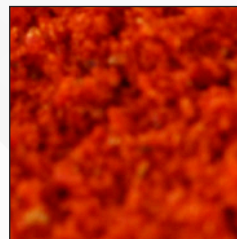
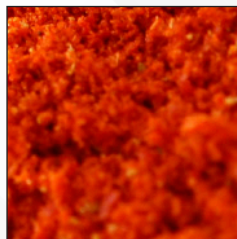
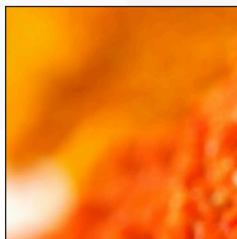
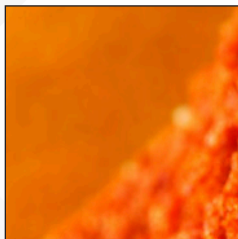
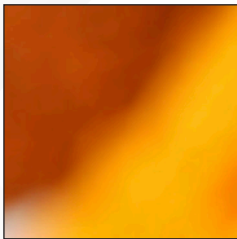
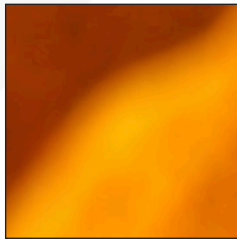
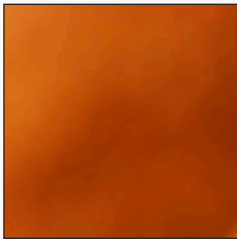
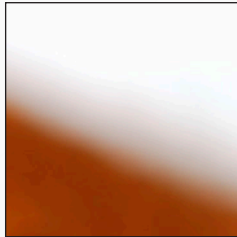


Powder Handling

In the Food, Pharmaceutical, Industrial,
Construction, Chemical and Plastic industries



Porvair Filtration Group in the Powder Handling Industries

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

Porvair manufactures in the UK and USA and has 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 is a filtration company with considerable experience in the powder handling industry, specialising in the manufacture of high performance powder fluidising materials.

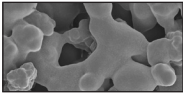
Fluidisation is the introduction of a compressed gas, via porous media, into a bulk powder, to enable the powder to behave like a liquid for ease of movement. In general, the smaller the powder particle size, the more cohesive it becomes and the more difficult it is to move. With **Porvair's** extensive range of fluidising media, it is likely that we can tailor an optimal solution to solve most fluidisation challenges.

Porvair's broad range of media has been used to fluidise a wide variety of powders including:

- **Food and Pharmaceutical**
Cereals, icing sugar, coffee, flour, cocoa powder, hydrated animal foodstuffs, starch, milk powder, paracetamol and vitamins.
- **Industrial and Construction**
Cement, gypsum, silica, resin bonded sand, sulphur, soda ash, pulverised fly ash, coal dust and glass beads.
- **Chemicals and Plastics**
Pigments, carbon black, titanium dioxide, anti pest powders, calcium carbonate, detergents, PVC, EVA, polyethylene, epoxy and polyester paint powders.

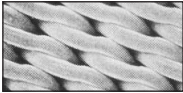
Filter Media and Elements

The material technologies that **Porvair** can bring to powder handling is one of the largest currently available from any single manufacturer. These materials can be supplied in a variety of different formats, including flat sheet or fully fabricated aeration cones. **Porvair** also manufacture filter elements in either a pleated or plain cylindrical form. These are offered in the following filter media:



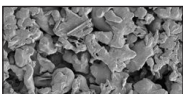
Vyon® Porous Polymers

Vyon® is a porous sintered material, manufactured from either high density polyethylene (HDPE) or polypropylene (PP). This material can be supplied as a ready fabricated fluidising cone liner or in flat sheet form, 1000mm x 750mm (40" x 30"), for use as a tank liner or in an end user secondary fabrication. Vyon® porous polymers are the most economical choice where temperatures are in the range of -70°C to 80°C (-94°F to 176°F). Vyon® is fully cleanable for multiple re-uses, however, its affordability compared to stainless steel may permit more frequent replacement where a disposal fabrication is preferred to cleaning.



Sinterflo® M Sintered Metal Mesh

Sinterflo® M multi layered, diffusion-bonded stainless steel mesh is available in 316L and other alloys. This precision filter mesh, also known as a porous plate, is available in both Lo Pass and Hi Pass media. Porvair fabricate Sinterflo® sintered mesh into fluidisation cones, complete hopper bottoms, tubes and custom shapes. The material is also supplied as a flat-panel porous plate up to a seamless size of 1000mm x 1500mm (40" x 60") and unlimited size in butt-welded sheets. This material is easily custom engineered for non-standard applications.

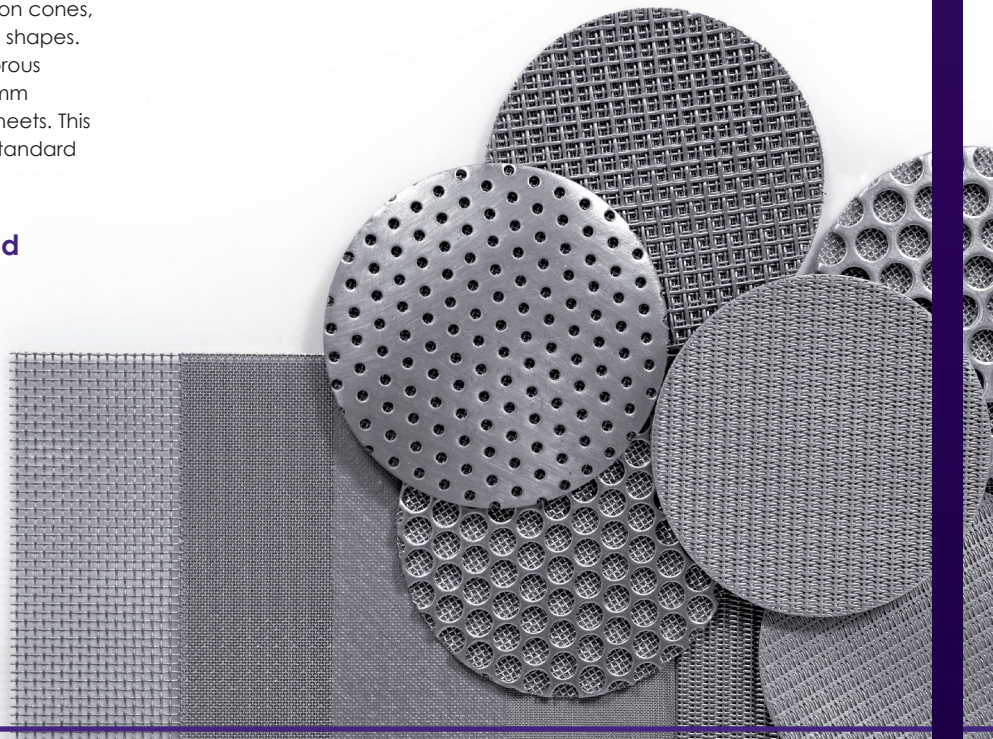


Sinterflo® P Sintered Metal Powder

Sinterflo® P sintered metal powder aeration pads are manufactured from either sintered powdered 316L stainless steel or sintered powdered bronze.

Table 1 Media Format

Format	Vyon®	Metal Powder	Metal Mesh
Flat sheets	✓	✓	✓
Fabricated cones	✓	–	✓
Retrofit pads	–	✓	–
Property			
Cleanability	✓	✓	✓
Disposability	✓	–	–
Elevated temperature tolerance	–	✓	✓
Lower price than stainless steel	✓	–	–



Our Vyon® porous media is manufactured from USP Class VI approved HDPE or PP materials, making it particularly suitable for both food and pharmaceutical applications. It has a uniform pore structure giving an even total area fluidisation. It is self-supporting due to its semi-rigid nature, thereby reducing the need for the external support structures that are required with canvas and felt media.

Applications

- **Food and Pharmaceutical**
 - Sugar
 - Flour
 - Milk powder
 - Paracetamol
 - Vitamins.
- **Industrial and Construction**
 - Cement
 - Gypsum
 - Soda/fly ash
 - Coal dust.
- **Chemical and Plastics**
 - Titanium dioxide
 - Carbon black
 - Calcium carbonate
 - Polyethylene powder
 - Epoxy and polyester paint powders.

Features and Benefits

- **Light weight and self supporting**

Does not require complex expensive support structures.
- **Even air flow**

Vyon® is made with a controlled and consistent distribution of pores throughout and does not stretch or flex during use, thereby ensuring uniform flow.
- **Non fibre shedding**

Unlike canvas and felt, Vyon® does not shed fibres and is, therefore, ideally suited for food and pharmaceutical applications.
- **Low extractables**

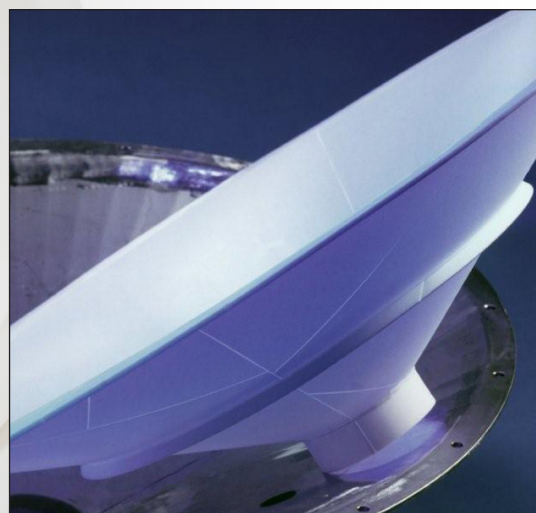
Manufactured from ultra clean, USP Class VI approved raw materials that will not adversely contaminate the powder being fluidised.
- **Naturally hydrophobic**

Acts as a moisture barrier to help prevent the transfer of moisture when using factory compressed air supplies.
- **Chemically inert**

Both HDPE and PP exhibit broad chemical compatibility and are naturally chemically inert.
- **Material versatility**

Can be easily welded to itself or non porous plastics, to form larger sheets or aeration cones, either during manufacture or on a customers site.
- **Easy to clean**

Can be effectively cleaned in situ by either washing or by back flushing.



Sinterflo® M Sintered Metal Mesh

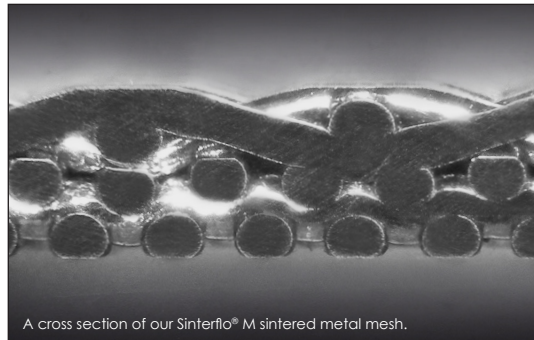
Porvair provide a comprehensive range of filters and fluidisation materials using a unique diffusion bonding process, which permanently bonds together multi-layers of a precision filter mesh. These are manufactured from 316L stainless steel as a standard, or from special alloys, and are available in both Lo and Hi Pass material. Careful control of the sintering process, and precision calendaring, allow for precise control of the permeability and provide uniform flow characteristics with optimum performance. We can also control pore size to prevent ingress of material.

Applications

Sinterflo® M multi-layered sintered mesh is particularly suited to demanding applications where high operating temperatures of up to 540°C (1004°F), increased chemical resistance or high abrasion resistance is essential, such as silo discharge cones, fluidised reactors and fluidised dryers. This material is easily custom engineered for non-standard applications.

Features and Benefits

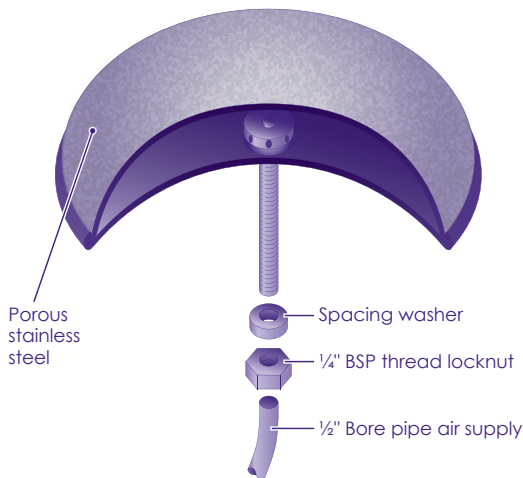
- **High operating temperatures**
Continuously up to 540°C (1004°F) with intermittent operating peaks up to 650°C (1202°F).
- **Robust and self supporting**
Fabricated shapes usually do not require complex and expensive support structures or joining strips.
- **Application and material versatility**
Can be easily sheared, formed, punched, and welded using standard manufacturing methods. Cones, tubes, custom shapes or flat panel, up to a seamless panel size of 1000mm x 1500mm (40" x 60").
- **Enhanced chemical resistance**
Can be constructed from a wide range of materials including 304 and 316L stainless steel, Hasteloy®, Inconel® and Monei®.
- **Cleanability**
A wide range of cleaning methods can be used; as a result the media can be sterilised for use within the food and pharmaceutical industries.
- **Abrasion resistance**
Non-shedding media, highly resistant to mechanical abrasion.
- **Design and engineering versatility**
Easily custom engineered to meet required specifications of materials, strength, flow requirements, thickness, micron rating and environment.



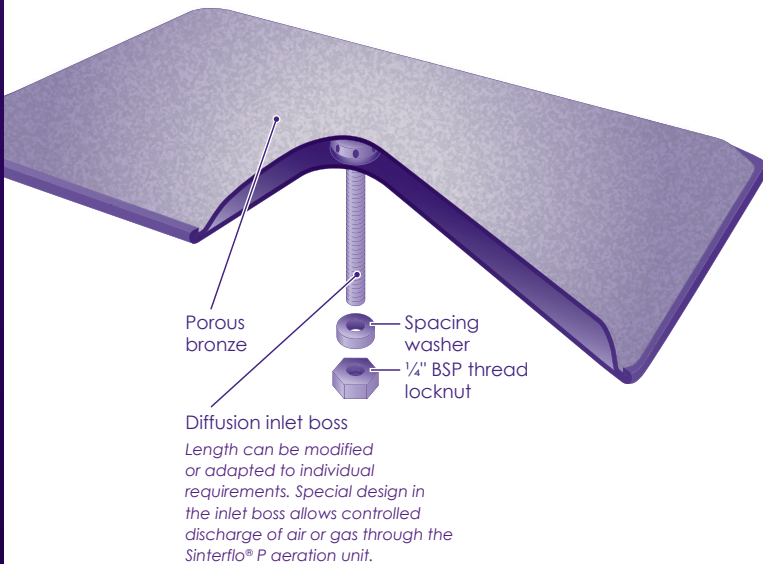
Sinterflo® P Sintered Metal Powder Aeration Units

These small area fluidisation devices are available in various sizes and metals for localised fluidisation applications. Ideally they are used to retrofit a fluidising system that has failed to perform. They can also be used for new silo construction where staggered aeration units are preferred to continuous sheets or cones. All aeration units come complete with compressed air supply connectors for ease of installation, simply drill and fit.

Sinterflo® P Stainless Steel Aeration Unit



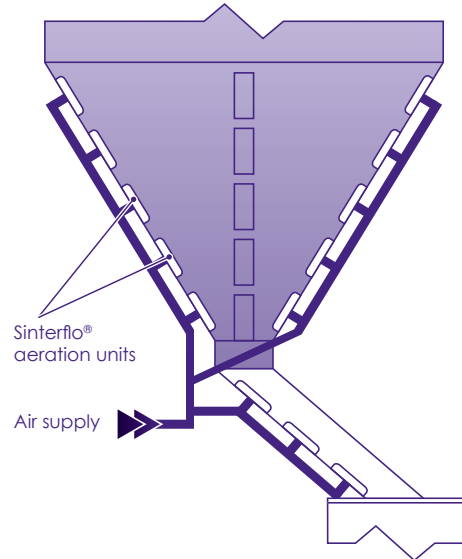
Sinterflo® P Bronze Aeration Unit



Applications

Sinterflo® P sintered metal powder aeration pads can be used where tolerance of high operating temperatures of up to 600°C (1112°F) and high corrosion resistance is required, such as gypsum and fly ash aeration or drying.

Location of Sinterflo® P Sintered Metal Powder Units



Features and Benefits

- High operating temperatures**
 Stainless steel up to 600°C (1112°F).
 Bronze up to 300°C (572°F).
- Easy installation**
 Aeration pads complete with compressed air supply adapter with BSP thread.
- Multiple sizes available**
 Ideal for retrofitting into existing hoppers or silos that have failed to perform effectively.



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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