



Pall Corporation

# Metallic Media for the Chemical Industry



*Filtration. Separation. Solution.<sup>SM</sup>*



**Pall knows media.**

Our reputation as the industry leader in metallic media filtration is based on our long history of innovation and reliability.

## ORIGINAL METALLIC MEDIA STANDS THE TEST OF TIME

Challenging chemical applications—such as those involving the processing of industrial gases, ceramic slurries, and high viscosity fluids—require exceptionally durable, sturdy, and reliable filtration media. Resistance to high temperatures, high pressures, and corrosion is critical. Each application also has unique filtration requirements that must be satisfied; for example, very fine particle removal is needed for microdenier fiber production.

When faced with these challenges, it can be difficult to locate a medium that can stand up to most, if not all, of your process conditions. Pall Corporation can change that. We offer various standard metallic media and can supply custom metallic media when required. With our technical expertise and manufacturing capabilities, we can provide the filtration products our customers need to overcome processing challenges and achieve production goals.

### Cutting-edge technology for over 60 years

Since its founding by Dr. David Pall in 1946, Pall Corporation has been the industry leader in metallic media filtration for the chemical industry and at the forefront of metallic filter media manufacturing. In the early years, Dr. Pall developed a groundbreaking technique to manufacture porous stainless steel by sintering stainless steel powder. This eliminated resin binders and compression, providing benefits such as lowered costs, improved quality, and design flexibility. In 1959, Pall achieved another technological breakthrough with the invention of fiber metal media. With greater capabilities than existing filtration technologies, our fiber metal media became world renowned for outstanding performance under the most difficult operating conditions

Today, the Pall product portfolio includes a variety of state-of-the-art porous metallic media produced for chemical applications using cutting-edge technologies, proprietary processes, and custom-designed equipment. Among Pall's offerings are fiber metal media, which have unique benefits over other types of metallic media for certain applications. We also manufacture media constructed of powder metal, wire mesh, and composites of metal powder and mesh. All of our metallic media products are highly regarded for quality and performance. We will help you select the one that is right for your application.

### Quality and performance that you can depend on

Pall manufactures metallic media under precise, highly controlled conditions, with quality systems certified to current ISO standards. We monitor all incoming raw materials, analyzing fiber metal, porous metal powder, and woven wire for metallurgical properties. Consistency in wire diameter of metal fibers and of wire mesh is monitored. Our procedures include examining the weave of the mesh and checking the powder metal for particle size distribution. Sintering is performed in high-temperature vacuums or controlled-atmosphere furnaces, preventing oxidation of the metal surface and the introduction of contaminants into your process. We test each grade of media using the bubble point method to ensure absolute<sup>1</sup> retention ratings. Other testing techniques are used to measure permeability and thickness. Testing ensures a high-quality porous metallic media with outstanding performance and longer in-service life.

<sup>1</sup> The term absolute, as it is used throughout this brochure, refers to removal ratings that have been determined by Pall standard tests.

## MEDIA OPTIONS

Pall produces standard and custom metallic media that are inherently strong and well-suited for a wide range of chemical applications. In addition to media constructed of woven wire mesh, powder metal, and composites of the two, we produce fiber metal media. Fiber metal products offer many advantages in certain applications.

Applying some of the same innovative technology used for our standard products, Pall designs and produces custom sintered metallic media for unique applications.

### Pall Standard Metallic Media at a Glance

Fiber Metal Fibermet™ Media PMF™ Media	Wire Mesh Dynamesh™ Media Rigimesh® Media	Powder Metal PSS® Media	Composite <sup>2</sup> Supramesh® Media PMM® Media
• Surface and depth filtration	• Surface filtration	• Depth filtration	• Depth filtration
• High porosity and permeability	• Excellent mechanical strength	• Excellent mechanical strength	• Very fine removal efficiencies
• Resists high temperature and pressure	• Pore size integrity	• Withstands reverse flow	• Thin and pleatable

Our custom media include:

- integral composites of sintered mesh layers.
- unique metallic media combinations, such as powder metal sintered to the upstream surface of metal mesh.
- multilayer composites of inorganic oxides on porous metal powder support tubes.

### Characteristics of Sintered Metallic Media

- Fixed pore size resulting from the sintering process and providing consistent, reliable removal.
- Resistance to pressure as high as 690 bard/10,000 psid.
- Tolerance of high temperatures, up to 927°C/1700°F and above.<sup>3</sup>
- Resistance to corrosion in most fluids, under a wide variety of service conditions.
- No extractables due to the absence of binders in the sintering process.
- No media migration, such as particle or fiber shedding.

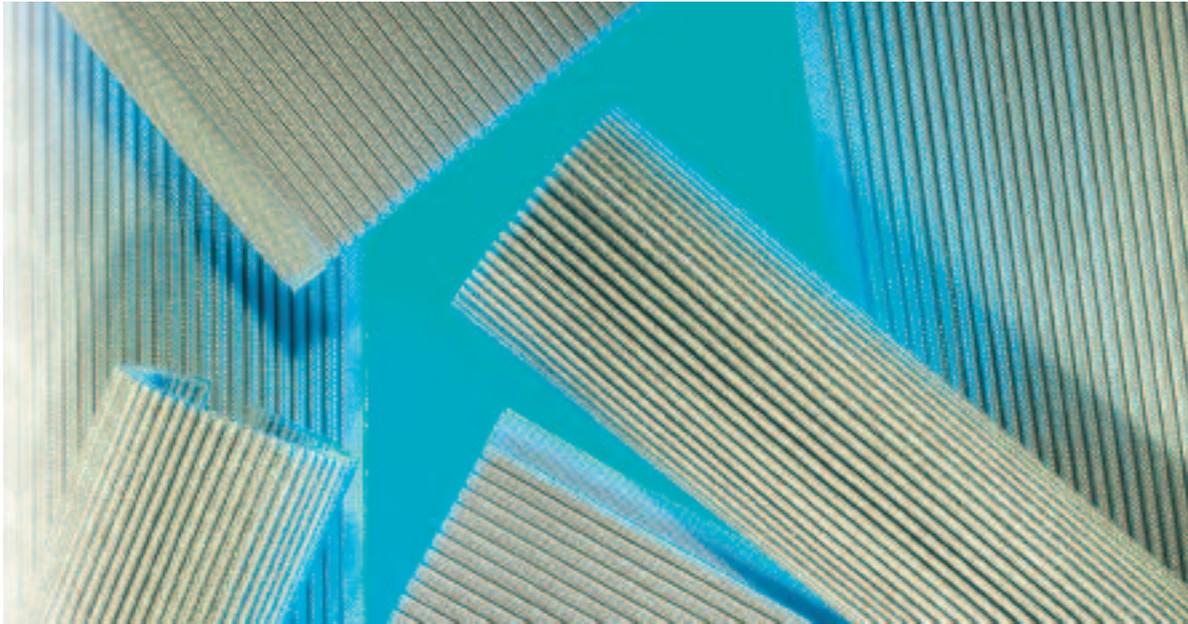
### Types of Alloys Available

A majority of our standard metallic media is offered in 316L stainless steel. Other alloys and grades of stainless steel are available. We accept special orders on materials of construction, as available.<sup>4</sup>

<sup>2</sup> Woven wire mesh and metal powder.

<sup>3</sup> Temperature tolerance depends on the metal alloy, the type of medium, and atmospheric conditions. Consult your Pall representative when selecting media for high-temperature applications.

<sup>4</sup> For information about standard and special order materials, refer to the individual product descriptions on the following pages.



*Candle elements constructed of pleated Fibermat media are used for chemical processing.*

## Fiber Metal Media

### Fibermat Media, PMF Media

Outstanding performance and versatility make Pall's fiber metal media the preferred choice for a variety of chemical applications, including polymer filtration, fiber extrusion, and gas purification. Our fiber metal products include Fibermat media and PMF media. They are engineered to meet the strictest chemical filtration requirements, with the ability to tolerate temperatures as high as 649°C /1200°F and withstand pressures in excess of 207 bard/3000 psid. These media are offered in large sheet and continuous roll formats.

The numerous benefits of Pall fiber metal media rest largely on the qualities of the microscopic metal fibers. Some are 30 times finer than human hair. Pall uses a proprietary process to manufacture the metal fibers, which begin as wire drawn from stainless steel and other metal alloys. The fibers are sintered to create an integral porous metal structure with a unique set of beneficial characteristics. These include mechanical strength, corrosion and temperature resistance, thermal and electrical conductivity, and non-toxicity.

Pall designs fiber metal media for depth and surface filtration. For depth filtration, the media placed upstream have larger, tortuous, graded pore structures to remove hard and deformable gel-type contaminants for optimum prefiltration. Downstream, the media have very fine, highly uniform surface pore structures, providing consistent, reliable filtration. In chemical processes where high-area fine filtration is required, fiber metal surface media can offer distinct advantages over conventional metallic media. The number of pores per unit area is four-to-five times greater than in wire mesh, powder metal, or ceramic media. The higher porosity affords a lower pressure drop and a much higher flow rate, yielding greater dirt-holding capacity and extended on-stream life. Removal ratings for Pall fiber metal media range from 1.0  $\mu\text{m}$  to 100  $\mu\text{m}$  absolute.



*Precision cutting of the metal fibers ensures total manufacturing process control.*

### Woven Wire Mesh Media

#### Dynamesh Media, Rigimesh Media

For certain filtration applications with adverse pressure or temperature conditions, or where low contaminant loading is necessary, we recommend Pall woven wire mesh products—Dynamesh media and Rigimesh media. They can tolerate pressures up to 10.34 barg/150 psid and temperatures up to 398°C/750°F. Removal ratings range from 5 µm to 400 µm absolute in liquid service, with both rigid and deformable particles retained. These products are offered in large sheet format.

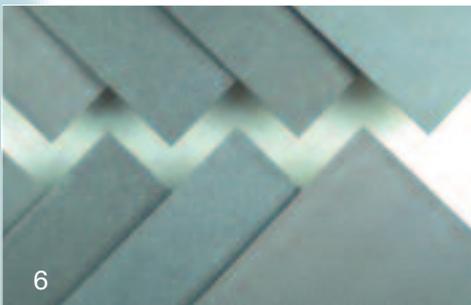
Dynamesh media and Rigimesh media have exceptional durability and strength, the result of our proprietary sintering process. The wires are bonded at every point of contact and will not shift under stress. As a result, the integrity of the media is continuously maintained. Since sintering reinforces the media, finer diameter wires can be used. Sintering imparts the media with higher permeability and dirt-holding capacity than unsintered mesh of a comparable removal rating. With high permeability and closely controlled pore size distributions, Dynamesh media and Rigimesh media yield consistent, repeatable filtration results.

### Powder Metal Media

#### PSS Media

Known for their many advantages over other types of powder metal media, PSS media are associated with lower operating costs and longer service life. They are extremely durable and corrosion resistant, and can tolerate repeated cleanings. PSS media have been specially designed for greater void volume, dirt-holding capacity, and temperature tolerance—up to 927°C/1700°F—and have removal ratings from 5 µm to 55 µm absolute in liquid service. They are available in sheet, disc, and cylinder formats.

The sintering process used for PSS media does not involve precompression of the powder or the use of binders or other extraneous substances. The result is a metallic material with a lower pressure drop at a given flow rate and with approximately 20% more open area (per unit area) than other sintered metals of similar efficiency.





*Our metallic media can be used in flat wrap-around or pleated elements.*

## Composites: Powder Metal with Woven Wire Mesh

### PMM Media, Supramesh Media

Pall offers composite media of PSS powder metal and Rigimesh woven wire mesh. In PMM composite media, the sintered metal powder is contained within the pore structure of the woven wire mesh. In Supramesh media, the metal powder is sinter-bonded to the upstream surface of the woven wire mesh.

Both PMM media and Supramesh media have a temperature tolerance of up to 927°C/1700°F and removal ratings from 5 µm to 55 µm absolute in liquid service. They provide exceptionally fine depth filtration, complete freedom from media migration, and perform equally well in liquid and gas service. PMM media are excellent for solids separation and solids recovery applications, since they can be pleated into high-area filter packs. Both products are offered in large sheet format.

Supramesh media can be customized by sintering multilayer composites of different metal wire meshes. Special orders offer various options to meet application requirements for specific flow, pressure drop, thickness, and strength.



*Producing media that is uniform and of the highest quality is a priority at Pall.*

## SELECTION GUIDELINES

The following tables provide information about the features, benefits, characteristics, and performance of Pall standard metallic media. They serve as basic references for selecting a filtration medium. Your Pall representative will provide more detailed product information and help you choose the product that is most appropriate for your application.

### Features and Benefits of Pall Metallic Media

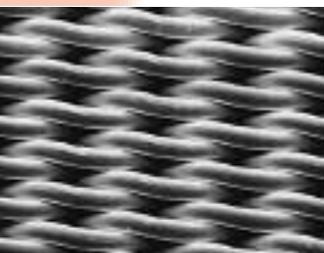
#### Fiber Metal: Fibermet Media, PMF Media



*Micron-level metallic fibers are key to the exceptional performance of Fibermet and PMF media.*

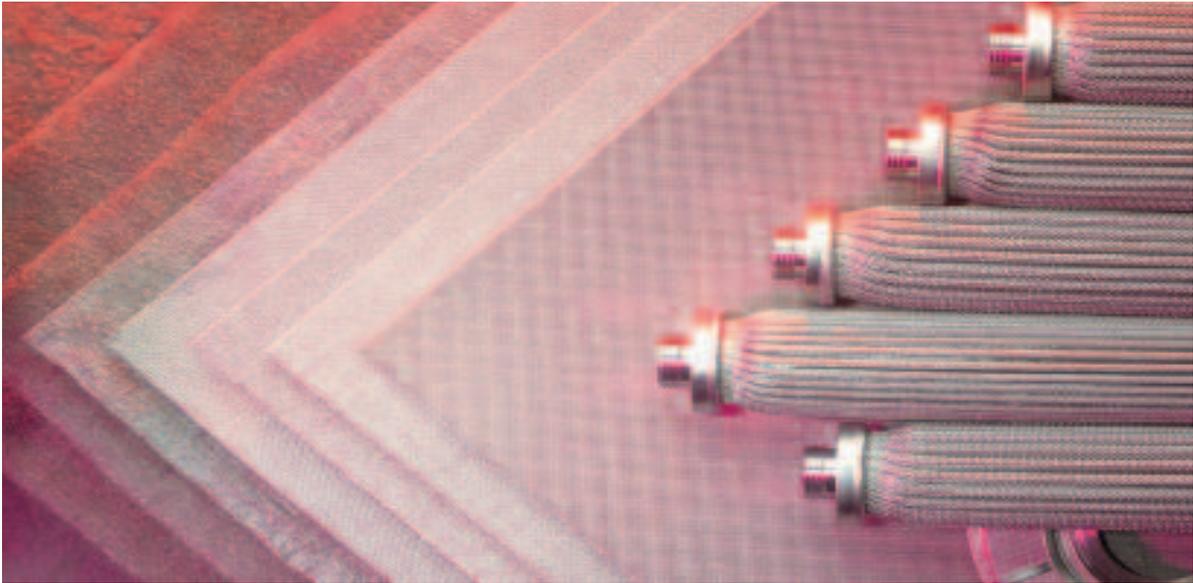
Feature	Associated Benefit
Resists high temperatures and pressures	Can be used for a wide variety of applications
High porosity/high permeability	Exceptional dirt-holding capacity and longer on-stream life
Can be cleaned repeatedly for reuse	Reduced operating and disposal costs
Graded or uniform pore structure	Highly efficient removal of hard and deformable gel-type contaminants

#### Wire Mesh: Dynamesh Media, Rigimesh Media



*Rigimesh and Dynamesh media are made of precision woven wires to ensure consistency and strength.*

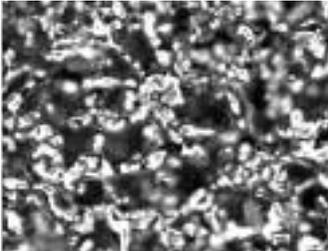
Feature	Associated Benefit
Closely controlled pore size distribution	Consistent, repeatable filtration results
Excellent mechanical strength	Can be used at high temperatures and differential pressures
Resists unloading, even under severe shock conditions	Specially suited for applications with adverse pressure conditions and low contaminant loading
Retains both rigid and deformable contaminants	Assured absolute particle retention



*Pall manufactures filter elements using various types of metallic media.*

**Powder Metal: PSS Media**

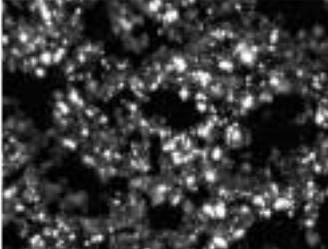
Feature	Associated Benefit
Mechanical strength	Reliability and longer on-stream life
Media available in a variety of alloys	Capable of tolerating high temperature chemical processes
High durability	Assured chemical compatibility with process fluids; can be cleaned repeatedly for reuse
Ability to withstand reverse flow	Lower maintenance and operating costs
Uniform permeability	Low resistance to flow



*The PSS medium has a uniform particle distribution that produces precise pore openings without the use of binders.*

**Composites: PMM Media, Supramesh Media**

Feature	Associated Benefit
Very fine removal efficiencies	Efficient cake formation and release for solids recovery applications
Thin, fine, pleatable depth filtration media	Higher surface area
Can be cleaned repeatedly for reuse	Reduces solids loading of final filters; economical choice for many prefiltration applications
High dirt-holding capacity	Longer service between cleanings



*The Supramesh medium combines the filtration features of powder metal with the strength of wire mesh.*

## PRODUCTS FOR CHALLENGING CHEMICAL APPLICATIONS

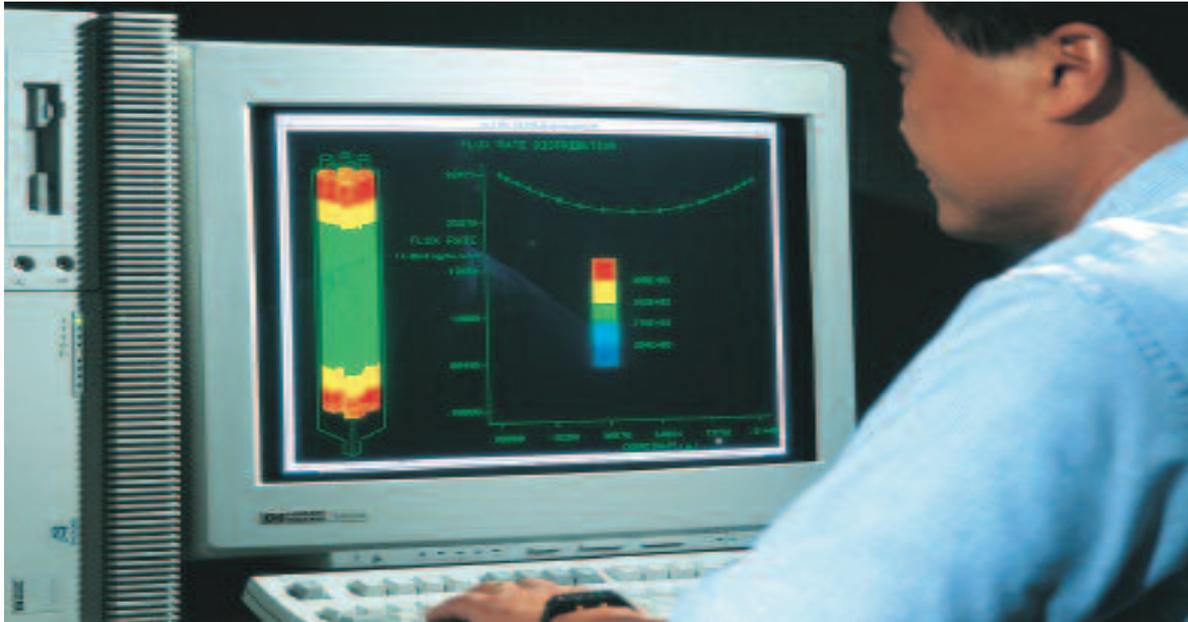
Filtration with Pall high-performance metallic media offers tremendous advantages under a variety of operating conditions. Each of our sintered metallic media products has a unique set of characteristics that fit the requirements of specific applications. For applications with complex processes and requirements, Pall can provide custom media with the same level of quality and performance as our standard products.

### Product Recommendations for Common Applications

	<b>Fiber Metal</b> Fibermet Media PMF Media	<b>Wire Mesh</b> Dynamesh Media Rigimesh Media	<b>Powder Metal</b> PSS Media	<b>Composite</b> Supramesh Media PMM Media
Carbon/catalyst recovery backwash systems	X	X	X	X
Catalyst activator/regenerator off-gas	X		X	X
Drum filters	X		X	X
Film extrusion	X		X	X
Gases	X		X	X
Polymer processing	X	X	X	X
Product dryers		X		X
Synthetic fibers	X	X	X	
Optical disc	X		X	
Ceramic capacitor	X			

### DEPEND ON PALL FOR PREMIUM METALLIC MEDIA

Fiber, mesh, powder, and composite metallic media are high-efficiency solutions for improved filtration in many chemical applications. When metallic media is the best fit for your filtration process, turn to Pall for dependable, high-quality, high-performance products. We offer a wide variety of standard and custom media made of stainless steel or other alloys. Designed for harsh environments, they are very durable and have been shown to resist high temperatures, high pressures, and corrosion; provide consistent, reliable removal; and have extended on-stream life. Your Pall representative will help you select the best media for your application. Contact your regional Pall office for assistance (Refer to the back of this brochure for contact information.)



**Business Card Die Cut**  
(does not print)

**You trust Pall as your equipment supplier.  
Trust us to be your materials provider.**



## Pall Corporation

### Western Hemisphere

Pall Corporation  
25 Harbor Park Drive  
Port Washington, NY 11050-4630  
+1 516 484 3600 phone  
+1 800 289 7255 (toll free in US only)

### Europe

Pall Europe Ltd.  
Europa House  
Havant Street  
Portsmouth, Hampshire  
PO1 3PD, UK  
+44 (0)23 9230 3303 phone

### Asia

Nihon Pall Ltd.  
6-8-1, Nishishinjuku  
Shinjuku-ku, Tokyo  
163-6017, Japan  
+81-3-6901-5800 phone

**Visit us on the Web at [www.pall.com/industrialmaterials.asp](http://www.pall.com/industrialmaterials.asp)**

---

**Pall Corporation has offices and plants throughout the world.**

---

*Filtration. Separation. Solution.<sup>SM</sup>*

© Copyright 2007, Pall Corporation. Pall, , Dynamesh, Fibernet, PMF, PMM, PSS, Rigimesh, and Supramesh are trademarks of Pall Corporation. ® Indicates a Pall trademark registered in the USA. *Filtration. Separation. Solution.<sup>SM</sup>* is a service mark of Pall Corporation.