

Media and Materials



An extensive range of porous metal and polymeric materials are manufactured to provide optimum solutions for a wide variety of applications.

These materials can be purchased for OEM products or be integrated and package into finished products.

Core materials are:

- **Sinterflo® sintered porous metal materials**
Mainly sintered porous stainless steel and bronze materials, sintered metal fibre and multi-layer stainless steel meshes
- **Vyon® sintered porous plastic materials**
Mainly sintered porous polyethylene and polypropylene materials

The applications for these materials include:

- Filtration, many and diverse applications including air, water, steam and aggressive chemicals
- Battery vents and flame arrestor plugs
- Flame arrestors for gas sensor protection
- Powder fluidisation and solids handling
- Silencing
- Vacuum tables
- Sensor protection
- Sparging
- Fragrance emanation and chemical controlled release

Sinterflo® F

Sintered Metal Fibre



Manufactured from randomly laid metal fibres, sinter-bonded to form a uniform high porosity filter medium, Sinterflo® F demonstrates a significantly low pressure drop, high permeability and excellent dirt holding capacity.

With the feasibility to formulate metal fibres to meet specific application requirements, combined with inherent durability, sintered metal fibre filters can be cleaned in-situ without interrupting process flow, this provides the ultimate in process economics by minimising downtime.

Typical Applications

- Catalyst recovery and retention
- Gasification
- Chemical production
- Vent filters
- Agrochemical applications
- Liquid and gaseous ammonia
- Pharmaceutical powder recovery
- Steam filtration
 - Culinary steam
 - Process steam

Features and Benefits

- **Resistant to high temperatures and corrosive environments**
Suitable for aggressive air and liquid filtration applications
- **Can be cleaned in-situ**
Reduces downtime to a minimum, providing excellent process economics
- **Pleatable structure**
Higher surface area with excellent dirt holding capacity for longer on-stream life
- **High void volume**
High permeability combined with low pressure drop

Ordering Information

For ordering information please contact a member of the sales team.

Sinterflo® P

Sintered Metal Powder



A robust material is manufactured from sinter-bonded metal powders. Primarily produced in 316/316L grade for use in temperatures up to 540°C (1,004°F) depending on process conditions and offering resistance to most chemicals. Sinterflo® P media can also be produced in other grades of stainless steel and alloys such as Inconel®, Hastelloy® and Monel®.

Sinterflo® P powder media can be manufactured in both disc format or in cylinder format. For cylinders, our isostatic pressing ensures greater media uniformity with no welds, leading to increased corrosion resistance.

Typical Applications

- Catalyst recovery
- Polymer melt
- Gasification
- Chemical production
- Slurry oils
- Steam filtration
 - Culinary steam
 - Process steam

Features and Benefits

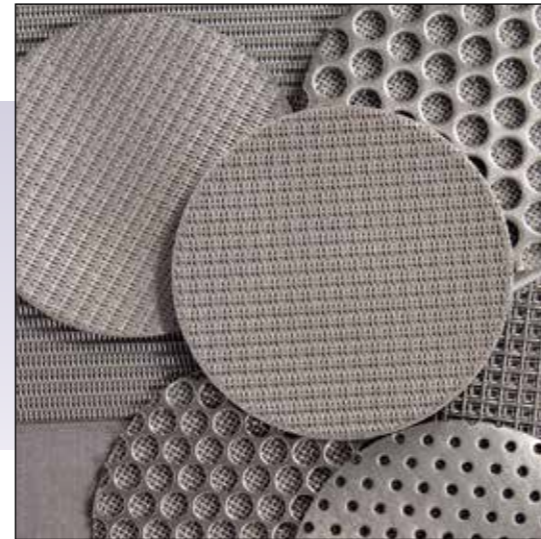
- **Resistant to high temperatures and corrosive environments**
Suitable for aggressive air and liquid filtration applications
- **Strength and Robustness**
Ensures reliability and longer on-stream service life
- **Excellent media uniformity**
Allows consistent filtration and effective loading
- **Seamless structure**
Weld free, giving increased corrosion resistance

Ordering Information

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Sinterflo® M

Metal Mesh



Precision woven meshes in various types of weaves, from plain square mesh to Dutch (Hollander) Twill Weave, to give the most defined absolute rating.

Plain square weave for simple sieving duties through various weave patterns (Reverse Plain Dutch, Broad Mesh Twill and Single Plain Weave) to Dutch Twill Weave to provide for the most comprehensive selection of surface filtration duties.

Typical Applications

- Catalyst recovery and retention
- Gasification
- Chemical production
- Vent filters
- Agrochemical applications
- Liquid and gaseous ammonia
 - Culinary steam
 - Process steam

Features and Benefits

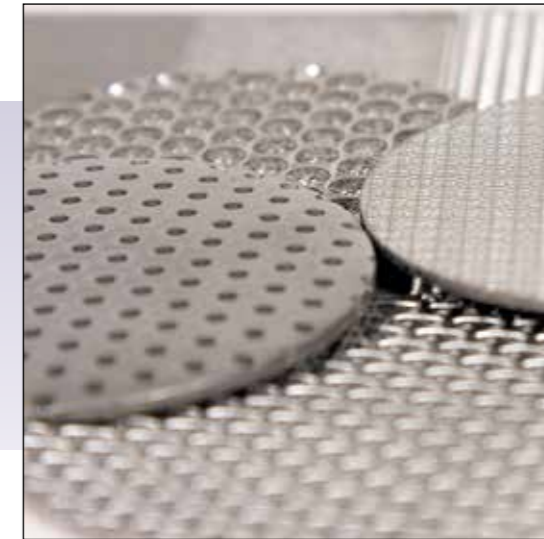
- Good permeability
- High tensile strength
- Available from single wrap designs through to complex multi-layered structures in pleated constructions to optimise the area available
- Some meshes available in a diffusion bonded versions to increased performance security of pore shape and size
- Available in the broadest range of pore sizes of any filter media type
- Available in 316/316L stainless steel as standard with other alloys such as 304L stainless steel, 904L stainless steel, Inconel®, Hastelloy®, Monel® and Fecralloy® on request

Ordering Information

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Sinterflo® MC

Sintered Metal Mesh Composite



Multi-layer precision filters, produced using a novel sintering process resulting in superior mechanically strong structures.

Primarily made from 316/316L stainless steel, also available in Inconel®, Hastelloy® and Monel® materials for use in the most aggressive environments.

Depending on atmospheric conditions, our stainless steel option can be used in temperatures up to 540°C (1,004°F), with intermittent operating peaks up to 650°C (1,202°F), and are resistant to most chemicals.

Formats available include flat sheet, custom shapes, welded cones and welded cylinders, and the materials can be manufactured in a variety of layer combinations depending on your specific application.

Standard material combinations can include perforated plates for additional support.

Sinterflo® MC is available in a range of filtration grades from 2 micron.

Typical Applications

- Powder fluidisation
- Liquid applications
- Slurry oils
- Steam filtration
 - Culinary steam
 - Process steam

Features and Benefits

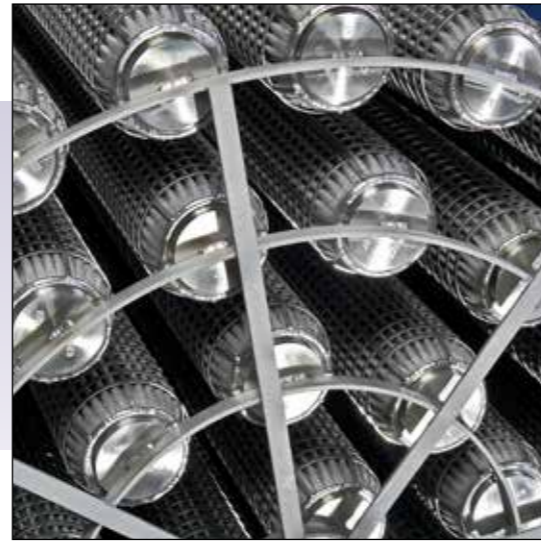
- **Fabricated shapes without expensive support structures or joining strips**
Offers robust and self-supporting structures
- **Can be cleaned repeatedly**
Suitable for reuse; providing an economical choice
- **Non-shedding media**
Provides resistance to mechanical abrasion
- **Easily custom-engineered**
To meet required specifications of materials, strength, flow requirements, thickness, micron rating and environment

Ordering Information

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Porvair Sinterguard®

Duty Extension Treatments for Sinterflo® Cartridges and Media



To improve the performance and lifetime of our metallic filters, we have developed the Porvair Sinterguard® surface modification technologies.

Porvair Sinterguard® technologies are proprietary processes that can be applied to our metallic filter elements to enhance their material properties in challenging environments.

The treatments modify the surface of the filter by the application of a chemical vapour deposition process that enhances durability and system performance, reducing overall life cycle cost.

Applications

The technologies are suitable for a range of applications in demanding environments. Ideal for use in refinery or chemical processes where hot or corrosive fluids would otherwise be detrimental to filter lifetime or integrity.

As part of our pulse jet cleaning system, Porvair Sinterguard® provides enhanced *in-situ* cleaning to ensure differential pressure rise is minimised for increased on-stream lifetime.

Porvair Sinterguard® PHC

PHC Corrosion Resistance

Porvair Sinterguard® PHC extends the life of 316/316L stainless steel and exotic alloys in highly corrosive fluid environments up to 500°C (932°F) depending on the environment.

The graph depicts simplistically the elemental structure of the surface modification. It provides a modification of the base metal in the form of a transition layer, as well as a discrete surface coating, inhibiting the attack of corrosive fluids across a wide range of pH conditions.

Numerous specification based trials have been applied for wet corrosion trials including;

- Salt spray to ASTM D117
- Stress corrosion to ASTM G36
- Pitting and crevice corrosion to ASTM G48B
- Cyclic polarisation to ASTM G61
- Condensing humidity to ASTM D4585.

Corrosion rate comparisons (at 22°C)		
Corrosive agent	Untreated 316/316L SS MPY units (0.001" per year)	Porvair Sinterguard® PHC MPY units (0.001" per year)
6N HCl (21.88%)	114	2.7
6N HBr (48.55%)	3.4	0.8
5% HF	120	80.4
25% H2SO4	54.6	5.4
Conc. HNO3	0.78	0.10
85% H3PO4	0.62	0.08

Features and Benefits

Increased chemical resistance

The stability of 316/316L is enhanced for many acidic applications including:

- hydrochloric acid (HCl)
- nitric acid (HNO3)
- sulphuric acid(H2SO4)

For H2SO4 (sulphuric acid) at a 0.3% concentration (w/w), the PHC treatment resulted in a 16 times improvement in reducing corrosion. At a 10% concentration (w/w) Sinterguard® PHC resulted in a 10 times improvement in reducing corrosion when compared to 316/316L stainless steel.

Increased performance

For applications involving various concentrations of hydrochloric acid (HCL) this surface modification has been compared with other materials such as Hastelloy® C-22 and has presented the lowest corrosion rate with a 103 times improvement over the 316/316L stainless steel corrosion rate.

Improved cleanability

This surface modification is specifically functionalised to reduce the surface energy on the materials exposed surface, thereby inhibiting the ability of various contaminants to adhere to the filter media.

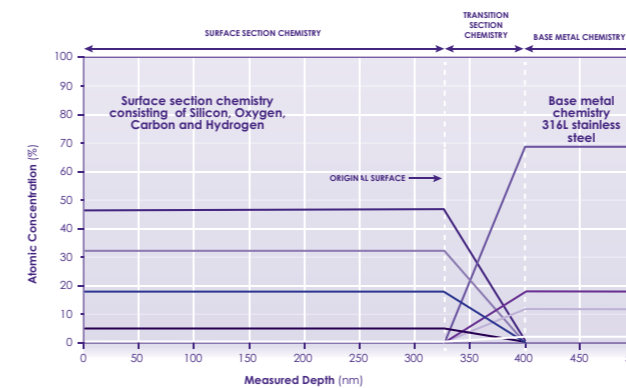
This reduction in adhesion improves the efficacy of *in-situ* cleaning processes such as pulsejet blowdown (gas) and backwash (liquid) extending the potential for increased on-stream operational or campaign life.

This benefit is also prevalent in offline or remote cleaning, permitting improved recovery of the differential pressure.

Corrosion resistance

In specific trials, performed in accordance with standard controlled conditions, the rate of corrosion has been measured for a quantitative comparison to be produced.

Porvair Sinterguard® PHC Simplistic Structure Representation



Porvair Sinterguard® HTR

HTR High Temperature Gaseous Duties

Porvair Sinterguard® HTR extends the service life of 316/316L stainless steel and exotic alloys at elevated temperatures.

The HTR treatment is application specific, formulated to suit the process conditions of more elevated temperature applications, up to 800°C (1,472°F), depending on the environment.

This treatment has the added ability to extend the operating conditions of the filter elements and cartridges in higher temperature gaseous duties.

Features and Benefits

Increased chemical compatibility

The HTR surface modification is highly effective in providing a barrier resistance to the effect upon various base metals (316/316L stainless steel, Hastelloy®, Inconel® and various iron/ chrome/ alumina alloys) in particular duties where sulphur (H2S, COS) and/or chlorine (HCl) is present. The HTR surface modification is not suitable for basic solutions, pH limit being 8.

Increased filter life

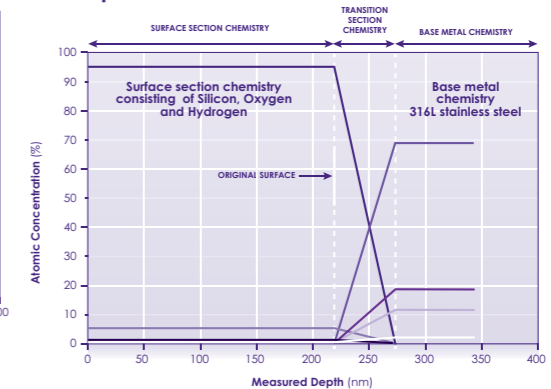
The addition of the HTR coating to 316/316L stainless steel can increase the filter durability by 20 times, given conditions of 2% H2S at a temperature of 350°C.

Increased temperature resistance

In specific applications the surface modification has provided protection and extended life of up to 15 times over 316/316L stainless steel including:

- Biomass gasification (3% H2S, >20% H2O and a temperature in excess of 500°C),
- Coal and petcoke gasification (0.4 to 2% H2S, up to 50% H2O and temperatures up to 380°C)
- A variety of other high temperature applications containing chlorine, fluorine or sulphur elements.

Porvair Sinterguard® HTR Simplistic Structure Representation



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Vyon® Sintered Porous Plastics



Excellent chemical compatibility, exceptional strength and resistant to most acids, bases, many organic chemicals and temperatures up to 110°C (230°F).

Produced in both sintered porous polyethylene and polypropylene, materials are available in:

- Roll
- Sheet
- Cut shapes
- Cones
- Moulded formats

Typical Applications

- Domestic water filters
- Activated carbon filters
- Chemical filters
- Air and dust filters
- Fluidisation and aeration of bulk solids
- Battery vents
- Pneumatic silencers
- Water and effluent aeration
- Fragrance emitters
- Vacuum platens and cones
- Vacuum hold down table covers

Features and Benefits

- **Strong lightweight and self supporting**
Versatile material that can be manufactured in a variety of shapes and sizes
- **Narrow controlled pore size distribution**
Very efficient and effective filtration material
- **High and even porosity**
Low pressure drop and even flow
- **Chemically inert**
Resistant to many chemicals making it suitable for many applications.

Ordering Information

For ordering information please contact a member of the sales team.

Vyon® Material Range

Through a range of proprietary techniques, our advanced Vyon® materials deliver enhanced performance techniques. Below are the media grades and the standard and specialist treated materials available:

Vyon® Media Grades

Name	Filtration Grades	
	Liquids (µm)*	Gases (µm)
Vyon® T	10	2
Vyon® M	6	1
Vyon® D	15	6
Vyon® F	35	10
Vyon® HP	70	30

All Vyon® grades are available in polyethylene.

Only Vyon® D, F and HP grades are available in Polypropylene.

Vyon® Hydrophobic

Our hydrophobic Vyon® is permanently treated to prevent the material from wetting-out in many organic solvents.