SUPRAdisc™

DEPTH FILTER MODULES

The SUPRAdisc™ module design concept combines the advantages of conventional depth filter sheets with the features of enclosed filters.

Concept

Seitz™ depth filter sheets have been used for many years in a vast array of applications, using a range of equipment. With their mechanical strength, they can be incorporated into SUPRAdisc modules, and installed into enclosed filter housings. This arrangement reduces cleaning and cleaning validation, and also simplifies installation, making it easier to handle and dispose of the filters after use. Each module consists of three major components:

- Individual filter cells or lenses
- A tubular center core
- End adapters

These components can then be broken down further to better understand the robust construction of SUPRAdisc modules.

Individual filter cells are made from the joining of two Seitz depth filter sheets and using an injection-molding process to seal the edges of the filter sheets to create a filter cell. A drainage plate is placed between each filter sheet prior to this process to reduce flow resistance and to improve flow distribution over the entire surface area of the filter sheets.

Up to 21 filter cells can be stacked on a tubular center core, compressed and joined to form a unit. This design results in a reliable sealing between the filter cells, and provides the structural robustness necessary to limit product failure or process bypass situations during operation.

Fig 1. SUPRAdisc modules with double O-ring and bayonet lock adapter (left) and flat gasket adapters (right).

Filter media

Almost all grades of Seitz depth filter sheets that are available in flat sheet format are also available as SUPRAdisc modules. Due to their excellent mechanical strength, these sheets can readily be incorporated into modules.

The complete filter system

The SUPRAdisc module adapter has two O-rings and a bayonet lock, a concept successfully implemented by the biopharmaceutical industry for filter cartridges. Consequently, the SUPRAdisc modules can be installed quickly and easily into filter housings accepting this style of adapter. SUPRAdisc modules are also available with a flat gasket-style adapter.

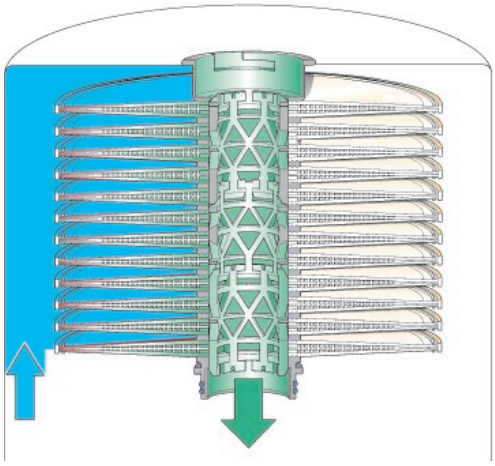

Fig 2. Illustration showing the module flow path and stacked cell construction.

Fig 3. Modules are available in a range of sizes with areas from 0.3 to 5.0 m^2.

Available filter areas

SUPRAdisc module	Filter area (m^2)	Filter area (ft^2)	Typical filtered volume (L)
SUPRAdisc 203	0.3	3.2	> 15
SUPRAdisc 205	0.5	5.0	> 15
SUPRAdisc 209	1.0	10.7	> 50
SUPRAdisc 216	1.8	19.3	> 50
SUPRAdisc 409	2.1	23.0	> 100
SUPRAdisc 416	3.7	40.0	> 100
SUPRAdisc 421	5.0	54.0	> 100
SUPRAdisc 509	2.3	24.7	> 100
SUPRAdisc 516	4.0	43.0	> 100
SUPRAdisc 520	5.0	53.8	> 100

The filter media meet the specifications set forth in the *US Code of Federal Regulations Title 21, parts 177.2260 e, f, g, h, i, j, k* and *l.* The materials for all polypropylene plastic components are listed in the *US Code of Federal Regulations Title 21, part 177.1520.*

With regard to food law conformity, the manufacture of depth filter sheets is also subject to ongoing analysis by the German ISEGA Forschungs- und Untersuchungsgesellschaft mbH, Aschaffenburg.

Filter media specifications

Code	Depth filter type	Typical water in permeability at Δp 1 bard (14.5 psid) (L/min/m²)	Nominal retention rating (µm)	Ash content (%)	Endotoxin level before rinsing (EU/mL)
PEKS	EKSP	29	0.1 to 0.3	58	< 0.06
PEKM	EKMP	41	0.2 to 0.5	48	< 0.06
PEK1	SUPRA EK1P	64	0.2 to 0.5	47	< 0.06
P050	KS 50P	93	0.4 to 0.8	46	< 0.06
P080	SUPRA 80P	159	1.0 to 3.0	49	< 0.06
P100	K100P	149	1.0 to 3.0	45	< 0.06
P200	K200P	217	3.0 to 6.0	43	< 0.06
P250	K250P	535	4.0 to 9.0	44	< 0.06
P700	K700P	935	6.0 to 15.0	45	< 0.06
P900	K900P	1980	8.0 to 20.0	45	< 0.06
B010	BIO 10	30	0.2 to 0.4	< 1	< 0.06
B020	BIO 20	75	0.4 to 1.0	< 1	< 0.06
B040	BIO 40	1135	4.5 to 12.0	< 1	< 0.06
XEK1	EK1	41	0.2 to 0.4	51	NA
XEK	EK	68	0.3 to 0.5	46	NA
X050	KS50	93	0.4 to 0.8	46	NA
X080	KS80	113	0.6 to 2.0	46	NA
X100	K100	146	1.0 to 3.0	46	NA
X150	K150	185	2.5 to 4.0	46	NA
X200	K200	213	3.0 to 6.0	46	NA
X250	K250	510	4.0 to 9.0	46	NA
X300	K300	785	5.0 to 12.0	46	NA
X700	K700	925	6.0 to 15.0	46	NA
X900	K900	1700	8.0 to 20.0	46	NA
T950	T950	1700	8.0 to 20.0	40	NA
T100	T1000	3400	10.0 to 25.0	35	NA
T150	T1500	7185	11.0 to 30.0	33	NA
T210	T2100	10 200	13.0 to 35.0	13	NA
T260	T2600	10 200	15.0 to 40.0	< 1	NA
T350	T3500	12 750	19.0 to 50.0	13	NA
T550	T5500	25 500	25.0 to 70.0	< 1	NA

NA = Not applicable as endotoxin content is not a measured criteria for these sheets.

Technical specifications

Operating characteristics

Maximum operating temperature	80°C in polypropylene design 160°C in polyamide design
Maximum operating pressure	2.4 bard (35 psid)

With compatible fluids that do not soften, swell or adversely affect the products or its material of construction.

Materials of construction

SUPRAdisc module components	Polypropylene Polyamide (only high temperature version)
O-rings	Silicone elastomer

- All plastic components used in the construction meet the specification for biological reactivity test *in vivo* for Class VI plastics (121°C) as described in the current *United States pharmacopoeia (USP)*.
- All SUPRAdisc modules and their components are fully traceable by serial number.

Sterilization

Steam-in-place	125°C for 30 min at 0.3 bard (4.3 psid) maximum

Nominal dimensions

Total length double O-ring	332 mm (13.1 in.)
Total length flat gasket	272 mm (10.7 in.)
Total diameters (see *Ordering information*)	• 284 mm (12.0 in.) for filter area codes 203, 205, 209 and 216 in polypropylene and polyamide designs • 410 mm (16.1 in.) for filter area codes 409, 416 and 421 in polyamide design • 413 mm (16.3 in.) for filter area codes 509, 516 and 520 in polypropylene design

Ordering information

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Code	Filter spacing	Code	Filter type	Code	Gasket option	Code	Filter area	Code	Gasket material	Code	Plastic parts
00	Standard	Insert filter media code from table on page 3		S	Double O-ring	203[1*]	0.3 m^2 (3.2 ft^2)	S	Silicone elastomer	P	Polypropylene
01	High temperature			C	Flat gasket	205[1*]	0.5 m^2 (5.3 ft^2)	Other gaskets available on request.		A	Polyamide[4]
30	Increased cell distance					209[1]	1.0 m^2 (10.7 ft^2)				
						216[1]	1.8 m^2 (19.3 ft^2)				
						409[1, 2]	2.1 m^2 (22.5 ft^2)				
						416[1, 2]	3.7 m^2 (39.8 ft^2)				
						421[1, 2]	5.0 m^2 (53.8 ft^2)				
						509[3]	2.3 m^2 (24.7 ft^2)				
						516[3]	4.0 m^2 (43.0 ft^2)				
						520[3]	5.0 m^2 (53.8 ft^2)				

This is a guide to the product code structure and possible options only.
Contact us for availability of specific options.

Example product codes

Standard	300X100S216SP
High temperature	301X100S216SA

[1] Available in polyamide and polypropylene design
[2] Seitz P-series, HP-series only
[3] Seitz K-series, T-series and Bio-series depth filter sheets only
[4] High temperature only.
[*] Only available with double O-ring.

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