

Sinterflo®

Sintered Metal Filter Cartridges and Elements



Porvair Filtration Group

Porvair Filtration Group is an international leader in the development and supply of materials and products for applications in filtration and separation.

Porvair manufacture in the UK, USA and China and have an extensive network of sales offices and distribution channels throughout the world. Our expertise is wide and varied, with products used in markets such as:

- Aerospace and Defence
- Food and Beverage
- Gasification
- Life Sciences and Scientific
- Microelectronics
- Nuclear
- Pharmaceutical
- Porous Media and OEM Materials
- Printing
- Process
- Transportation
- Water

Our ongoing success is based on a dedication to technical excellence and superior customer service. Our future will be built on our investment in research and development to provide innovative new products that exceed the expectations of our customers in solving the challenges that they face.



Porvair Filtration Group manufacture a range of industry standard stainless steel filter cartridges suitable for use in a wide range of industries, including petrochemical.

The robustness of design, that is provided by a fully welded metallic element or cartridge, is required to resist deterioration in harsh operating environments where the fluids present are aggressive, high temperatures are experienced or where the operating differential pressures are high.

For some filtration applications, the use of a conventional disposable polymeric cartridge may simply be environmentally unacceptable and the use of a re-cleanable cartridge will often give more cost effective filtration.

These filter elements are offered in the following media configurations:

- Sinterflo® F Sintered Metal Fiber
- Sinterflo® P Sintered Metal Powder
- Sinterflo® M Sintered Metal Mesh
- Sinterflo® MC Sintered Metal Composite



Cartridge and Element Construction

The Sinterflo® range of filter cartridges and elements are constructed in stainless steel 316L as standard. These filters are available in a cylindrical element configuration (giving 0.55ft² (0.05m²) of active filtration area per 10" length) and pleated cartridge configuration (giving 1.40ft² (0.13m²) of filtration area).



The cylindrical element design provides a sleeve of filter medium (protected and supported by woven meshes) around a support core. The pleated cartridge design uses a precision pleated pack (again comprising protection and support meshes either side of the filter medium) around a support core to provide nearly three times the effective filtration area of the cylindrical element.

In both designs the filter media and support meshes are TiG seam welded and the media support core and end fittings are fully TiG welded together. This method of construction guarantees cartridge integrity, eliminating the risk of bypassing and the presence of extractables derived from bonding agents.

The method of construction and materials used allow for operation from -238°F (-150°C) to 572°F (+300°C) and up to 367psi (25bar) differential pressure in normal flow direction. Higher operating temperatures and differential pressures can be accommodated by design.

In the double open ended configuration, in addition to the support core, there is a 1" (25mm) inner core to assist the location of multiple length units onto tie rods. The pleated cartridge style has an outer guard (optional for the cylindrical element design) for protection and to allow for back flushing up to 44psi (3bar).

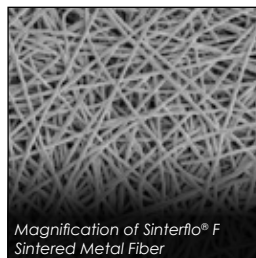


Sinterflo® F Sintered Metal Fiber



Manufactured from random laid metal fibers, sinter bonded to form a uniform high porosity filter medium, Sinterflo® F offers:

- high permeability
- low clean and operating pressure drops
- excellent cleanability and dirt holding capacity
- long life
- minimal maintenance costs
- Pleatable, offering higher filtration area per element
- available in 316L as standard with other alloys such as 304L stainless steel, Inconel® 601, Hastelloy® X, NiCrMo Alloy 59 and FeCrAl Alloy on request.

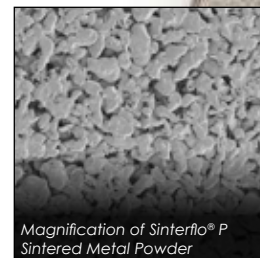


Sinterflo® P Sintered Metal Powder



A robust filter material manufactured from sinter bonded metal powders, Sinterflo® P offers:

- low permeability, but extremely robust construction
- depth filtration
- high resistance to corrosion
- self supporting construction eliminating the need for additional hardware
- efficient and cost effective
- available in 316L as standard with other alloys such as 304L stainless steel, Inconel® 600, Hastelloy® X and Monel® on request, as well as sintered powdered bronze.



Sinterflo® M Sintered Metal Mesh



A multi layered, diffusion-bonded, precision stainless steel woven mesh, Sinterflo® M offers:

- high permeability
- high strength
- available in both Lo Pass and Hi Pass media
- available in a wide range of mesh sizes and separation ratings
- available in a range of plate sizes and other shapes, this layered mesh can be custom designed for non-standard applications
- available in 316L stainless steel as standard with other alloys such as 304L stainless steel, Inconel®, Hastelloy® and Monel® on request.



Magnification of Sinterflo® M Sintered Metal Mesh

Sinterflo® MC Sintered Metal Composite



A multi-layer precision filter mesh that is produced using a novel sintering process, Sinterflo® MC offers:

- a superior, mechanically strong structure
- fabricated shapes without expensive support structures or joining strips
- can be reused as the structure allows repeated cleaning, providing an economical choice.
- non-shedding media that provides resistance to mechanical abrasion
- easily custom-engineered to meet required specifications of materials, strength, flow requirements, thickness, micron rating and environment
- depending on atmospheric conditions, it can be used in temperatures up to 1004°F (540°C), with intermittent operating peaks up to 1202°F (650°C)
- primarily made from 316L stainless steel, it is also available in Inconel®, Hastelloy® and Monel® materials for use in the most aggressive environments
- resistance to most chemicals.



Cross section of Sinterflo® MC Sintered Metal Mesh Composite

Technical Specifications

Materials of Manufacture

316L stainless steel standard. 304L stainless steel, Incone®, Hastelloy®, Monel®, NiCrMo Alloy 59 and FeCrAl Alloy on request or by process selection. Additional alloys are available on request.

Cartridge Dimensions

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

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

Effective Filtration Area (per 10" length)

Pleated cartridge: 1.40ft² (0.13m²)
Cylindrical cartridge: 0.55ft² (0.05m²)

Gaskets and O-Rings

EPDM as standard. Nitrile, PTFE, Silicone, Viton® and PTFE coated Viton® available on request or by process selection

Typical Maximum Differential Pressure (all lengths)

Normal flow direction: 218 to 367psi (15 to 25bar)
Reverse flow direction: 44 to 145psi (3 to 10bar)

Operating Temperature

Maximum continuous: From -195°C (-319°F) to 340°C (644°F) seal limiting,
From -269°C (-452°F) to 1000°C (1832°F) alloy dependant.

Pleated and Cylindrical Cartridge Ordering Codes

Sinterflo Table 1 - Table 2 Table 3 - Table 4 - Table 5 - Table 6 Table 7 Table 8

Example part number: M - 222P - 0020 - 10 - ENF Sinterflo M, 222 fitting, pleated, 20µm rating, 10" cartridge, EPDM seal, no guard, fin option.

Table 1	Media Type
F	Sinterflo® F (fiber)
M	Sinterflo® M (mesh)
P	Sinterflo® P (powder)
MC	Sinterflo® MC (mesh composite)

Table 2	End Fitting
226	226 fitting
222	222 fitting
DOE	Double open ended fitting
NP1	1" NPT
NP5	1.5" NPT
NP2	2" NPT

Table 3	Cartridge Type
P	Pleated
C	Cylindrical

Table 4	Micron Rating
0003	3µm
0005	5µm
0010	10µm
0020	20µm
0030	30µm
0040	40µm
0050	50µm

Note: Other standard cartridges with higher micron ratings are available on request.

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

Note: Other non-standard lengths are available on request.

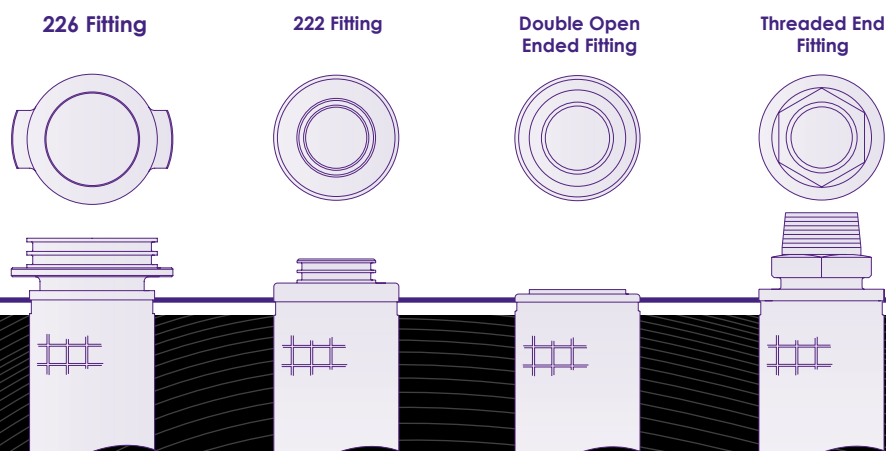
Table 6	Seal Material
E	EPDM*
N	Nitrile
S	Silicone
T/P	PTFE
V	Viton®*

*FDA approved seal material.

Table 7	Guard/Support Option
G	Guard
S	Support
N	None

Table 8	Fin Option
F	Fin
N	No fin

Cartridge End Fittings

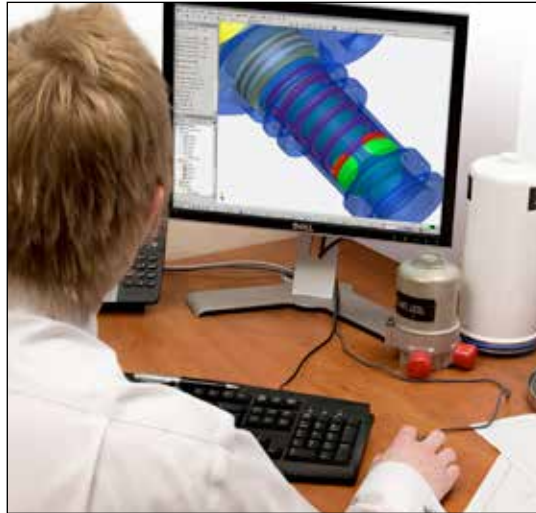


Porvair Filtration Group has a policy of continuous improvement in all areas of its business. Listening to the customers' present and future requirements is a vital part of our operations and a key part of driving change.

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.

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





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