



# Sartoclear® Depth Filter

Cell Clarification and Contaminant Removal Technologies

## Product Information

Sartoclear® filters are cellulose-based depth filters developed for demanding clarification applications in the biotechnology and pharmaceutical industries.



## Sartoclear® Depth Filter Media

### DL-Series

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 are pre-selected and optimized to serve the most common biopharmaceutical applications. See below for detailed application guidance for each DL-grade.

### S-Series

Sartoclear® S-Series are single layer depth filter media grades for more specific applications such as vaccines and process intermediates with a lower or homogenous particle load. The Sartoclear® S-Series are also available as filter sheets for plate and frame filters often used in the plasma industries.

## Applications

- Mammalian cell culture harvests
- Microbial lysates
- Removal of precipitates from serum and plasma
- Particle and colloid removal from process intermediates
- Media Filtration

Grade	Description	Application examples <sup>1</sup>
DL90	Very coarse primary grade on top of a coarse secondary filter for filtrations with high solid concentrations	Primary clarification of mammalian cell cultures, insect cell cultures, microbial fermentations, vaccines
DL75	Pure cellulose pre-filter combined with a coarse secondary filter	Primary clarification of mammalian cell cultures, insect cell cultures, microbial fermentations, vaccines
DL60	Coarse primary grade with a secondary fine filtration grade for lower to moderate solid concentrations	Post-perfusion bioreactors, vaccines
DL20	Fine filtration grade combined with a standard bioburden reduction grade for the removal of particles	Post centrifuge mammalian cell cultures, post primary depth filtration, process precipitates
DL10	Fine filtration grade followed by a tight secondary filter for the removal of high concentrations of small particles	Post centrifuge microbial (e.g. <i>E. coli</i> ) lysates, post primary depth filtration step, process precipitates

<sup>1</sup> The listed examples are indicative and should be confirmed by small scale tests

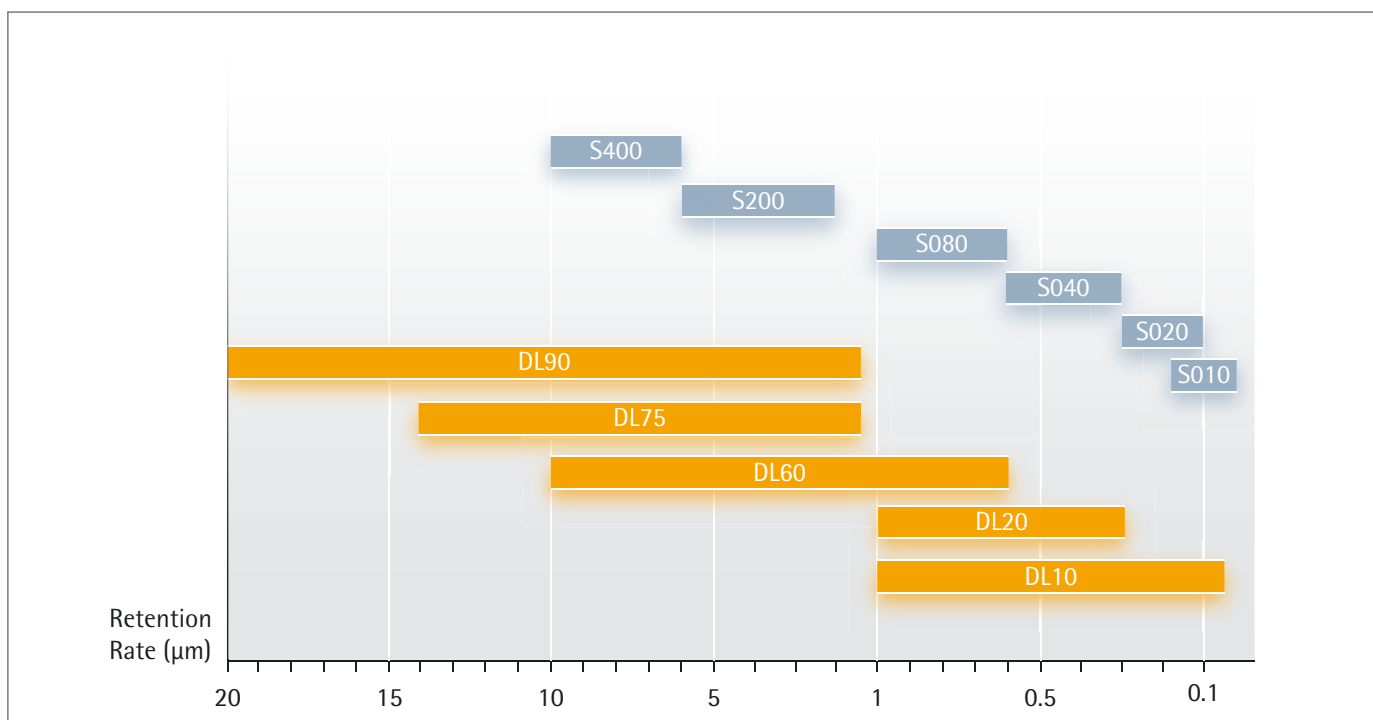
## Technical Data

### Specifications S-Series

Grade	Thickness [mm]	Ash Content [%]	Water Flow [L/m <sup>2</sup> /min]
S010	3.9	58	30
S020	3.9	50	46
S040	3.9	49.0	61
S080	3.9	50.0	175
S200	3.9	50.0	330
S400	4.1	48	2,381

### Specifications DL-Series

Grade	Primary Layer	Secondary Layer	Water Flow (100 kPa) [L/m <sup>2</sup> /min]
DL10	S080	S010	26
DL20	S080	S040	45
DL60	S400	S080	160
DL75	S600	S200	302
DL90	SX00	S200	315



## 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 contains 3 units of the same grade and come with plug-in Luer adapters for the easiest possible exchange of filters.

Sartoclear® MaxiCaps® are developed for scale up filtrations with volumes between 1 and 15 liters.

Sartoclear® Depth Filter Cassettes are single-use filtration devices especially 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

	Sartoclear® Depth Filter Caps	Sartoclear® Depth Filter MaxiCaps®	Sartoclear® Depth Filter Cassettes	Sartoclear® Depth Filter Modules	Sartoclear® Manifold Set
					
<b>Materials</b>					
Filter media	Cellulosic fibers with inorganic filter aids and polymeric binder	Cellulosic fibers with inorganic filter aids and polymeric binder	Cellulosic fibers with inorganic filter aids and polymeric binder	Cellulosic fibers with inorganic filter aids and polymeric binder	
Gasket	–	Silicone	Silicone	Silicone	Silicone
Plastics	–	Polypropylene	ABS   Glass Fiber Reinforced	Polypropylene   Separate stainless steel housing should be ordered	ABS   Glass Fiber Reinforced
Core		Polypropylene		Stainless steel	–
End caps	Polypropylene	–	–	–	–
Male luer adapter	Polypropylene	–	–	–	–
Filtration area	25 cm <sup>2</sup>	SL: 600 cm <sup>2</sup> DL: 400 cm <sup>2</sup>	SL: 0.2 m <sup>2</sup> , 0.4 m <sup>2</sup> , 1.0 m <sup>2</sup> DL: 0.2 m <sup>2</sup> , 0.4 m <sup>2</sup> , 0.8 m <sup>2</sup>	SL: 12": 1.9 m <sup>2</sup> 16": 3.7 m <sup>2</sup> DL: 16": 1.9 m <sup>2</sup>	–
Cells per module	–	–	–	SL: 16 DL: 8	–
Dimensions H × W × D (mm)	–	5"	0.2 m <sup>2</sup> : 387 × 634 × 36 0.4 m <sup>2</sup> : 387 × 634 × 59 0.8 m <sup>2</sup>   1.0 m <sup>2</sup> : 387 × 634 × 104	Diameter SL: 12", 16" DL: 16" Height SL: 276 mm DL: 185 mm	387 × 634 × 58
Drain and vent					ABS + silicon tubing

**Sartoclear® Depth Filter Caps**



**Sartoclear® Depth Filter MaxiCaps®**



**Sartoclear® Depth Filter Cassettes**



**Sartoclear® Depth Filter Modules**



**Sartoclear® Manifold Set**



Operating Parameters					
Max. allowable pressure	2.0 bar   29 psi	2.5 bar   36 psi	Liquid: 1.5 bar   21.8 psi Gaseous: 0.5 bar   7.2 psi		Liquid: 1.5 bar   21.8 psi Gaseous: 0.5 bar   7.2 psi
Max. allowable back Pressure	0.03 bar   0.4 psi	2.0 bar   29 psi	0.7 bar   10.2 psi	0.03 bar   0.4 psi	0.7 bar   10.2 psi
Max. allowable differential pressure		2.0 bar   29 psi		2.0 bar   36 psi	
Temperature range			4°C – 40 °C		4°C – 40 °C
Connections					
Inlet	Hose barb	3/4" Tri Clamp			1 1/2" Tri Clamp
Outlet	Hose barb	3/4" Tri Clamp			1 1/2" Tri Clamp
Adapter	Male Luer for insertion in Inlet to quick connect 8" (3.2 mm ID) tubing			Flat Adapter FA	
Drain and vent					1/4" Hose Barb
Safety (for all materials with direct fluid contact)					
Endotoxins		< 0.25 EU/mL	< 0.25 EU/mL		< 0.25 EU/mL
Biosafety			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 97/23/EC.		Designed according to the requirements of the Pressure Equipment Directive 97/23/EC.
Steam sterilization		One cycle of wet autoclaving at 121°C at 1 bar for 30 min. MaxiCaps® may not be in line steam sterilized!			121°C at 1 bar for 60 min.
Hot water flush					80°C at 1 bar for 30 min

## Ordering Information

Family Type	Technical Specification   Grade	Format	Filtration Area	Connection
<b>29C:</b> Capsules <b>29L:</b> Module <b>29M:</b> MaxiCaps <b>29X:</b> Filter Cassette	<b>S:</b> Single Layer <b>DL:</b> Double Layer	<b>12:</b> Module 12" <b>16:</b> Module 16" <b>FC:</b> Filter Cassette <b>MC:</b> MaxiCaps <b>CA:</b> Capsules	if 29L then -: Module if 29M then <b>5:</b> 5"  if 29C then <b>C:</b> 0.003 qm if 29X then <b>A:</b> 0.224 qm <b>B:</b> 0.444 qm <b>C:</b> 0.800 qm <b>D:</b> 1.100 qm	<b>FA:</b> Flat Adapter <b>FF:</b> Sanitary Flansh ¾

### Sartoclear® Depth Filter Caps Single Layer

Art-No.	Adapters	Grade	Filtration area	Retention rate	Units/Pack
29CS010-CACHH--M	Hose barb	S010	25 cm <sup>2</sup>	0.1 µm	3
29CS020-CACHH--M	Hose barb	S020	25 cm <sup>2</sup>	0.2 µm	3
29CS040-CACHH--M	Hose barb	S040	25 cm <sup>2</sup>	0.4 µm	3
29CS080-CACHH--M	Hose barb	S080	25 cm <sup>2</sup>	0.8 µm	3
29CS200-CACHH--M	Hose barb	S200	25 cm <sup>2</sup>	2.0 µm	3
29CS400-CACHH--M	Hose barb	S400	25 cm <sup>2</sup>	8.0 µm	3

### Sartoclear® Depth Filter Caps Double Layer

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

### Sartoclear® Depth Filter MaxiCaps® Single Layer

Art-No.	Adapters	Grade	Filtration area	Retention rate	Units/Pack
29MS010-MC5FF--V	TC ¾"	S010	0.06 m <sup>2</sup>	0.1 µm	2
29MS020-MC5FF--V	TC ¾"	S020	0.06 m <sup>2</sup>	0.2 µm	2
29MS040-MC5FF--V	TC ¾"	S040	0.06 m <sup>2</sup>	0.4 µm	2
29MS080-MC5FF--V	TC ¾"	S080	0.06 m <sup>2</sup>	0.8 µm	2
29MS200-MC5FF--V	TC ¾"	S200	0.06 m <sup>2</sup>	2.0 µm	2
29MS400-MC5FF--V	TC ¾"	S400	0.06 m <sup>2</sup>	8.0 µm	2

### Sartoclear® Depth Filter MaxiCaps® Double Layer

Art-No.	Adapters	Grade	Filtration area	Retention rate	Units/Pack
29MDL10-MC5FF--V	5"   TC 3/4"	DL10	0.04 m <sup>2</sup>	0.8/ 0.1 µm	2
29MDL20-MC5FF--V	5"   TC 3/4"	DL20	0.04 m <sup>2</sup>	0.8/ 0.4 µm	2
29MDL60-MC5FF--V	5"   TC 3/4"	DL60	0.04 m <sup>2</sup>	8.0/ 0.8 µm	2
29MDL75-MC5FF--V	5"   TC 3/4"	DL75	0.04 m <sup>2</sup>	10/ 2.0 µm	2
29MDL90-MC5FF--V	5"   TC 3/4"	DL90	0.04 m <sup>2</sup>	15/ 2.0 µm	2

### Sartoclear® Depth Filter Cassettes Single Layer

Art-No.	Grade	Filtration area	Retention rate	Units/Pack
29XS010-FCA	S010	0.2 m <sup>2</sup>	0.1 µm	1
29XS020-FCA	S020	0.2 m <sup>2</sup>	0.2 µm	1
29XS040-FCA	S040	0.2 m <sup>2</sup>	0.4 µm	1
29XS080-FCA	S080	0.2 m <sup>2</sup>	0.8 µm	1
29XS200-FCA	S200	0.2 m <sup>2</sup>	2.0 µm	1
29XS400-FCA	S400	0.2 m <sup>2</sup>	8.0 µm	1
29XS010-FCB	S010	0.4 m <sup>2</sup>	0.1 µm	1
29XS020-FCB	S020	0.4 m <sup>2</sup>	0.2 µm	1
29XS040-FCB	S040	0.4 m <sup>2</sup>	0.4 µm	1
29XS080-FCB	S080	0.4 m <sup>2</sup>	0.8 µm	1
29XS200-FCB	S200	0.4 m <sup>2</sup>	2.0 µm	1
29XS400-FCB	S400	0.4 m <sup>2</sup>	8.0 µm	1
29XS010-FCC	S010	1.0 m <sup>2</sup>	0.1 µm	1
29XS020-FCC	S020	1.0 m <sup>2</sup>	0.2 µm	1
29XS040-FCC	S040	1.0 m <sup>2</sup>	0.4 µm	1
29XS080-FCC	S080	1.0 m <sup>2</sup>	0.8 µm	1
29XS200-FCC	S200	1.0 m <sup>2</sup>	2.0 µm	1
29XS400-FCC	S400	1.0 m <sup>2</sup>	8.0 µm	1

### Sartoclear® Depth Filter Cassettes Double Layer

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

### Sartoclear® 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

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

### Sartoclear® Depth Filter Modules Double Layer

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

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