

Sartoclear® Depth Filter

Cell Clarification and
Contaminant Removal
Technologies



Product Information

The Sartoclear® Depth Filter product family is cellulose-based filters, which contain diatomaceous earth. Due to their high capacity for solids, the filters are used for demanding clarification applications in the biotechnology and pharmaceutical industries.

These double layer (DL) formats are available to serve you with cell broth filtration, with cell densities $<15 \times 10^6/\text{mL}$ from process development to commercial manufacturing.

Applications

- Mammalian cell culture harvests
- Microbial lysates
- Removal of precipitates from serum and plasma
- Particle and colloid removal from process intermediates
- Media filtration
- Viral vectors (Adeno-associated virus)

Sartoclear® Depth Filter Media

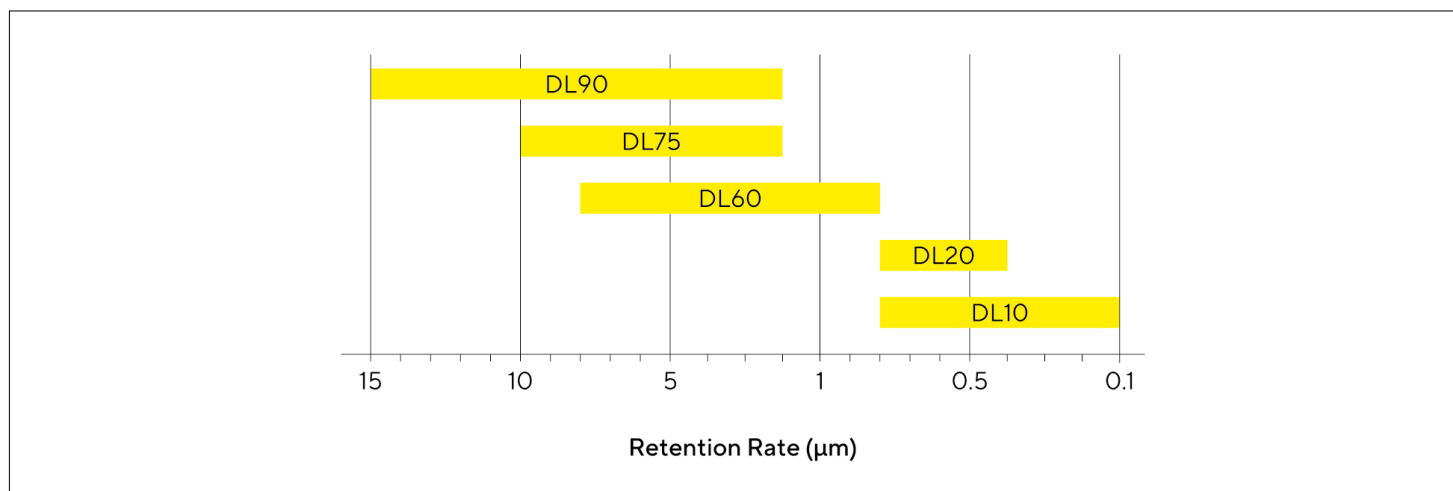
Sartoclear® DL-Series are high-capacity depth filters made of two distinct filtration layers. The primary coarse layer is followed by a second, finer layer, which enables the removal of a broader spectrum of particles in a single step.

The Sartoclear® DL-Series is pre-selected and optimized to serve the most common biopharmaceutical applications.

	Grade	Description
Primary Clarification	DL90	Primary (coarse) clarification.
	DL75	Primary clarification. In case of AAV clarification can serve as single-stage clarification solution directly followed by a sterile filter.
Primary Secondary Clarification	DL60	Primary or secondary clarification. In certain cases also serves as a single-stage clarification solution directly followed by a sterile filter (e.g. AAV clarification).
Secondary Clarification	DL20	Secondary clarification post-depth filtration, -centrifuge or -perfusion.
	DL10	Secondary clarification post depth filtration or centrifuge.

Technical Data

Grade	Primary Layer [µm]	Secondary Layer [µm]	Water Flow (at 1 bar) [L/m ² /min]
DL90	15	2	315
DL75	10	2	302
DL60	8	0.8	160
DL20	0.8	0.4	45
DL10	0.8	0.1	26



Average retention rate for each filter grade

Sartoclear® Depth Filter Formats

Sartoclear® Depth Filters are available in various formats to serve you from the first steps, throughout clinical phases and up to large-scale manufacturing while always keeping the same filter material.

Sartoclear® Depth Filter caps are easy-to-use screening devices that help you to find the best grade for your application. All packages contain three units of the same grade and come with plug-in Luer adapters for the easiest possible exchange of filters.

Sartoclear® Depth Filter midscale cassettes are developed for scale-up filtrations with volumes between 5 to 10 liters (depending on the cell density). They are designed in gradient shape for mechanical reinforcement to meet the application conditions and provide a self-contained solution.

Sartoclear® Depth Filter cassettes are single-use filtration devices specially designed for biopharmaceutical clarification applications. The modular devices provide linear scalability from small- to large-scale processes. Three different sizes of filter holder allow for a seamless adaptation to different process fluid volumes.

Sartoclear® Depth Filter modules are stackable, lenticular-shaped depth filters for use in stainless steel housings, which are often used in large-scale manufacturing facilities for biologicals.



Technical Information



Materials & Dimensions

Filter media	Cellulosic fibers with diatomaceous earth (inorganic filter aid) and polymeric binder			
Materials of construction Product contact components	Polypropylene Glass Fiber Reinforced	ABS Glass Fiber Reinforced	ABS Glass Fiber Reinforced	Polypropylene with stainless steel core. To operate a stainless steel housing is required.
Filtration area	25 cm ²	DL: 800 cm ²	DL: 0.2 m ² , 0.4 m ² , 0.8 m ²	SL*: 12": 1.9 m ² 16": 3.7 m ² DL: 16": 1.9 m ²
Cells per module	-	-	-	SL: 16 DL: 8
Dimensions H × W × D [mm]	Diameter: 73 mm Height: 82 mm	182 × 250 × 144	0.2 m ² : 387 × 634 × 36 0.4 m ² : 387 × 634 × 59 0.8 m ² : 387 × 634 × 104 Adapter Plate: 387 × 634 × 58	Diameter: SL: 12", 16" DL: 16" Height: SL: 276 mm DL: 185 mm

Operating Parameters

System pressure for housing holder at 20 °C	Liquid: 3 bar 43.5 psi Gaseous: 0.5 bar 7.2 psi	Liquid: 1.7 bar 24.7 psi Gaseous: 0.4 bar 5.8 psi	Liquid: 1.7 bar 24.7 psi Gaseous: 0.5 bar 7.2 psi	Depending on housing pressure resistance.
Max. operating pressure during filtration	2.0 bar 29 psi			2.0 bar 29 psi
Operating temperature range	-	5 °C – 40 °C	5 °C – 40 °C	-
Sterilization	Autoclavable at 121 °C for 30 min at 1 bar	-	-	Steam sterilization at 121 °C for 30 min at 1 bar

Connections

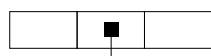
Inlet Outlet	¼" Multiple Stepped Hose Barb	¾" Tri Clamp	Inlet and Outlet Adapter Plate (Manifold Set): 1.5" Tri Clamp	-
Adapter	Male Luer for insertion in Inlet to quick connect ⅜" (3.2 mm ID) tubing	-	-	Flat Adapter FA
Drain and vent	Vent port with screw	Luer Lock connector	Inlet and Outlet Adapter Plate (Manifold Set): ¼" Hose Barb	-

Safety (for all materials with direct fluid contact)

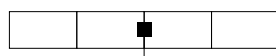
Endotoxins		< 0.25 EU/mL	< 0.25 EU/mL	
Biological reactivity		Passing of USP Plastic Class VI tests in accordance with the USP <88> for all component materials	Passing of USP Plastic Class VI tests in accordance with the USP <88> for all component materials	
TSE BSE		Complying with the EMA/410/01	Complying with the EMA/410/01	
CE Pressure equipment directive	Designed according to the requirements of the Pressure Equipment Directive 2014/68/EU.	Designed according to the requirements of the Pressure Equipment Directive 2014/68/EU.	Designed according to the requirements of the Pressure Equipment Directive 2014/68/EU.	

*SL = Single Layer
Only Sartoclear® Depth Filter modules are available in SL format.

Ordering Information



Family Type
29C: Capsules
29L: Module
29X: Midscale and Filter Cassette



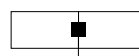
Technical Specification | Grade

Single Layer*

S010: 0.1 µm
S020: 0.2 µm
S040: 0.4 µm
S080: 0.8 µm
S200: 2.0 µm
S400: 8.0 µm

Double Layer

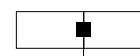
DL10: 0.8 | 0.1 µm
DL20: 0.8 | 0.4 µm
DL60: 8.0 | 0.8 µm
DL75: 10 | 2.0 µm
DL90: 15 | 2.0 µm



Format
12: Module 12"
16: Module 16"
FC: Midscale and Filter Cassette
CA: Capsules



Filtration Area
if 29L then
 -: Module
if 29C then
C: 0.0025 m²
if 29X then
A: 0.2 m²
B: 0.4 m²
C: 0.8 m²
F: 0.08 m²



Connection
FA: Flat Adapter
FF: Sanitary Flansh or Tri Clamp ¾

*Modules only

Sartoclear® Depth Filter

Sartoclear® Depth Filter Caps | Double Layer | Cellulose With Diatomaceous Earth

Art-No.	Adapters	Grade	Filtration area [cm ²]	Retention rate [µm]	Units Pack
29CDL10-CACHH--M	Hose barb	DL10	25	0.8 0.1	3
29CDL20-CACHH--M	Hose barb	DL20	25	0.8 0.4	3
29CDL60-CACHH--M	Hose barb	DL60	25	8.0 0.8	3
29CDL75-CACHH--M	Hose barb	DL75	25	10 2.0	3
29CDL90-CACHH--M	Hose barb	DL90	25	15 2.0	3

Sartoclear® Depth Filter Midscale Cassette | Double Layer | Cellulose With Diatomaceous Earth

Art-No.	Adapters	Grade	Filtration area [m ²]	Retention rate [µm]	Units Pack
29XDL10-FCFFF	TC ¾"	DL10	0.08	0.8 0.1	1
29XDL20-FCFFF	TC ¾"	DL20	0.08	0.8 0.4	1
29XDL60-FCFFF	TC ¾"	DL60	0.08	8.0 0.8	1
29XDL75-FCFFF	TC ¾"	DL75	0.08	10 2.0	1
29XDL90-FCFFF	TC ¾"	DL90	0.08	15 2.0	1

Sartoclear® Depth Filter Cassettes | Double Layer | Cellulose With Diatomaceous Earth

Art-No.	Grade	Filtration area [m ²]	Retention rate [µm]	Units Pack
29XDL10-FCA	DL10	0.2	0.8 0.1	1
29XDL20-FCA	DL20	0.2	0.8 0.4	1
29XDL60-FCA	DL60	0.2	8.0 0.8	1
29XDL75-FCA	DL75	0.2	10 2.0	1
29XDL90-FCA	DL90	0.2	15 2.0	1
29XDL10-FCB	DL10	0.4	0.8 0.1	1
29XDL20-FCB	DL20	0.4	0.8 0.4	1
29XDL60-FCB	DL60	0.4	8.0 0.8	1
29XDL75-FCB	DL75	0.4	10 2.0	1
29XDL90-FCB	DL90	0.4	15 2.0	1
29XDL10-FCC	DL10	0.8	0.8 0.1	1
29XDL20-FCC	DL20	0.8	0.8 0.4	1
29XDL60-FCC	DL60	0.8	8.0 0.8	1
29XDL75-FCC	DL75	0.8	10 2.0	1
29XDL90-FCC	DL90	0.8	15 2.0	1

Inlet and Outlet Adapter Plate (Manifold Set)

Art-No.	Adapters	Description	Units Pack
29Z-S00001	1½" Tri Clamp	Inlet and outlet plate with pre-installed silicone tubing incl. pinch clamp and MPC quick connectors on the ventilation and drain ports	1

Sartoclear® Depth Filter Modules | Single Layer | Cellulose With Diatomaceous Earth

Art-No.	Adapters	Grade	Filtration area [m ²]	Retention rate [µm]	Units Pack
29LS010-12-FA	12" Flat	S010	1.9	0.1	1
29LS020-12-FA	12" Flat	S020	1.9	0.2	1
29LS040-12-FA	12" Flat	S040	1.9	0.4	1
29LS080-12-FA	12" Flat	S080	1.9	0.8	1
29LS200-12-FA	12" Flat	S200	1.9	2.0	1
29LS400-12-FA	12" Flat	S400	1.9	8.0	1
29LS010-16-FA	12" Flat	S010	3.7	0.1	1
29LS020-16-FA	12" Flat	S020	3.7	0.2	1
29LS040-16-FA	12" Flat	S040	3.7	0.4	1
29LS080-16-FA	12" Flat	S080	3.7	0.8	1
29LS200-16-FA	12" Flat	S200	3.7	2.0	1
29LS400-16-FA	12" Flat	S400	3.7	8.0	1

Sartoclear® Depth Filter Modules | Double Layer | Cellulose With Diatomaceous Earth

Art-No.	Adapters	Grade	Filtration area [m ²]	Retention rate [µm]	Units Pack
29LDL90-16-FA	16" Flat	DL90	1.9	15 2.0	1
29LDL75-16-FA	16" Flat	DL75	1.9	10 2.0	1
29LDL60-16-FA	16" Flat	DL60	1.9	8.0 0.8	1
29LDL20-16-FA	16" Flat	DL20	1.9	0.8 0.4	1
29LDL10-16-FA	16" Flat	DL10	1.9	0.8 0.1	1

Accessories

Art-No.	Description
2ZGL--0005	Sartoclear® Pilot filterholder (1 - 6 Sartoclear cassettes)
2ZGL--0006	Sartoclear® Process filterholder (1 - 12 Sartoclear cassettes)
2ZGL--0007	Sartoclear® Double Process filterholder (1 - 24 Sartoclear cassettes)
2ZGL--0008	Drip pan for Sartoclear® Pilot filterholder
2ZGL--0013	Sartoclear® separation plate
2ZGL--0014	Pressure Safety Device
2ZGL--0015	Drip pan for Sartoclear® process holder

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