Supracap™

DEPTH FILTER CAPSULES

Scalable single-use depth filtration

The range of Supracap™ capsules provides a scalable and reliable depth filter platform for rapid process development for volumes from less than < 1 L to over 100 L, utilizing the same design, flow path, and filter media as larger-scale SUPRAdisc™ depth filter modules and Stax™ capsules.

Supracap capsules can save time and costs during critical screening, development and process operations. The disposable design removes any cleaning or handling concerns typically associated with housings, especially when dealing with biological and hazardous products.

The Supracap range of capsules has been designed to provide cost effectiveness, flexibility and ease of use, while reducing the exposure risks for operators.

Supracap 50 capsules

Well suited for developing and optimizing processes during scale-up and scale-down studies, the Supracap 50 capsules, with an effective filtration area (EFA) of 22 cm^2, can be used to quickly and accurately determine the Seitz depth filter sheets necessary for successful process filtration. And because the Supracap 50 capsules utilize the same design principles, filter media and flow path construction as the larger Supracap 100 capsules, performance and process design during scale-up and scale-down studies can be achieved.



Fig 1. Left to right: Supracap 100 capsules, 127 mm (5 in.) and 254 mm (10 in.); bottom: Supracap 50 capsule.

Inside Supracap 100 capsules

Benefiting from the SUPRAdisc II mechanically robust module design, Supracap 100 capsules enable consistent, reliable filtration results from batch to batch. Through the use of dual drainage plates, the SUPRAdisc II module design imparts the structural integrity necessary for:

- Unobstructed process flow
- Consistent filtration results
- Lowering the risk to filter media rupture in the event of reverse pressure



Fig 2. Supracap 100 internal cartridge and Stax capsule.

Scalability

Following on from Supracap 50 capsules, Supracap 100 capsules are available in four sizes ranging from 0.025 to 0.300 m^2 (0.27 to 3.23 ft^2) EFA. These capsules can also be manifolded together to create larger systems, to meet your process requirements for scale-up when transitioning from small-scale development to commercial-phase manufacturing.

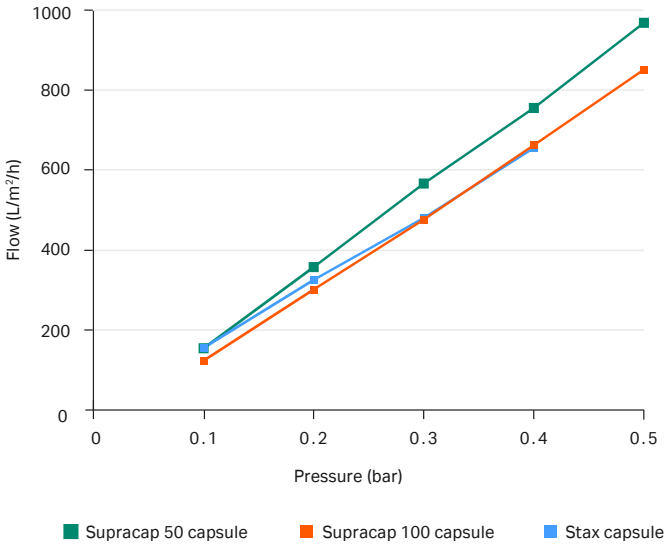


Fig 3. Water flow diagram for Supracap 50, Supracap 100 and Stax capsules with Bio 10 media grade.

Flexibility of design

Designed to offer choice and flexibility

The Supracap range of single-use capsules comes in a variety of options to enable you to select the correct capsule to meet your specific process requirements, offering different configurations for:

- Filtration area
- Depth filter media grade
- Capsule configuration
- Inlet and outlet connections

Complete single-use systems

With the additional benefit of being able to manifold the Supracap 100 capsules together, or with other Kleenpak™ Nova capsule filters, the Supracap 100 capsules can be easily incorporated into Allegro™ single-use systems.

Allegro systems can combine depth filters, bioburden reduction filters, final sterile filters and virus filters with sterile connectors and biocontainers, making a complete filter train. A complete single-use system designed to your specifications, ready to use straight out of the box!

Supracap capsules provide high performance filtration and flexibility, in single-use format.

Applications

Range of single-use capsules comes in a variety of options to enable you to select the correct capsule to meet your specific process requirements, offering different configurations for:

- Mammalian cell cultures
- Yeast
- *E.coli* lysates and refolds
- Vaccines
- Blood plasma proteins and serum
- Media



Fig 4. In-line Supracap 100 capsule, 254 mm (10 in.).

Features and benefits

- **Flexibility** – Choices in filter media, effective filtration area, capsule configuration, and connection styles enable customized filtration solutions.
- **Low hold-up volume** – Increased product recovery requiring low post-use rinse volumes.
- **Seamless linear scalability** – Greater flexibility and linear process scalability for our line of traditional SUPRAdisc modules and Stax capsules.
- **Lower risk** – Mechanically robust design offers unobstructed process flows and consistent and scalable filtration results, as well as a high filter media integrity.
- **No housings** – Easy to use and manipulate while reducing capital expenditures.
- **Single use** – Removes the need for cleaning and cleaning validation.
- **Encapsulated design** – Reduces operator exposure to potential biohazards.

High performance depth filter media

Incorporating Seitz depth filter sheets

Supracap capsules are available in a wide range of advanced pharmaceutical-grade Seitz depth filters. Supported with comprehensive validation guides, Seitz depth filters meet high pharmaceutical standards for:

- Quality
- Lot-to-lot consistency
- Manufacturing control
- Low extractable content
- Low endotoxin content

Applications

With our wide range of pharmaceutical grade depth filter sheets for use in the entire Supracap line of single-use capsules, flexibility to meet your own process demands is attainable.

P-series

Seitz P-series depth filter sheets were specifically developed for the strict requirements in biotechnological and pharmaceutical industries. Manufactured with stringent in-process control methods to enable consistent filtration quality, purity of filter medium, and alignment with the requirements of the pharmaceutical industry.

HP-series

Seitz HP-series depth filter sheets consist of two distinct layers of Seitz P-series depth filter sheets: a coarser layer upstream followed by a finer layer downstream. These performance-enhanced depth filter sheets have been designed for use in low-viability, high-solids-containing applications. As small shifts in process conditions can cause dramatic differences in filtration requirements, the flexibility of combining P-series media in an HP format allows for improved process optimization.

Bio-series

Seitz Bio-series depth filter sheets are developed from purified natural and modified cellulose fibers and contain no inorganic materials such as diatomaceous earth (DE), perlite or glass fibers. This reduces the levels of ash and heavy metal extractables.

V100P grade

V100P grade depth filters are developed for the removal of contaminating particles combined with low retention of viruses to increase yield post-filtration in vaccine processing.

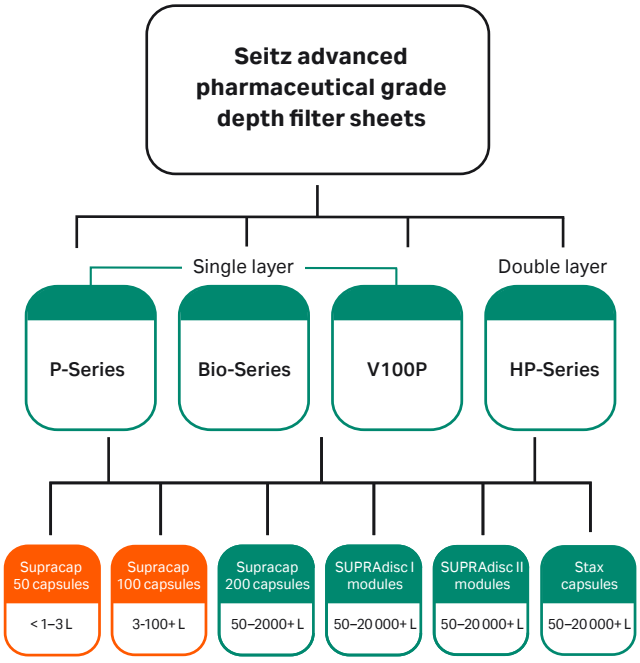


Fig 5. Scalability – depth filter sheet formats.

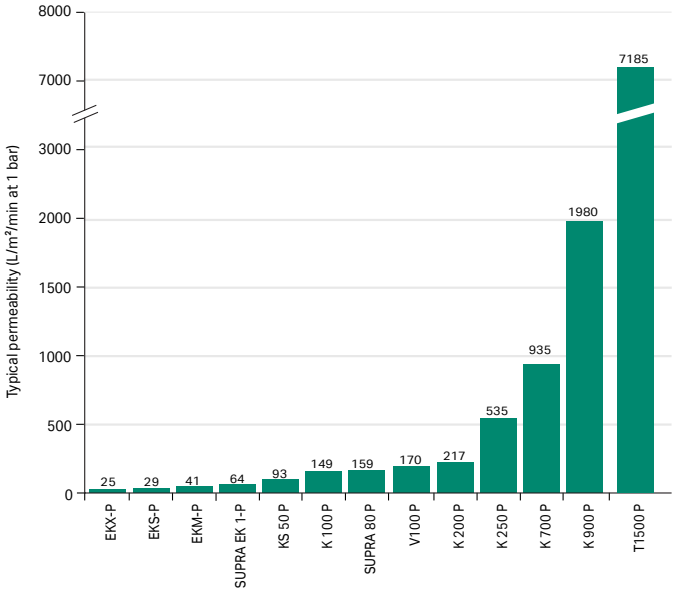


Fig 6. Permeability – P-series.



Fig 7. Depth filter sheets.

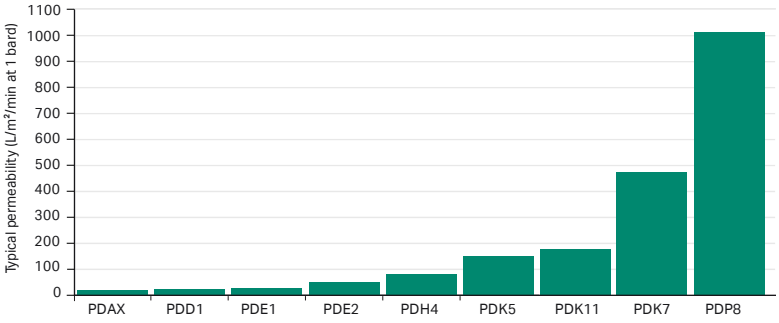


Fig 8. Permeability – HP-series. Test performed with water at 20°C and a differential pressure of 1 bard (14 psid)

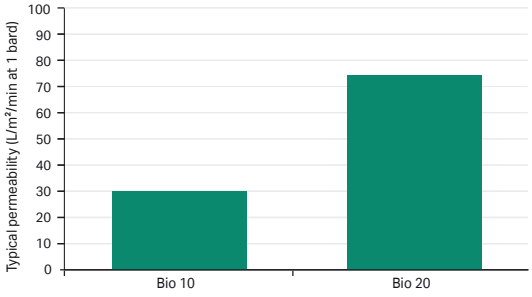


Fig 9. Permeability – bio-series.

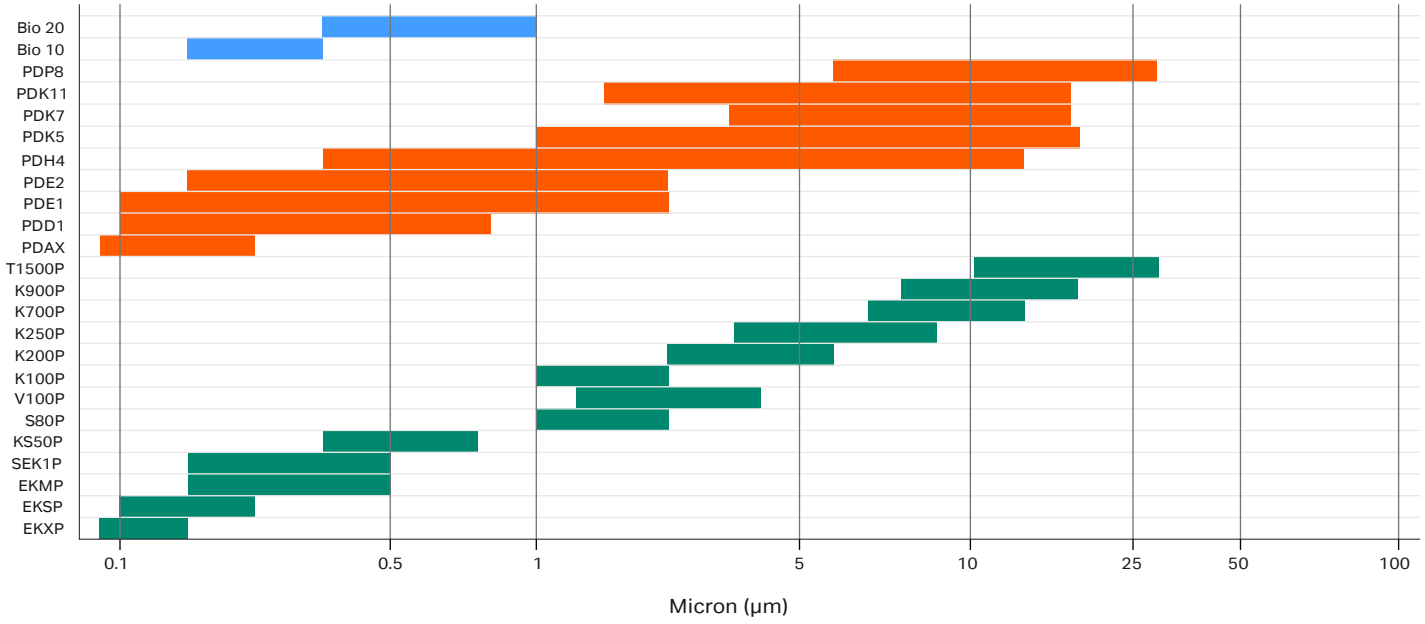


Fig 10. Nominal retention rating of Seitz P-series, HP-series and Bio-series depth filter sheet media.

From benchtop to process

A well-integrated suite of single-use equipment is critical when scaling up or down a process for further analysis. Apart from the ease of use aspect of these single-use products, designing them with similar flow resistance, flow paths and filtration area utilization will produce results that more accurately predict what will be demonstrated at larger scales.

Supported by these complimentary technologies, we have extended this seamless approach to our larger Stax capsule system (50 to 20 000+ L). Building upon the same criteria for design, flow path, and filter media, we have established a suite of enabling single-use technologies providing scalability in filtration performance from bench to process.



Fig 11. Supracap 50 capsules.

Scalability – effective filtration area

Supracap 50 capsules (<1 to 3 L)	
Capsule	22 cm² (0.024 ft²) of EFA

Supracap 100 capsules (3 to 100+ L)	
127 mm (5 in.)	0.050 m² (0.54 ft²) SL[1] EFA 0.025 m² (0.27 ft²) DL[2] EFA
254 mm (10 in.)	0.10 m² (1.08 ft²) SL EFA 0.05 m² (0.54 ft²) DL EFA
508 mm (20 in.)	0.20 m² (2.15 ft²) SL EFA 0.10 m² (1.08 ft²) DL EFA
762 mm (30 in.)	0.30 m² (3.23 ft²) SL EFA 0.15 m² (1.61 ft²) DL EFA

Stax capsules (50 to 20 000+ L)	
Small capsules	0.50 m² (5.38 ft²) SL EFA 0.25 m² (2.70 ft²) DL EFA
Medium capsules	1.00 m² (10.76 ft²) SL EFA 0.50 m² (5.38 ft²) DL EFA
Large capsules	2.00 m² (21.50 ft²) SL EFA 1.00 m² (10.76 ft²) DL EFA

[1] SL = Single layer Seitz depth filter sheets such as P-series and Bio-series
[2] DL = Double layer Seitz depth filter sheets such as HP-series

Technical specifications

High quality standards

- Batch tested in order to meet quality requirements.
- Manufactured under a quality management system certified to ISO 9000 and ISO 9001 and an environmental management system certified to ISO 14001.
- All plastic components used in construction meet the specifications for biological reactivity tests *in vivo* for *class VI Plastics (121°C)* as described in the current *United States pharmacopoeia (USP).*

Supracap capsules meet industry requirements

Supracap capsules have been designed to meet industry requirements, including autoclaving and low extractables. They offer high flow rates and throughputs and are designed to have low hold-up volumes. The translucent shell makes venting and draining easy as liquid levels are visible.

Materials of construction

Supracap 50 capsules	
Capsule	Polypropylene
Vent	Polypropylene

Supracap 100 capsules	
Housing bowl	Polypropylene
Housing head[3]	Polypropylene
O-rings	Silicone elastomers

[3] Formulated with TiO_2 whitener which does not contribute to organic extractables.

Maximum operating pressure	
Supracap 50 and 100 capsules	3 bar (44 psi) at 40°C

In compatible fluids which do not soften, swell, or adversely affect the filter or its materials of construction.

Maximum differential pressure	
Supracap 50 capsules	1.5 bar (22 psi)
Supracap 100 capsules	2.4 bar (35 psi)

Sterilization – autoclaving	
Supracap 50 capsules, one cycle	125°C at 30 min
Supracap 100 capsules, one cycle	125°C at 60 min

Supracap 100 capsules void volumes

Capsule length	NP capsule	NT capsule
127 mm (5 in.)	652 mL	Not applicable
254 mm (10 in.)	1125 mL	1160 mL
508 mm (20 in.)	2291 mL	2578 mL
762 mm (30 in.)	3399 mL	3747 mL

Void volume is defined as amount of liquid required to fill entire capsule with cartridge installed inside.

Supracap 50 capsules nominal dimensions (Fig 12)

	Maximum height (A)	Maximum diameter (B)
Single layer media	42 mm (1.65 in.)	64 mm (2.52 in.)
HP media	52 mm (2.05 in.)	64 mm (2.52 in.)

Supracap 100 capsules nominal dimensions

In-line (Fig 13)	**NP5**	**NP6**	**NP7**	**NP8**
Maximum diameter (B) including valves	154 mm (6.1 in.)	54 mm (6.1 in.)	154 mm (6.1 in.)	154 mm (6.1 in.)
Height (A) with hose barb inlet/outlet	263 mm (10.4 in.)	397 mm (15.6 in.)	644 mm (25.4 in.)	895 mm (35.2 in.)
Height (A) with sanitary inlet/outlet	213 mm (8.4 in.)	335 mm (13.2 in.)	584 mm (23.0 in.)	834 mm (32.8 in.)

T-style (Fig 14)	**NT6**	**NT7**	**NT8**
Maximum diameter (B)	240 mm (9.5 in.)	240 mm (9.5 in.)	240 mm (9.4 in.)
Height (A) including valves	349 mm (13.7 in.)	598 mm (23.5 in.)	848 mm (33.4 in.)

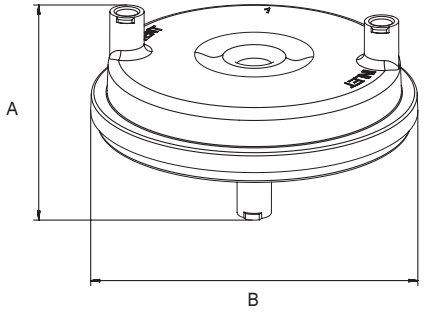


Fig 12. Supracap 50 capsules.

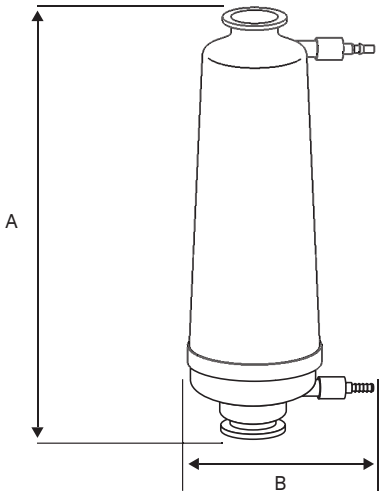


Fig 13. Supracap 100 in-line capsules NP.

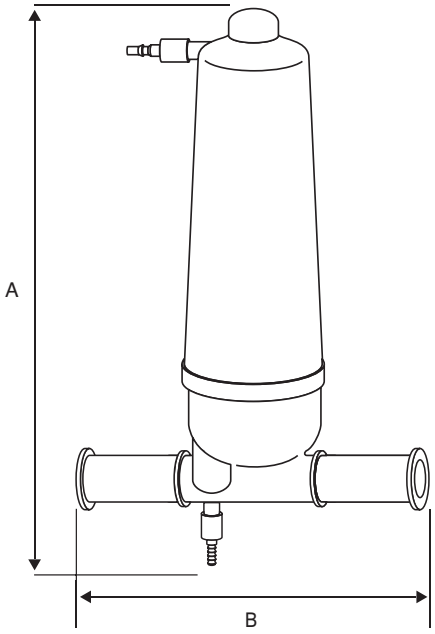


Fig 14. Supracap 100 T-style capsules NT.

Ordering information

Supracap 50 capsules

Product code: SC050 ☐

Code	Media grade
PEKX	EKXP
PEKS	EKSP
PEKM	EKMP
PEK1	SEK1P
P050	KS50 P
P080	SUPRA 80 P
P100	K100 P

Code	Media grade
V100	V100P
P200	K 200 P
P250	K 250 P
P700	K 700 P
P900	K 900 P
P1500	T1500 P
B010	BIO10
B020	BIO20

Code	Media grade
PDAX	PDAX
PDD1	PDD1
PDE1	PDE1
PDE2	PDE2
PDH4	PDH4
PDK5	PDK5
PDK7	PDK7
PDK11	PDK11
PDP8	PDP8

Example product codes:
SC050PEKX
SC050V100

Supracap 100 capsules

Product code: N ☐ ☐ ☐ ☐

Code	Capsule format
P	In-line
T	T-style

Code	Nominal length
5L[1]	127 mm (5 in.)
6	254 mm (10 in.)
7	508 mm (20 in.)
8	762 mm (30 in.)

Code	Media grade
PEKX	EKXP
PEKS	EKSP
PEKM	EKMP
PEK1	SEK1P
P050	KS50 P
P080	SUPRA 80 P
P100	K100 P
V100	V100P
P200	K 200 P
P250	K 250 P
P700	K 700 P
P900	K 900 P
P1500	T1500P
B010	BIO10
B020	BIO20
PDAX	PDAX
PDD1	PDD1
PDE1	PDE1
PDE2	PDE2
PDH4	PDH4
PDK5	PDK5
PDK7	PDK7
PDK11	PDK11
PDP8	PDP8

Code	Connection options
1	1 to 1½ in. sanitary flange inlet and outlet
9	25 mm (1 in.) single barb hose barb inlet and outlet
6[2]	13 mm (½ in.) single barb hose barb inlet and outlet
7[3]	¼ in. hose barb inlet and outlet

Example product code:
NP6PEKX9

Note: Staübli vent and stepped hose barb drain fitted as standard.

[1] Available only with in-line capsule format and connection codes 1, 6, or 7.
[2] Available only with in-line capsule formats.
[3] Available only with 5 in. capsule formats.

cytiva

cytiva.com

Cytiva and the Drop logo are trademarks of Life Sciences IP Holdings Corporation or an affiliate doing business as Cytiva.

Allegro, Kleenpak, Stax, Supracap, and SUPRAdisc are trademarks of Global Life Sciences Solutions USA LLC or an affiliate doing business as Cytiva.

Any other trademarks are the property of their respective owners.

The Danaher trademark is a proprietary mark of Danaher Corporation.

© 2025 Cytiva

For local office contact information, visit cytiva.com/contact

CY40468-16Jul25-DF

danaher