

Steam Filters

Sinterflo® Sintered Stainless Steel Filter Elements

Porvair Filtration Group manufacture a range of high quality, industry standard equipment sterilisation and processing filters. Our steam filters are available in a selection of grades to meet the particular requirements demanded throughout the production process.

Culinary Steam

Porvair supply a range of filters for the production of particulate-free culinary steam for critical applications that come in direct contact with food, beverages, pharmaceuticals or product contact surfaces. These filters exceed the 3A Sanitary Standards 609-03, constructed to remove more than 95% of 2 micron particles.

Process Steam

Porvair's process steam filters are used where clean, dry steam is critical for plant performance and continuous operation, but where there is no direct contact with the manufactured product.

Porvair's Sinterflo® stainless steel filter elements are available in high quality 316L sintered metal fibre, metal mesh and sintered metal powder media. Our elements have an exceptional dirt holding capacity and are designed to withstand demanding temperature and pressure conditions.

All components used in the construction of our elements are FDA approved to 21CFR, manufactured according to DIN EN ISO 9001 and meet or exceed the latest EC Directives for Food Contact.



Applications

Sterilisation, particulate entrainment and purification using filtered steam is used throughout the production process in applications such as:

- **Sterile Packaging**
For the sterilisation of product packaging for the food, beverage and pharmaceutical industries.
- **Pharmaceuticals**
Used in the purification of product and manufacturing equipment and the prevention of contaminants.
- **Breweries**
For bottling lines, sterilising equipment, removing pipe-scale and prevention of fouling of valves and injectors.
- **Dairies**
For the sterilisation of process equipment and direct/indirect thermal processing of foodstuffs.
- **Food and Beverages**
For bottling and canning processes.
- **Chemical Production**
For the removal of bacteria and contaminants in fermentation and sanitisation processes in fermentors and bioreactors.



Features and Benefits

- Sinterflo® stainless steel elements**
 The Sinterflo® range of filter elements are constructed in stainless steel 316L as standard. These filters are available in a cylindrical element configuration (giving 0.05m² (0.55ft²) of active filtration area per 10" length) and pleated element configuration (giving 0.13m² (1.40ft²) of filtration area).
- Broad range of high quality stainless steel filters**
 Our Sinterflo® steam cartridges are manufactured in a pleated or cylindrical construction and are available in a wide range of sizes, micron ratings (typically 1µm to 25µm) and connection options to ensure our filters meet the majority of steam filtration requirements.
- Robustness of design**
 Our high quality stainless steel Sinterflo® F Fibre, Sinterflo® M Mesh and Sinterflo® P Powder cartridges have a fully welded construction ensuring an excellent resistance to high temperature environments.
- Efficient and cost effective**
 Excellent cleanability, longer filter life and reduced operating costs.
- High tensile strength**
 The method of construction and materials used guarantees cartridge integrity allowing for a typical operation in steam from -51°C (-60°F) to 204°C (400°F), seal dependant, and up to 5bar (72psi) differential pressure in normal flow direction.

Stainless Steel Media Grades

Stainless Steel Grades	Micron Rating (µm) (micron code)	Liquids (µm) (99.9% efficiency)	Gases (µm) (99.9% efficiency)
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Sinterflo® F Stainless Steel Media Grades

F3	3 (0003)	3*	1
F5	5 (0005)	5*	1.5
F10	10 (0010)	10*	3
F15	15 (0015)	15*	4
F20	20 (0020)	20*	6
F30	30 (0030)	30*	8
F40	40 (0040)	40*	11
F60	60 (0060)	60*	16

Sinterflo® M Stainless Steel Media Grades

M3	3 (0003)	10**	2
M5	5 (0005)	18**	13
M10	10 (0010)	25**	18
M15	15 (0015)	35**	25
M25	25 (0025)	30**	20
M30	30 (0030)	40**	30
M35	35 (0035)	50**	45
M70	70 (0070)	75**	60

Sinterflo® P Stainless Steel Media Grades

S10	6 (0006)	6*	0.7
S20	10 (0010)	10*	0.8
S30	15 (0015)	15*	4
S36	25 (0025)	25*	5
S40	30 (0030)	30*	6
S41	40 (0040)	40*	8
S50	60 (0060)	60*	15

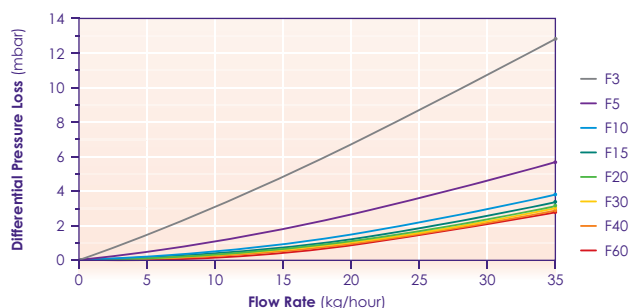
* Single Pass Efficiency Test in accordance with ASTM795 ACFTD.

** Hard spherical particle maximum passed.

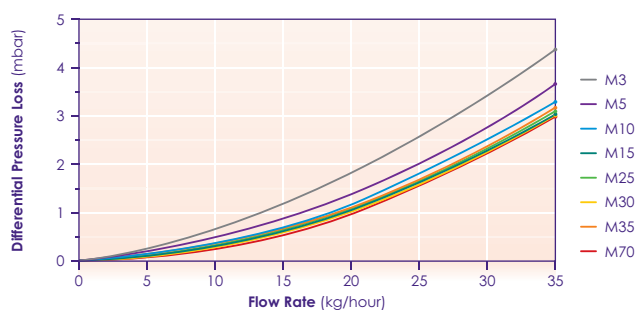
Typical Flow Rates in Steam

The flow rates in the graphs below are calculated using a 10" pleated element for fibre and mesh, and a 10" cylindrical element for powder. The conditions are referenced at a temperature of 100°C (212°F) and a pressure of 1 bar absolute. Please contact **Porvair Filtration Group** for information on other steam conditions.

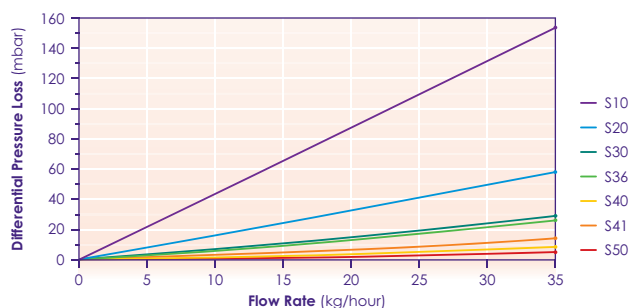
Sinterflo® F Sintered Metal Fibre



Sinterflo® M Sintered Metal Mesh



Sinterflo® P Sintered Metal Powder



Specifications and Ordering Information

Materials of Manufacture

316L stainless steel as standard.

Cartridge Dimensions

Diameter*: 66mm (2.6") as standard.
 Lengths*: 125mm (5"), 250mm (10"), 498mm (20"),
 745mm (30") and 1012mm (40").

* Other diameters and non-standard lengths available on request.

Effective Filtration Area (per 10" length)

Pleated element: 0.13m² (1.40ft²)
 Cylindrical element: 0.05m² (0.54ft²)

Gaskets and O-Rings

EPDM as standard. Other materials are available on request or by process selection.

Typical Maximum Differential Pressure* (all lengths)

Normal flow direction: up to 5bar (72psi)
 Reverse flow direction: up to 3bar (44psi)

* Grade dependant.

Ordering Information

Sinterflo® F and M (Pleated or Cylindrical): 250 [Table 1](#) - [Table 2](#) - [Table 3](#) - [Table 4](#) - [Table 5](#) - [Table 6](#) - [Table 7](#)

Example part number: [2502-10-0025B-EGF](#) SOE 226 fitting/pleated, 10" element, 25µm rating, Sinterflo® M, EPDM seal, guard, fin.

Sinterflo® P : 405 [Table 1](#) - [Table 2](#) - [Table 3](#) - [Table 5](#) - [Table 7](#) - [Table 8](#)

Example part number: [2502-10-0025B-EGF](#) SOE threaded, 5" cartridge, 40 rating, EPDM seal, 1.5" NPT thread option.

Table 1 End Fittings

Sinterflo® F and M		Sinterflo® P	
Mesh & Fibre		Powder	
0	DOE fitting/pleated	3	SOE 222 fitting
1	DOE fitting/cylindrical	4	SOE 226 fitting
2	SOE 226 fitting/pleated	5	SOE threaded
3	SOE 226 fitting/cylindrical	6	DOE fitting
4	SOE 222 fitting/pleated		
5	SOE 222 fitting/cylindrical		
7	SOE threaded/pleated		
8	SOE threaded/cylindrical		

DOE: Double Open Ended fitting.

SOE: Single Open Ended fitting.

Table 4 Media Option

C	Sinterflo® F (fibre)
B	Sinterflo® M (mesh)

* Only applies to mesh and fibre

Table 6 Guard/Support Option

G	Guard (pleated only)
S	Backflush support (cylindrical only)
N	None

* Only applies to mesh and fibre

** "S" option only on cylindrical design

*** "G" option only on pleated design

**** "B" option only on pleated design

Table 5 Seal Material*

C	Chemraz®
E	EPDM
N	Nitrile
P	PTFE (DOE only)
S	Silicone
F	FEP coated Viton® (SOE only)
T	FEP coated Silicone (SOE only)
Y	FEP coated EPDM (SOE only)
V	Viton®
X	No seal

* Omit 'Table 5' for the threaded option.

Table 2 Nominal Element Length*

05	5" (125mm)
10	10" (250mm)
20	20" (498mm)
30	30" (745mm)
40	40" (1012mm)

* Other non-standard lengths are available on request.

Table 7 Options*

Fin Option (SOE 226 and SOE 222)	
F	Fin
N	No fin
B	Band

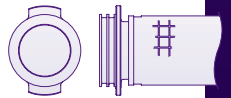
* Not available on DOE designs - 2500, 2501, 4056

Table 8 Threaded Option

Sinterflo® F and M		Sinterflo® P	
Pleated	Cylindrical		
1	1" NPT	1	1" NPT
2	1.5" NPT	2	1.5" NPT
3	1" BSPT	3	1.5" BSPP
4	2" BSPT	4	2" BSPT
5	1.5" BSPT	5	1" BSPT
6	2" NPT	6	1.5" BSPT
7	1.25" BSPT		

* Only available on 2507, 2508, 4055

226 Fitting



222 Fitting



Double Open Ended Fitting



Threaded End Fitting



Filter Regeneration

The Porvair range of steam filters may be regenerated to extend the life and efficiency of the elements. The effectiveness of the filter cleaning process is influenced by the level of contamination in the fluid stream and the management of the cleaning programme.

Filter cleaning using the reverse flow technique may be very effective in fluid streams containing very low contaminants. However, care should be taken not to exceed the reverse pressure in this operation. Other techniques may be employed for filters that are heavily contaminated or contain aggressive impurities.

An overview of these cleaning methods is listed below. Please consult a filter cleaning specialist for further information on these techniques.

Reverse Flow Cleaning

This cleaning method involves washing the filter media with a reverse flow of clean liquid or gas. This flow can be pulsed to further enhance the cleaning process by releasing stubborn particles retained on the surface of the element.

Ultrasonic Cleaning

This technique involves the immersion of the filter elements in a non-flammable solvent or water bath. Ultrasonic waves are then used to remove particles embedded within the filter media. Elements which are ultrasonically cleaned may be returned to a near original condition.

Pyrolysis Furnace Cleaning

This cleaning process involves the gentle decomposition of particles from the filter element, at a variable working temperature, within a vacuumed pyrolysis furnace. This is ecologically preferable as no solvents or detergents are needed in this cleaning method.

Forward Flow Cleaning Using Solvents

Solvents or detergents are sometimes required in the filter cleaning process for the removal of oil or oil-based contaminant embedded in the media, or to release particles retained within the contaminant embedded in the media. O-ring compatibility with the solvent should always be verified prior to solvent cleaning. The filter must always be flushed with cold water after the solvent cleaning process, and then allowed to fully dry.

Filter Housings

Porvair Filtration Group also manufacture a full range of stainless steel Industrial and sanitary housings, in a single or multi-round design. These are designed to be compatible with your specific steam process conditions. Please contact a Porvair representative for further information.

Quality Assurance

Quality is at the heart of every stage of our operation and a fundamental part of our culture. We are ISO9001 approved at all of our manufacturing facilities and hold many other accreditations for the various industries we serve.

Product Innovation, Manufacturing and Testing

We understand that product development involves building multidiscipline teams, not only within the company, but often in partnership with our customers, improving project efficiency and ensuring complete customer satisfaction. This continuous development of products and materials is vital, to enable us to offer new and better solutions to applications. **Porvair** has implemented various methodologies to drive out waste and process variance across the company to achieve the ultimate goal of zero defects.

We have a dedicated team of scientists, engineers, production and quality professionals working towards the best possible filtration solutions for our customers. We have a fully equipped test house and laboratory, and our experienced design engineers use the latest AutoCAD® technology, with 3D solid modelling, integrated with a finite element analysis system to give full structural assurance capability.



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