

Sartobind STIC® PA, 4 mm bed height

Salt Tolerant Membrane
Adsorbers Anion Exchange



Benefits

- Binds negatively charged contaminants at high salt conditions of up to 20 mS/cm
- No dilution of CEX pools necessary if positioned as final polishing step in mAb processes
- Designed for single batch use flow-through operation
- Recommended flow rate of up to 30 membrane volumes/min
- Easy and simple handling (like a filter)

Product Information

Sartobind STIC® is a membrane adsorber for Salt Tolerant Interaction Chromatography (STIC). With the primary amine (PA) ligand they bind negatively charged impurities such as DNA, host cell proteins (HCP), endotoxins and viruses at much higher salt concentrations than known from conventional Q matrices. Sartobind STIC® PA membranes eliminate the need for feed-stream dilution before flow-through polishing of recombinant proteins and monoclonal antibodies (mAbs). The single use product reduces validation costs, consumption of buffers, footprint and speeds up the process time as the recommended flow rate is 10 to 30 membrane volumes per minute. The Sartobind® capsules scale linearly within the 4 mm bed height family from the Nano to the Jumbo 2.5 L and the 0.8 L cassette(s).

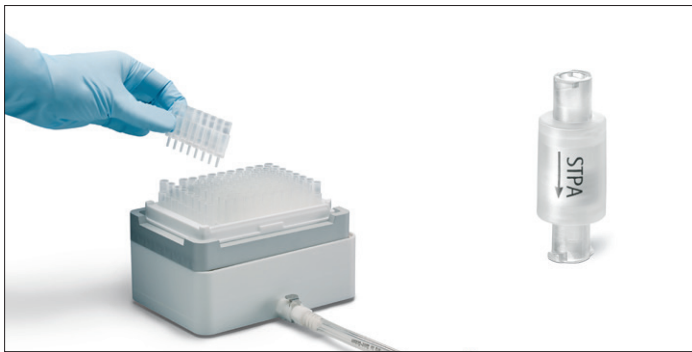
In the capsules the membrane is rolled up to form a cylinder with a bed height of 4 mm around a central core. The cassettes contain two membrane stacks of 4 mm bed height with a central spacer inbetween. The optimized design of the fluid channels reduces the void volume significantly resulting in higher safety at sample loading and lower buffer consumption. The internal support structures and the outer shell of the capsules are made from polypropylene and from acrylonitrile butadiene styrene (ABS) for the cassettes. The membrane, bed height and the flow path is identical in all devices. Sartobind® Nano 1 mL is the recommended scale down model to start with. If sample amount is limited, Sartobind STIC® PA Pico units with 0.08 mL bed volume are available. For buffer and conditions screening, additionally 96 well plates with a bed height of 0.8 mm can be used.

Applications

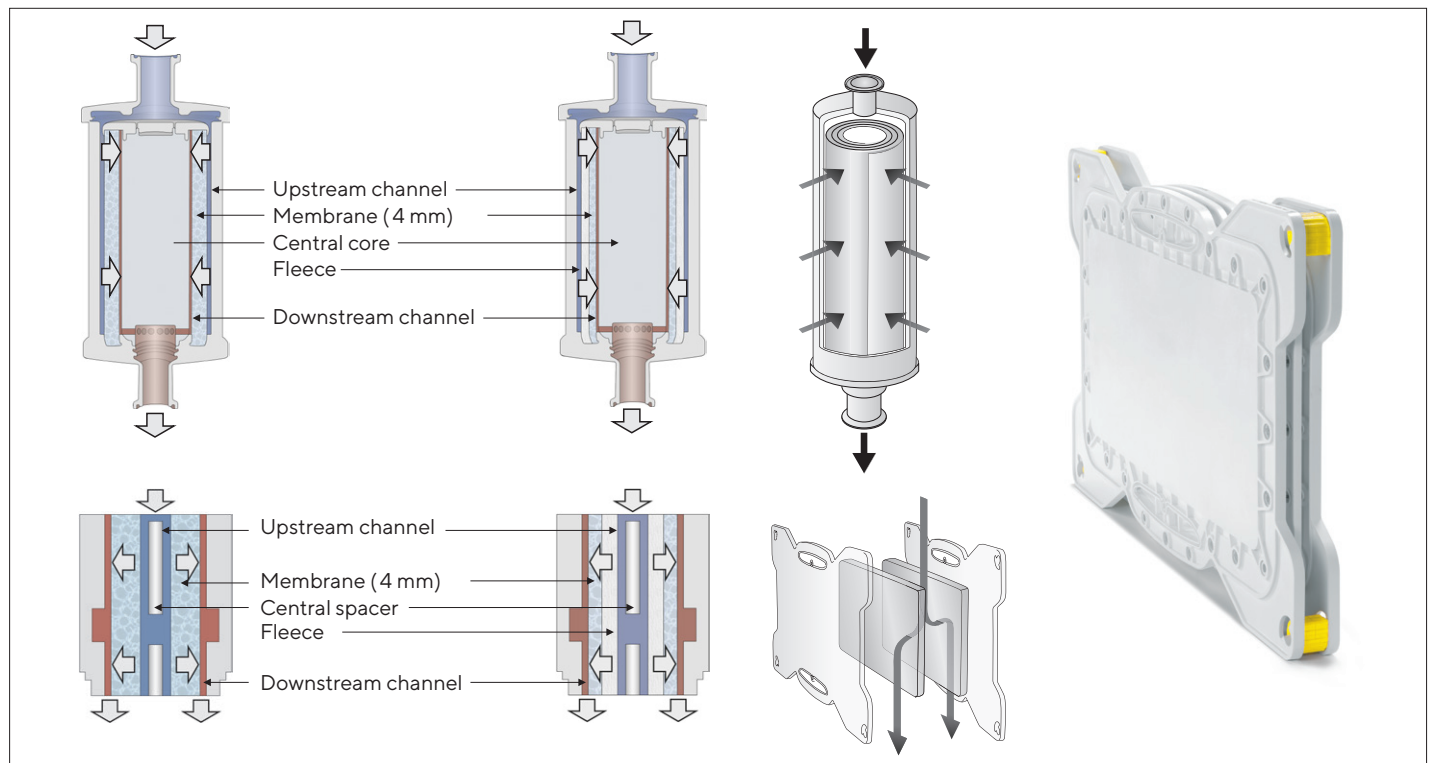
Target molecules to be purified: monoclonal antibodies, recombinant proteins, conjugated proteins, glycoproteins, antibody drug conjugates (ADCs), virus particles, virus like particles (VLPs)

Polishing

- DNA removal at up to 1.5 M NaCl
- DNA removal even in the presence of phosphate buffers (e.g. PBS)
- Host cell proteins up to 10 kg/L (product load/liter membrane)
- Endotoxins >4 log
- Viruses >4 log



96 well plates and Pico device for screening of conditions and initial tests



Cutaway view and flow path of a capsule (upper figures) and a cassette (lower figures)


Due to the high binding capacity the membrane can be loaded with 10 kg of mAb per liter membrane in flow-through mode to remove HCP e.g. from 303 ng/mg of mAb to below 6 ng/mg (see application note: "Host cell protein removal with Sartobind STIC® PA Pico", order no.: 85032-542-30). This step was applied with undiluted cation exchange pools. Although binding of HCP to the ligand is reduced in the presence of polyanionic buffers such as phosphate or citrate, DNA is effectively bound.

This feature allows even to remove DNA at binding conditions in the range of 5 mg DNA per mL Sartobind STIC® at e.g. 50 mM phosphate (see application note: Effect of Phosphate on Protein and DNA Binding to Sartobind STIC® PA, order no.: 85032-536-63).

Technical Specifications

Membrane materials		
Matrix	Stabilized reinforced cellulose	
Membrane thickness membrane volume = membrane area	275 µm 1 mL = 36.4 cm²	
Nominal pore size	> 3 µm	
Ion exchanger ligand STIC PA	Weak anion STIC PA: primary amine (R-NH2)	
Capsule materials		
Outer cage, inner core, end caps, capsule housing, nonwoven, fleece	Polypropylene	
O-ring in vent valve (except Nano)	EPDM (ethylene propylene diene monomer)	
Cassette materials		
Outer cage, seal, nonwoven, fleece	ABS, silicone, polyethylene	
Operation		
Depyrogenation	1 N NaOH for 30 minutes at 20°C	
Autoclaving	121°C for 30 minutes for one cycle capsules only	
Integrity testing	By the diffusion test method with Sartocheck® 5 Plus	
Typical dynamic binding capacity at 10% breakthrough		
STIC PA (BSA, 20 mM Tris HCl, 150 mM NaCl, pH 7.5)	50 mg/mL (1.4 mg/cm²)	
STIC PA (salmon sperm DNA, 20 mM Tris/HCl, 150 mM NaCl pH 7.2)	10.9 mg/mL (0.3 mg/cm²)	
Ligand density		
STIC PA	18 – 22 µeq/cm²	
pH stabilities	Short term	Long term
STIC PA	pH 2–12	not defined

Dimensions and Connections

Membrane volume 4 mm	1 mL	10 mL	75 mL	200 mL	400 mL	600 mL	2,500 mL	800 mL
Size	Nano	Mini	5"	10"	20"	30"	Jumbo	Cassette
								
Membrane area cm ² 4 mm	36.4	364	2,700	7,300	14,600	22,000	91,000	29,000*
Void volume mL MV** 4 mm	3.5 3.5	3.4 34	2.7 200	2.7 540	2.7 1,080	2.7 1,600	2.8 7,000	3.1 2500*
Dimensions one device (height × diameter) mm	37 × 33 h × Ø	70 – 110 × 54.5 h × Ø	190 × 77 h × Ø	350 × 100 h × Ø	570 × 100 h × Ø	810 × 100 h × Ø	850 × 302 h × Ø	634 × 387 × 49 w × h × t
Connectors	Luer female	Luer female Sanitary 3/4" 25 mm outer, 14 mm i.D. Hose barb 1/2"	Sanitary 3/4" 25 mm outer, 14 mm inner diameter	Sanitary 1 1/2" 50.5 mm outer, 36 mm inner diameter	Sanitary 1 1/2" 50.5 mm outer, 36 mm inner diameter	Sanitary 1 1/2" 50.5 mm outer, 36 mm inner diameter	Sanitary 1 1/2" 50.5 mm outer, 36 mm inner diameter	Sanitary 1 1/2" 50.5 mm outer, 36 mm inner diameter via manifolds (accessory)
Approximate weight	10 g	65 g	400 g	760 g	1.3 kg	1.9 kg	16 kg 20 kg wet 23 kg filled	4.9 kg* 6.0 kg* wet

n.a. = not available, *Multiply with the number of used cassettes **MV = membrane volume (including the porosity of the membrane which is 80%)

Ordering Information

Sartobind STIC® PA Capsules

Order number	Description	Quantity	Bed height [mm]	Protein binding capacity [g]	Recommended flow rate [L/min]	Maximum pressure [MPa] (bar/psig)
96STPA42DN-11--A	Sartobind STIC® PA Nano 1 mL, 4 mm, Luer female connectors, 2 PEEK Luer male adapters to UNF 10-32 female, manual, certificate	4	4	0.05	0.02	0.4 (4/58)
96STPA42D4R11--A	Sartobind STIC® PA Mini 10 mL, 4 mm, Luer female connectors, 8 PEEK adapters Luer male to UNF 10-32 female, manual, certificate	4	4	0.5	0.2	0.4 (4/58)
96STPA42D4RFF--A	Sartobind STIC® PA Mini 10 mL, 4 mm, ¾" sanitary clamp, manual, certificate	4	4	0.5	0.2	0.4 (4/58)
96STPA42D4ROO--A	Sartobind STIC® PA Mini 10 mL, 4 mm, hose barb connectors, manual, certificate	4	4	0.5	0.2	0.4 (4/58)
96STPA42D9MFF--A	Sartobind STIC® PA 75 mL, 4 mm, ¾" sanitary clamp, manual, certificate	4	4	3.8	1.5	0.4 (4/58)
96STPA42D1GSS	Sartobind STIC® PA 200 mL, 4 mm, 1½" sanitary clamp, manual, certificate	1	4	10.2	4	0.4 (4/58)
96STPA42D2HSS	Sartobind STIC® PA 400 mL, 4 mm, 1½" sanitary clamp, manual, certificate	1	4	20.4	8	0.4 (4/58)
96STPA42D3KSS	Sartobind STIC® PA 600 mL, 4 mm, 1½" sanitary clamp, manual, certificate	1	4	30	12	0.4 (4/58)
96STPA42D3NSS	Sartobind STIC® PA Jumbo 2.5 L, 4 mm, 1½" sanitary clamp, manual, autoclaving instructions, certificate	1	4	127	50	0.3 (3/43.5)
98STPA42D-L	Sartobind STIC® PA Cassette 0.8 L, 4 mm, 1½" sanitary clamp via manifold set (accessory), manual, certificate	1	4	40.6	16	0.2 (2/29)





Related Products



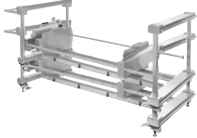

Order number	Description	Quantity
99STPA42GC-----V	Sartobind® STIC PA 96-well plate	2
99STPA42GC-----D	Sartobind® STIC PA 96-well plate	10
92STPA42DD-11--D	Sartobind® STIC PA Pico 0.08 mL	10
92MU0142DD-11--D	Sartobind® Selection Kit Pico 0.08 mL, Q, S and STIC PA	each 1

Sartobind® 96-well plate. Data sheet: order no.: 85032-543-28

Sartobind® Pico 0.08 mL. Data sheet: order no.: 85032-541-71

Accessories

Order number		Description	Quantity
1ZA---0004		Adapter Luer male to UNF 10-32 female, PEEK	1
1ZAOGV0003		Adapter UNF 10-32 female to sanitary 3/4\", 25 mm, polyoxymethylene	2
5ZALB-0002		Distribution adapter for 3 × 200 to 1,200 mL (10 – 30\") capsules, 1 × 2\", 3 × 1½\", sanitary, stainless steel	1
7ZAL-V0013		Reducing adapter 1½\" (50.5 mm) to ¾\" (25 mm), sanitary	1
7ZAL-V0010		Reducing adapter 2\" (64 mm) to 1½\" (50.5 mm), sanitary	1
9ZGL--0102		Trolley for Jumbo 2.5 or 5 L, stainless steel	1
26787---FT---P		Sartocheck® 5 Plus Filter Integrity Tester	1


Order number		Description	Quantity
29Z--S00001		Manifold set for Sartoclear® Sartobind®, 1½" sanitary clamp	2
2ZGL--0005		Pilot Filter Holder for Sartoclear® Sartobind®	1
2ZGL--0006		Process Filter Holder for Sartoclear® Sartobind®	1
2ZGL--0007		Double process Filter Holder for Sartoclear® Sartobind®	1
2ZGL--0008		Drip pan for Pilot Filter Holder	1
2ZGL--0015		Drip pan for Process and double Process Filter Holder	1

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 To find out more about chromatography membranes, visit
www.sartorius.com/chromatography-membranes