▶ Manufactured in accordance with 21 CFR Part 820, Quality System Requirements.
- ▶ In compliance with published specifications.
- ▶ Fully traceable to raw components.
- ▶ Constructed of component materials that meet United States Pharmacopeia (USP) Biological Reactivity Test, *in vivo* <88>.

Applications

Free Sample: [Contact](#) a chromatography specialist to discuss your application requirements and qualify for a free product sample!

Typical Applications for Mustang Membrane Chromatography Include:

- ▶ Contaminant removal of host cell protein, virus, DNA and endotoxin
- ▶ Plasmid, virus, protein capture and oligonucleotide purification
- ▶ Column guard to enhance selectivity of subsequent chromatographic steps

Specifications

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Materials of Construction

- ▶ Housing: Polypropylene
- ▶ Media:
 - 16-layer Mustang Q membrane, 0.8 µm (nominal)
 - 16-layer Mustang S membrane, 0.8 µm (nominal)
- ▶ Connections: Inlet and Outlet: Female luer lock

Membrane Bed Volume

- ▶ 0.86 mL

Differential Pressure

- ▶ < 15 psi at 10 mL/min

Typical Operating Temperature

- ▶ 21 - 24 °C

Maximum Operating Pressure

- ▶ 4 bar (60 psi)

Mean Dynamic Binding Capacity*

- ▶ BSA* ~ 70 mg/mL membrane volume for Mustang Q XT Acrodisc unit
- ▶ Lysozyme ~ 30 mg/mL membrane volume for Mustang S XT Acrodisc unit

**Note on Optimization: The yield is contingent on flow rate, surface charge, type and concentration of protein, pH, ionic strength, and other components of the sample solution. For connection to typical low pressure chromatography systems, a male luer to 10-32 female connector, such as Upchurch part number P-656, is recommended.*

Performance

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Chromatography Performance

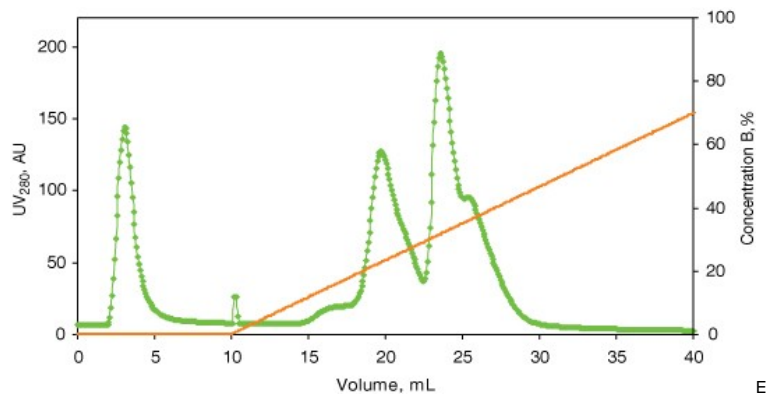
In many applications, the dynamic binding capacity of Mustang Q and S membrane is equivalent to or greater than the equivalent sorbent chemistries. Unlike sorbents, the dynamic binding capacity is independent of flow rate. In polishing applications, for the removal of low levels of contaminants, this means high flow rates (more than 10 MV/min) and low pressure drops that can be fully exploited with minimum membrane volume. In capture applications, good resolution with high yields and minimal elution volumes are achieved, due also to the characteristics of the membrane, the uniform flow path and the very low holdup-volume-to-membrane-volume ratio.

The following charts and chromatograms demonstrate the high resolution and high dynamic binding capacities of the Mustang membrane chromatography units.

Separation of Bovine IgG and Bovine BSA on Mustang Q XT Acrodisc Unit

Experimental conditions:

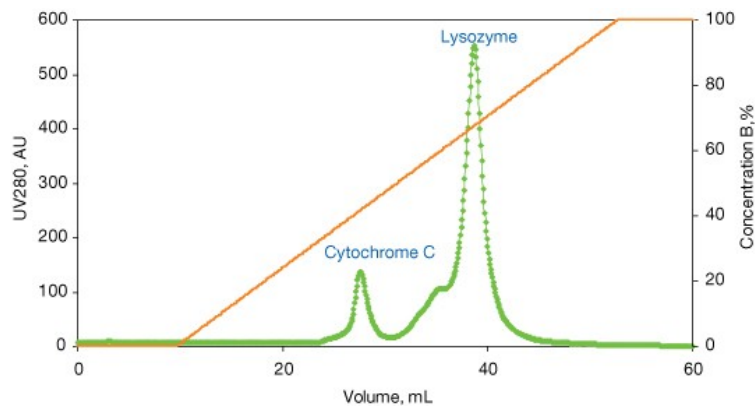
- ▶ Load 2 mg of Bovine IgG and 3 mg of Bovine BSA (~6% DBC) in 25mM Tris-HCl buffer pH8
- ▶ Wash 25 mM Tris-HCl buffer pH8
- ▶ Gradient elution 0 to 1M NaCl in 25 mM Tris-HCl buffer pH 8 in 50 MV
- ▶ Run at 10 MV/min



Separation of Lysozyme and Cytochrome C on Mustang S XT Acrodisc Unit

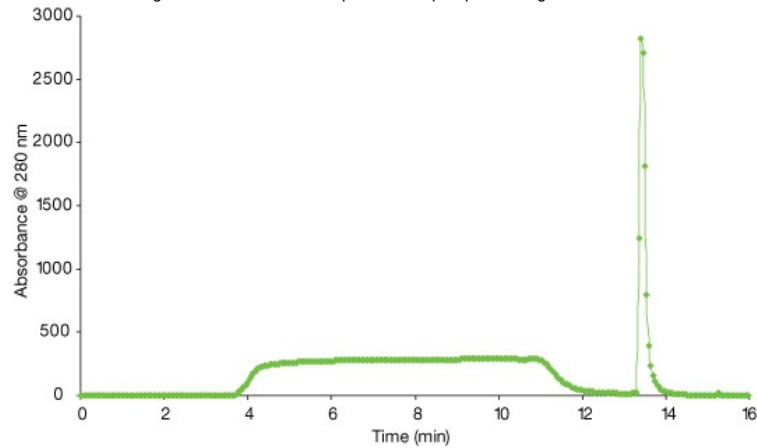
Experimental conditions:

- ▶ Load 3 mg of lysozyme and 1 g of Bovine BSA (~8% DBC) in 10mM MES-OH buffer pH5.5
- ▶ Wash 10 mM MES-OH buffer pH 5.5
- ▶ Gradient elution 0 to 1M NaCl in 10mM MES-OH buffer pH5.5 in 50 MV
- ▶ Run at 10 MV/min

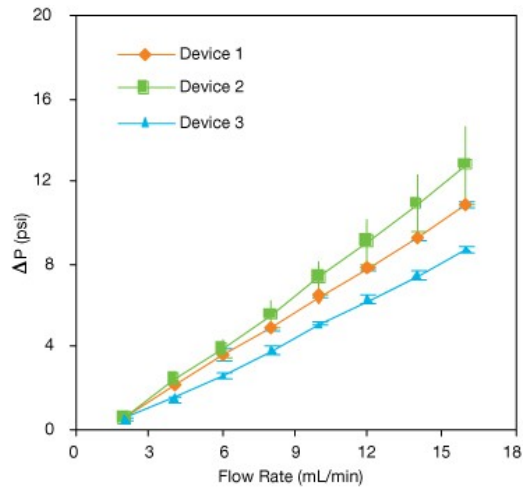


Mustang Q XT Acrodisc Unit BSA Binding Breakthrough Curve

A solution of 1.6 mg/mL BSA in 25 mM Tris pH 8.0 was pumped through the unit at 10 mL/min.



Flow Rate Versus ΔP for 3 Different Lots of Mustang Q XT Acrodisc Units



Additional Information

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[Download](#) the Instructions for Use/Product Information Insert: Mustang® Q and S XT Acrodisc® Units

Download the [Brochure: Mustang® Q XT Chromatography Capsules](#)

Optimize Your Scale Up with Pall

When it is time to scale up your process, Pall offers a comprehensive range of pilot- and process-scale [PK chromatography control systems](#). PK systems:

- ▶ Ensure your purification is consistent and optimal at pilot and manufacturing scales
- ▶ Provide flexibility and execution of all biochromatography applications
- ▶ Exhibit robust operation from hardware and software
- ▶ Cover a range of applications from 10 to 4000 L/h

Pall offers the most comprehensive range of chromatography products for biopharmaceutical manufacturing including scalable sorbents, columns, and systems. Our industry-leading technical support can help to ensure the most efficient development, start-up and lifetime operation of your processes, thereby lowering operating costs.

Ordering Information

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Product Number	Description	Single Use or Reuse	Membrane Volume	Scale	Packaging
MSTGXT25Q16	Mustang Q XT Acrodisc Unit	Single	0.86 mL	Process Development	4/pkg
MSTGXT25S16	Mustang S XT Acrodisc Unit	Single	0.86 mL	Process Development	4/pkg

Complementary Products

Product Number	Description	Single Use or Reuse	Membrane Volume	Scale	Packaging
MSTG25KIT	Mustang Acrodisc unit, 6 layers (Q and S), 3 layers (E), quick screen kit	Single	0.18 mL (Q and S), 0.12 mL (E)	Quick screen, sample prep	4Q, 4S and 2E chemistry
8071	AcroPrep Advance filter plate, 350 uL, Mustang Q	Single		DOE, process development	10/pkg
8072	AcroPrep Advance filter plate, 350 uL, Mustang S membrane	Single		DOE, process development	10/pkg
8171	AcroPrep Advance filter plate, 350 uL, Mustang S membrane	Single		DOE, process development	5/pkg
8172	AcroPrep Advance filter plate, 1 mL, Mustang S membrane	Single	5/pkg	DOE, process development	
XT5MSTGQM6	Mustang Q XT5 capsule, Q chemistry	Single or reuse	5 mL	Process development	1/pkg
XT140MSTGQP05	Mustang Q XT140, Q chemistry	Single or reuse	140 mL	Pilot	1/pkg
XT5000MSTGQP1	Mustang Q XT5000, Q chemistry	Single or reuse	5000 mL	Process	1/pkg
CLM05MSTGQP1	Mustang Q 10 mL capsule, Q chemistry*	Single	10 mL	Pilot	1/pkg
CL3MSTGQP1	Mustang 60 mL capsule, Q chemistry*	Single	60 mL	Pilot	1/pkg
NP6MSTGQP1	Mustang 260 mL capsule, Q chemistry*	Single	260 mL	Process	1/pkg
NP7MSTGQP1	Mustang 520 mL capsule, Q chemistry*	Single	520 mL	Process	1/pkg
NP8MSTGQP1	Mustang 780 mL capsule, Q chemistry*	Single	780 mL	Process	1/pkg

* All single use capsules also available in S chemistry as well as Endotoxin (E) chemistry. Mustang XT capsules are only available in Q chemistry at this time.

Contact Information

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