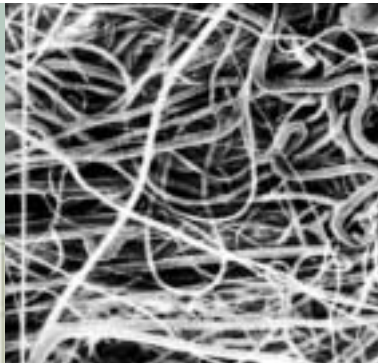




sartorius



Sartofine® PP

The Particle-removing
Multilayer Depth
Filter Cartridge



Introducing our depth filter cartridge.

Sartofine PP, the filter cartridge with the 14 mm thick multilayer consisting of heterogeneous filter zones for progressively finer depth filtration.

Construction.

Our Sartofine filter cartridges contain no pleated filter layers. For application purposes, they feature a 14 mm thick multilayer, consisting of 4 to 9 different filter zones. The number of zones depends on the type of cartridge. Each zone, made up of polypropylene filter layers, is a homogeneous depth filter itself. The nominal retention rating of the respective filter zones becomes increasingly finer in the direction of filtration.

Efficiency.

Particle removal by fractionized depth filtration ensures optimal use of the entire multilayer, which results in a long service life of the filter. The filtration efficiency is enhanced by the filter cake that can be build up within the depths of each filter zone.

This filter cake allows colloids to be retained in the finer filter zones.

Sartofine PP filter cartridges are available with eight different retention ratings ranging from 0.5 µm to 40 µm. Each type has a specially matched filter zone combination.

Mechanical Stability.

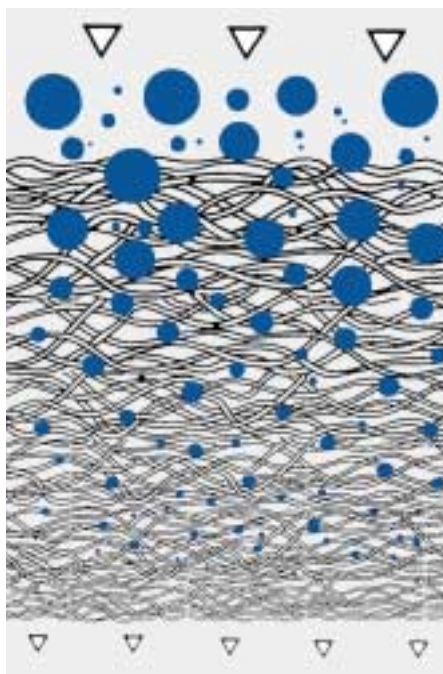
Sartofine PP filter cartridges have been designed for daily routine use. Our special production method of wrapping the filter layers tightly around the supportive core of the cartridge provides high mechanical stability and eliminates the common problem of breakthrough right from the start. The thermally bonded exterior layer and our special welding technique for joining filter layers and end caps allow you to easily backflush the cartridges during cleaning at a pressure up to 3 bar (44 psi).

Effectiveness.

With Sartofine PP filter cartridges, we have succeeded in optimizing the advantages of a thick-layered depth filter, which include:

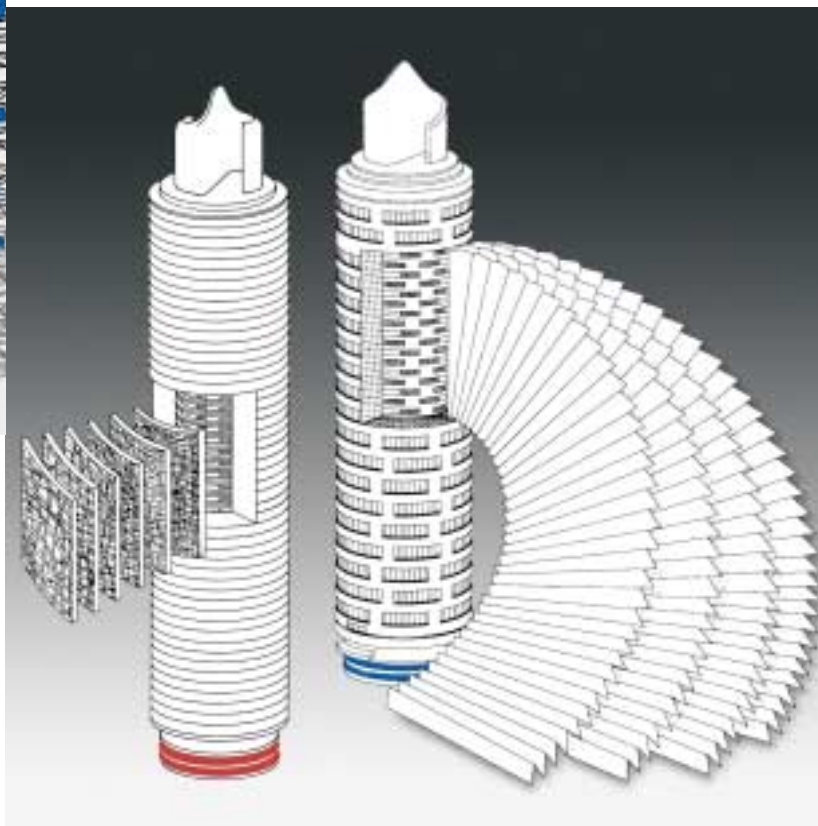
- high dirt handling capacity, in a filter cartridge design:
- a closed, compact system, and
- ease of handling.

In addition to the advantages above, Sartofine PP filter cartridges can be cleaned by back-flushing and are offered at a reasonable price. Therefore, they ensure effective particle removal at a filtration cost you can afford.



Schematic diagram of the heterogeneous multilayer, which consists of several different filter zones.

The diagram below clearly shows the difference between the Sartofine PP filter cartridge (on the left) and a pleated filter cartridge (on the right).



Advantages and applications, nominal retention ratings

Applications.

Whether in the pharmaceutical, chemical, or food and beverage industry, Sartofine PP filter cartridges are used wherever liquids with a wide range of particle sizes need to be prefiltered or clarified.

You can choose from 8 different retention ratings (0.5 µm to 40 µm), depending on the size of the particles to be removed. This variety allows you to select the filter type which best suits your particular application. The following example clearly illustrates this.

Application examples.

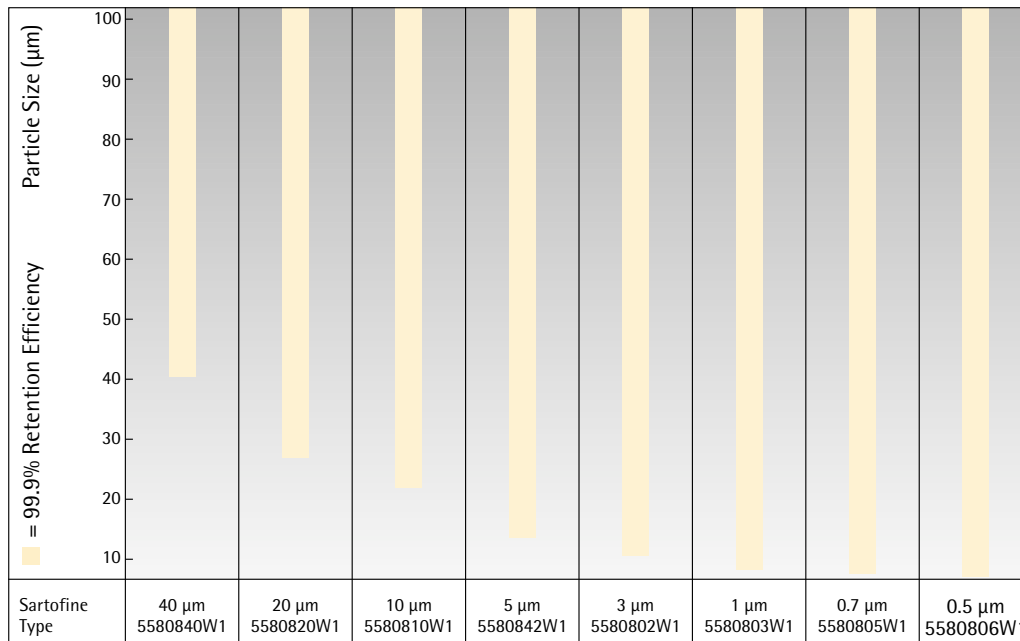
Sartofine PP

40 µm	Removal of coarse particles from rinse water for containers
20 µm 10 µm	Removal of particles upstream of an ion exchanger
5 µm	Protection of RO systems
3 µm 1 µm	Prefiltration of distilled or deionized water for bottle washing machines
0.7 µm	Filtration for complete removal of yeast from beer
0.5 µm	Prefiltration of sera

What advantages do Sartofine PP filter cartridges offer you?

Sartofine PP Features	+ Advantages	= User Benefits
Up to seven staged filter zones.	Particle retention by fractionized depth filtration.	Extremely efficient for particle retention.
Mechanically stable. 14 m thick multilayer filter. Special welding technique for the end caps.	Pressure-resistant in either direction. Back-flushable. Absolutely leak-tight seal between end caps and the filter unit.	No breakthrough. Low filtration costs. No bypass.
Eight different retention ratings available, each with a specially matched filter zone combination.	Covers a wide range of applications.	Tailored filtration system, depending on the size of the finest particle to be removed.
Sartofine PP filter cartridges are installed in stainless steel housings, thus constituting a closed filtration system.	Compact system, which can be directly installed in available piping. Sterilizable with hot water or steam. Short set-up time.	Low investment costs. Take up little space. Less work.
Except for the O-rings (silicone) the entire filter cartridge is made of polypropylene.	Homogeneous materials of construction.	Excellent chemical compatibility.

Nominal retention ratings

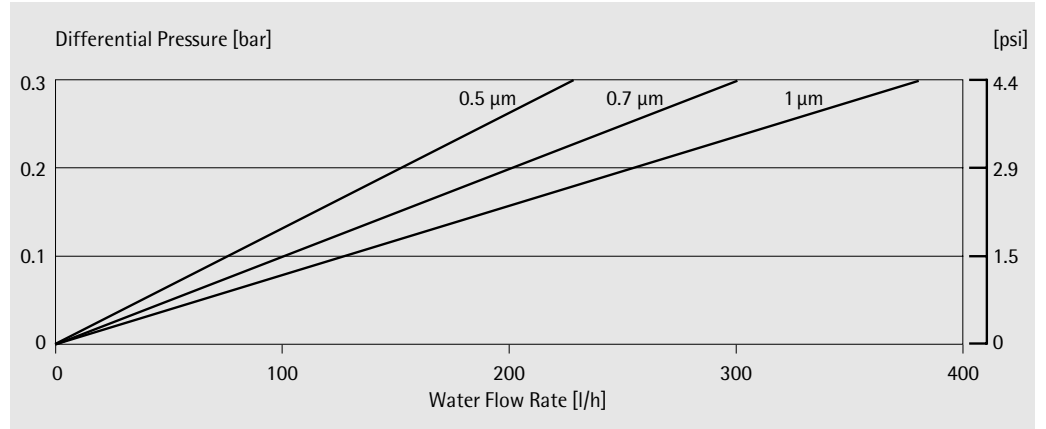


The bar graph above shows the nominal retention ratings (99.9%) of each type of Sartofine PP filter cartridge.

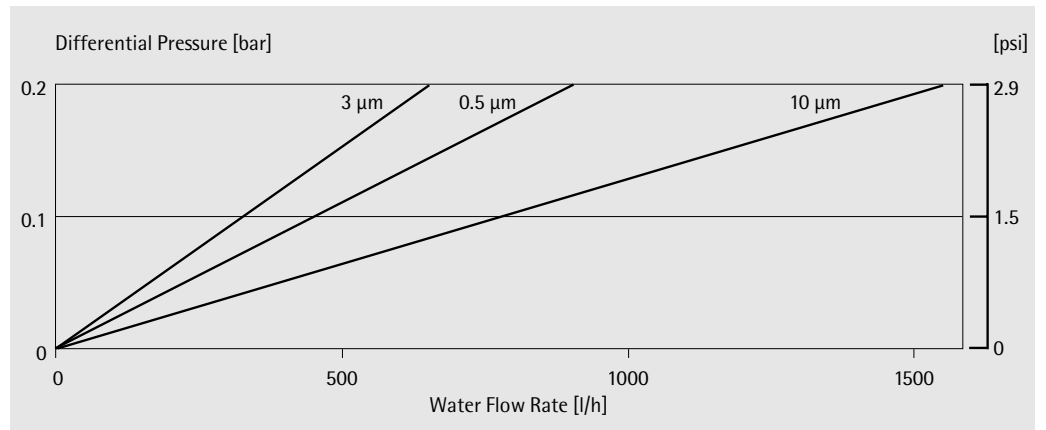
The following measuring method was used: on-line multipass test using a challenge of latex particles suspended in ethanol and a laser particle counter. In addition, the flow rates for water at corresponding differential pressures are indicated on the diagram. These values apply to standard filter cartridges (10").

Flow rates for water

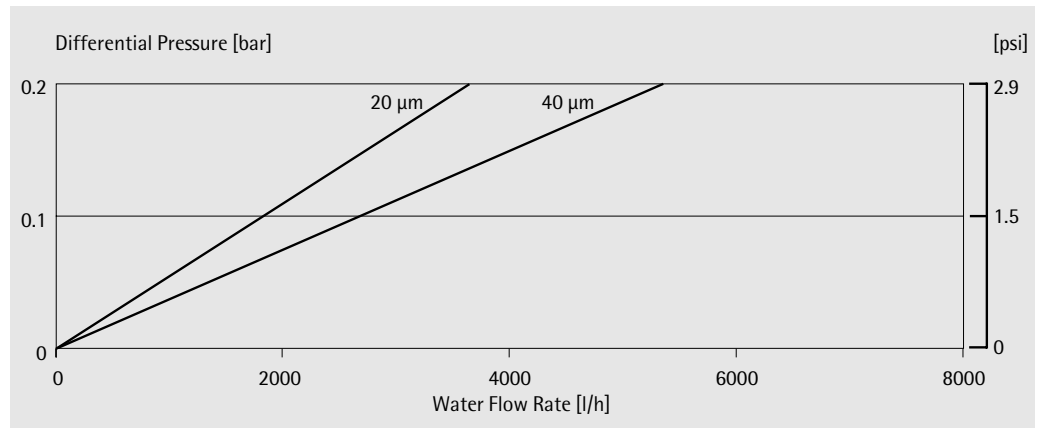
Sartofine 10"
Standard Cartridges,
0.5 μm , 0.7 μm , 1 μm



Sartofine 10"
Standard Cartridges,
3 μm , 5 μm , 10 μm



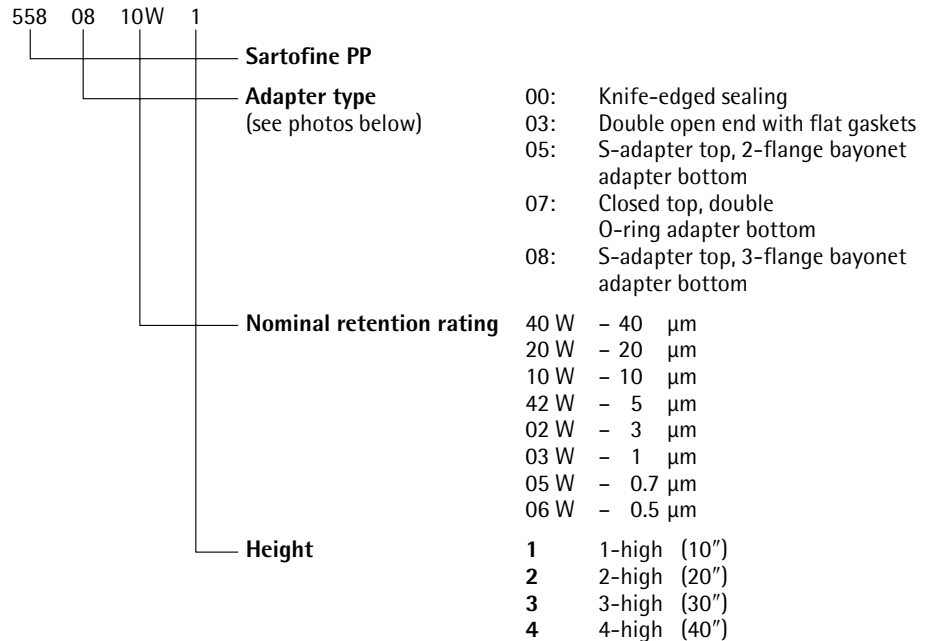
Sartofine 10"
Standard Cartridges,
20 μm , 40 μm



Test filter cartridges were placed into individual Sartorius filter housings (Sartorius housings type 340011P25TT112A), the inlet pressure was held constant at 2.5 bar (36 psi). Flow rates were determined at a water temperature of 20°C using the magnetic inductive flowmeter Fisher & Porter COPA XM D10D1465.

Order Numbers

The diagram on the right shows you how to put together order numbers for Sartofine PP filter cartridges. The order numbers contain the adapter type, nominal retention rating, and height. To obtain a complete order number please combine the applicable numbers or letters in a row.

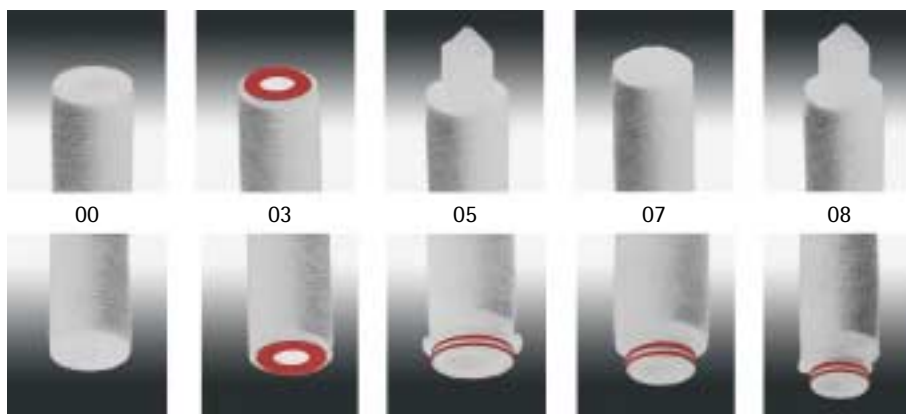


Important information on adapter types. Sartofine PP filter cartridges with the 00 knife-edged sealing should be installed only once in an appropriate filter cartridge housing. After several installations, complete leak-tightness is no longer ensured.

To install a 00 adapter cartridge in a non-Sartorius housing, you will need an additional compensating adapter to make up for the difference in cartridge height.

Backflushing should only be done with adapter types 05 and 08, because only these bayonet adapters ensure that the cartridges will stay put when exposed to back pressure. We also recommend that you use these two adapter types for in-line sterilization of Sartofine PP filter cartridges (the adapters prevent leakage caused by thermal contraction or expansion).

End caps | adapter types.



Specifications

Materials
Polypropylene

Filter
Polypropylene

Core
Polypropylene

End caps
Polypropylene

O-ring
Silicone*

Specifications

Thickness of the multilayer
14 mm

Outer diameter
63 mm

Max. operating temperatur
90°C

Max. differential pressure
5 bar (500 kPa = 73 psi) at 20°C
2 bar (200 kPa = 29 psi) at 80°C

Max. back pressure
3 bar (300 kPa = 44 psi) at 20°C

Sterilization
Autoclaving or in-line steaming
up to 134°C

**Tested Biosafety
(acc. to current USP,
Plastic Class VI)**
Sartofine PP filter cartridges
contain no fibrous materials. All
materials comply with the require-
ment of the Title 21 Code of
Federal Regulations. They are bio-
safe (all-have passed the current
USP Class VI Plastics Test) and are
suitable for contact with foods,
beverages, and pharmaceuticals.

Chemical Compatibility
(See the table on the right)

Key to Symbols:

- = Compatible**
- = Limited compatibility
- = Incompatible

Test Conditions
7 days contact at 20 °C

* EPDM or Viton O-rings optionally
available

** Various factors can influence chemical
compatibility. For this reason, please
verify the listed specifications by
performing a trial filtration run with
the liquid to be filtered.

Chemicals

Sartofine PP without
O-rings | flat gaskets

O-rings | flat gaskets made of:
Silicone (standard) EPDM Viton

Solvents

Solvent	Sartofine PP without O-rings flat gaskets	Silicone (standard)	EPDM	Viton
Acetone	■	-	■	-
Butanol	■	■	■	■
n-Butyl acetate	■	-	■	-
Cellosolve	□	-	□	-
Cyclohexanone	■	-	□	-
Dimethyl formamide	■	□	■	-
Dimethyl sulfoxide	■	-	■	-
Dioxane	□	-	■	-
Ethanol, 98%	■	■	■	■
Ethyl acetate	□	□	□	-
Formamide	■	-	■	□
Gasoline	□	-	-	■
n-Hexane	■	-	-	■
Isobutanol	■	■	■	■
Isopropanol	■	■	■	■
Methanol, 98%	■	■	■	■
Methyl ethyl ketone	■	-	■	-
Methylene chloride	□	-	-	□
Tetrahydrofuran	□	-	-	-
Toluene	■	-	-	□
Trichloroethylene	□	-	□	■
Xylene	□	-	-	□

Aqueous Solutions

Ammonium persulfate, 25%	■	■	■	■
Ferric chloride, 25%	■	□	■	■
Formaldehyde, 30%	■	□	■	■
Hydrogen peroxide, 5%	■	■	■	■
Sodium hypochloride, 5%	■	■	■	■

Acids

Acetic acid, 96%	■	□	■	-
Hexafluorosilicic acid, 50%	□	-	□	■
Hydrochloric acid, 25%	■	-	□	■
Hydrochloric acid, 37%	■	-	-	□
Hydrofluoric acid, 25%	■	-	□	□
Nitric acid, 25%	■	-	□	■
Nitric acid, 65%	□	-	-	□
Perchloric acid, 25%	■	□	■	■
Phosphoric acid, 25%	■	■	■	■
Sulfuric acid, 25%	■	□	■	■
Sulfuric acid, 98%	□	-	-	□
Trichloroacetic acid, 25%	■	-	□	-

Bases

Ammonium hydroxide, 25%	■	■	■	□
Potassium hydroxide, 32%	■	□	■	■
Sodium hydroxide, 32%	■	□	■	■

Sartorius AG
Weender Landstrasse 94-108
37075 Goettingen, Germany

Phone +49.551.308.0
Fax +49.551.308.3289

www.sartorius.com

Sartorius Corporation
131 Heartland Boulevard,
Edgewood, New York 11717, USA

Phone +1.631.2544274
Fax +1.631.2544253
Toll-Free +1.800.3687178

Sartorius Limited
Longmead Business Centre
Blenheim Road, Epsom, Surrey
KT199QN, Great Britain

Phone +44.1372.737100
Fax +44.1372.729972

Sartorius S.A.
4, rue Emile Baudot
91127 Palaiseau, France

Phone +33.1.69192100
Fax +33.1.69200922

Sartorius S.p.A
Via dell'Antella, 76/A
50011 Antella (FI), Italy

Phone +39.055.634041
Fax +39.055.6340526

Sartorius K.K.
No. 3 Hoya Building 8-17
Kamitakaido 1-chome
Suginami-ku
Tokyo 168-0074, Japan

Phone +81.3.33295533
Fax +81.3.33295543

Sartorius S.A.
C/Isabel Colbrand 10-12
Edificio Alfa III
planta 4, of. 121
28050 Madrid, Spain

Phone +34.91.3586100
Fax +34.91.3588804