

Porous metal filtration media, elements and systems

  
**Purolator**<sup>®</sup>  
ADVANCED FILTRATION  
a CLARCOR company



Your partner in specialized filtration systems

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*Imagine what we could do together.*

Purolator provides solutions for the most demanding filtration applications.

Purolator is your specialized partner in the design and manufacture of metallic filter elements and filtration systems. We guarantee superior knowledge and expertise in all aspects of filtration technology.

Purolator offers you both standard and custom-made equipment to match your quality, productivity, handling and maintenance requirements.

We want to be a valuable partner in providing products and solutions tailored to your needs, and are eager to understand your situation and processes. In fact, we see this as a pre-condition for building close partnerships that result in solutions that work for your company.

Your requirements fuel our passion to innovate. Our specialists and researchers think along with you to come up with new products and applications.

Working in partnership with you to find solutions, we provide a diverse range of high-tech products, systems and services to give you high added value. Our long-term partnerships and cooperative relationships constantly yield new products to renew and extend our product portfolio.

# High-performance polymer filtration



Benefit from more than 30 years of expertise in the design and manufacture of filter elements and systems. Discover for yourself why Purolator is the leader in filtration for the polymer industry, offering the most complete range of products from polymerization to spinning.

## Applications

- Synthetic fibers (PET, PA, PP, carbon, & more)
- Film (PP, PET, PC, PS, PVBH, PE, & more)
- Non-woven (PP, PET, & more)
- PET bottle
- Engineered polymers
- Rubbers and silicones

## Filter elements

Both candles (flat or pleated) and leaf discs can be used in our systems.



## Filter systems

Purolator offers you both standard and custom-made equipment to perfectly match your quality, productivity, handling and maintenance requirements. The best filter media and the most appropriate filter elements will be used in our monomer, pre-polymer or polymer filter systems. Challenge us and we will find the unique solution for your specific application.



Duplex system for a continuous filtration.



OFS horizontal system (50-1000 kg/h).



Simplex system.

## Spinpack filters and gaskets

Purolator can provide you with the complete set of elements used in spinpack filtration. This step is critical in the production of synthetic fibers (spinning), and we can improve and innovate on your traditional filtration process.



### Gaskets [1]

You can benefit from our metal-to-metal gaskets used in the polymer industry by the diversity of means of production and the quality of our toolings.

Alloys available: aluminium, copper, nickel-plated copper, stainless steel, Inconel®, and more.



### Screens [2]

- Any shape or dimensions
- Assembly by spotwelding or frame
- Pleated media available
- Different alloys available
- Also used in extrusion (film, profiles)



### Purolator Optisupport® [3]

This solution allows a reduced consumption of filters and an improved quality of filtered polymer. This product is available for most kinds of spinpacks and for all major screenchangers brands.

### Filling sands [4]

We can offer a wide range of material to be used as filling sands in the spinpacks: stainless steel (offering the best shearing), Inconel®, silica, aluminium, glass, ceramic, and more.



# High-performance gas filtration

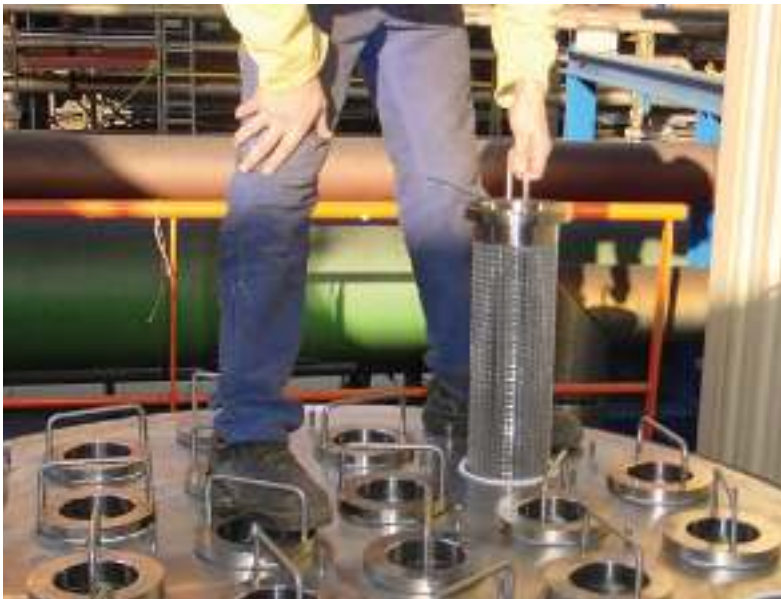


Purolator specializes in the development and manufacture of porous metal filtration solutions. We offer filter media, elements and systems for industrial gas filtration, based on the unique advantages of metal fiber media. Use our filter systems in your high-temperature or corrosive chemical and petrochemical processes for filtration of process and exhaust gases. Our systems offer an alternative in situations where high mechanical stability, long lifetime, low pressure drop, easy cleaning and chemical and heat resistance are required. Filter materials are available with temperature resistance up to 1,000°C.

## Our primary application areas

### Depth filter applications

Depth filtration is used primarily in applications where small dust loads must be separated from a gas stream. The contaminants or particles are captured within the multiple layer structure of the filter medium. Profit from our depth filter systems that combine high temperature and corrosion resistance with high dirt-holding capacity and excellent off-line cleaning possibilities—the perfect solution for your applications.



### Benefits

- High permeability: low pressure drop
- High dirt holding capacity: long on-stream lifetime
- Easy to clean (water, chemicals): reusable
- Compact construction: high porosity and pleatable
- Not brittle
- Fully sintered and welded, contains no glues or binders
- Suitable for high temperatures and high-pressure applications

## Applications

- Purification of process gases to protect downstream equipments
- Protection of catalysts
- Ammonia and mixed gas filtration in nitric acid production
- Purification of technical gases, such as hydrogen, nitrogen and oxygen
- Filtration of steam in pharmaceutical and food and beverage industry



## Backpulse filter applications

Backpulse surface filtration is the solution for applications where large dust concentrations must be separated from a gas stream. We offer you the finest metal filter media available on today's market. Our backpulse filter systems build a dust cake at the filter surface. The cake is removed at regular intervals using a venturi backpulse or reverse flow process, which allows you to clean the filters while the systems is still online.

## Benefits

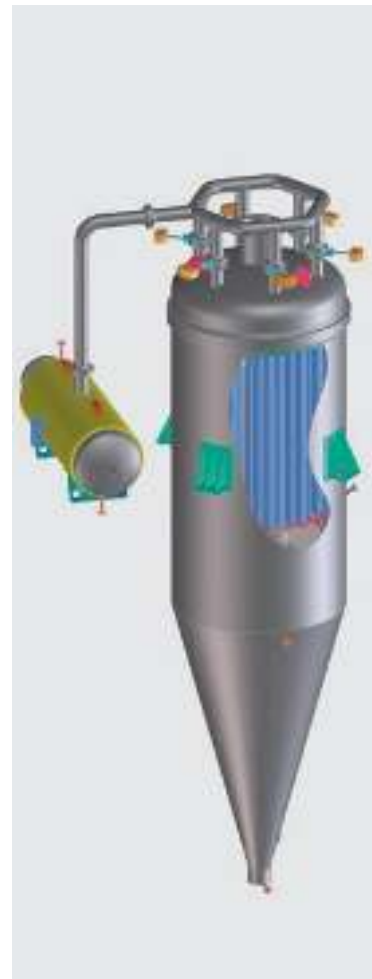
- Very reliable filter material
- Automatic self-cleaning system
- Long on-stream lifetime: no clogging
- No hazardous maintenance
- Extremely high efficiencies; extremely low emission
- Suitable for high temperatures (up to 1.000°C)

## Applications

- Catalyst or product recovery in gas processes
- Protection of downstream equipments
- Venting protection for pneumatic product or catalyst transport
- Filtration of exhaust gases
- Processes where cleaning-in-place (CIP) is applied



Installation of filter elements.



Example of backpulse surface filtration applications: hot gas filtration during the production of Magnesium Oxide.

# High-performance liquid filtration



Purolator is your specialized partner in the development and manufacture of porous metal filtration solutions. We offer filter media, elements and systems for industrial liquid processing applications. Enjoy the unique advantages of sintered porous metal.

## Primary application areas Chemical and Petrochemical

- Polishing of corrosive liquids
- Pre-coat filtration
- Catalyst recovery, slurry phase reactors
- High-temperature liquids
- Cryogenic fluids
- Solvents, ketones, esters, liquid hydrocarbons
- Feed water and make-up water
- Ethylene glycol
- High-efficiency solids recovery or liquid recycling

## Food and Beverage

- Process steam filtration
- Catalyst recovery from hydrogenation reactors
- Polishing of syrups, liquors, and other liquids
- Catalyst removal from flavor ingredients and other food specialties
- Activated carbon removal and decolorization

## Pharmaceutical

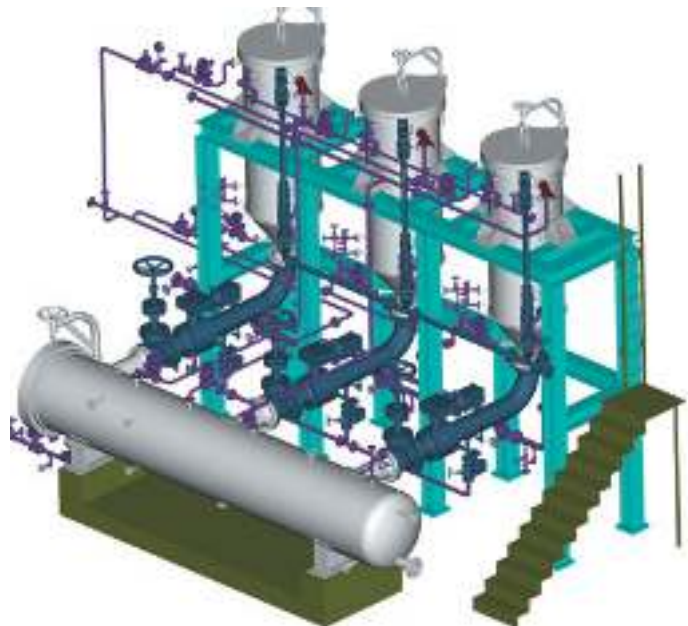
Pharmaceutical companies can maximize their productivity, as the Purolator filter system can be used in decolorization and catalyst recovery.

## Refinery

Purolator filter systems can be designed to handle high flow rates in continuous operations typical in

refinery applications.

Hot hydrocarbon streams such as FCCU slurry oil often require removal of catalysts and other particulate. Removal of catalyst fines and other particulates not only improves the oil product, it also improves the downstream operating equipment by preventing fouling and reducing maintenance.





# Our filter elements and systems offer you the following advantages

- **Resistance to high temperatures and corrosion**  
All our elements are resistant to high temperatures and corrosive environments, making them suitable for a wide range of applications.
- **High-strength filter elements**  
We use sintering porous filter media at the molecular level, resulting in high mechanical resistance in compression and stress.
- **Totally enclosed**  
Backwashing filter elements reduce your operators' exposure to hazardous chemicals.
- **Ease of cleaning**  
You can easily free porous metal filters of particulate by using backwash cleaning methods without scraping, scrubbing, or rotating filter elements. You can also remove contaminants with water, steam, air, solvents, caustic or acid washing, or with ultrasonic cleaning.
- **Minimal maintenance**  
Porous metal filters have no moving parts, so your maintenance procedures are simpler and less frequent.
- **Reduced spare parts expense**  
You seldom need to replace porous metal filter elements.
- **Waste minimization**  
Cleanable filter elements eliminate the incineration or landfill costs that you have with disposable filters.
- **Single-stage filtration**  
You can often replace an entire series of process filtration steps with a single filter system.
- **Wide selection of filter media**  
We offer porous metal filter elements with the widest selection of filter media, in sintered powder or sintered fibers, ranging from standard 316L stainless steel to corrosion-resistant nickel and Hastelloy.



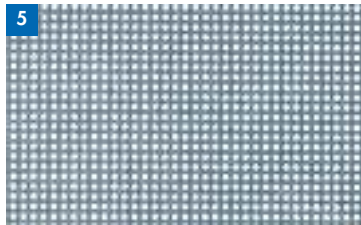
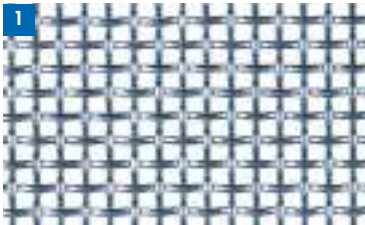
# Metallic filter media



Benefit from our complete variety of metallic filter media that can be cleaned and re-used. They resist chemicals and mechanical wear, and have a maximum lifespan.

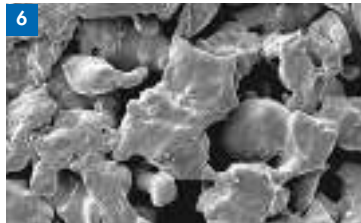
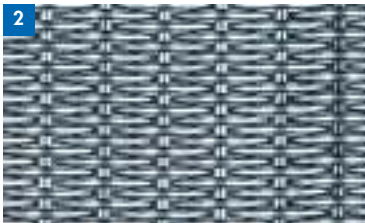
Supported by our Optilayer simulation software, our team selects the filtering structure best suited to your product and application in order to:

- facilitate the flow through the medium.
- provide a lengthy lifespan.
- offer ease in cleaning.



## Classical square weave [1]

5 mm to 25  $\mu\text{m}$  abs.



## Dutch weave [2]

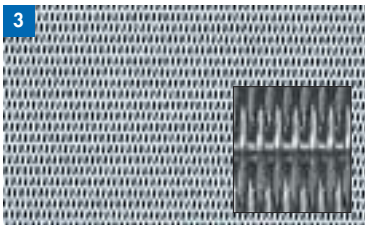
300 to 6  $\mu\text{m}$ .

## Multipor [3]

Surface filtration with high porosity (45%) (90 to 15  $\mu\text{m}$  abs.)

## Porofelt® sintered metal fibers [4]

Available from 100  $\mu\text{m}$  down to 1  $\mu\text{m}$  abs.

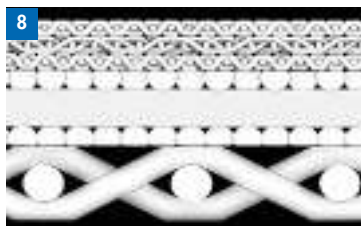
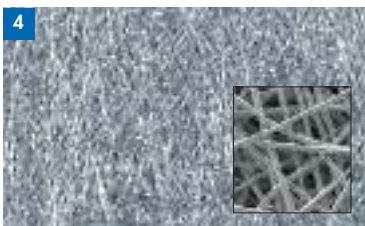


## Perforated and micro-perforated sheets [5]

To 20  $\mu\text{m}$  abs.

## Sintered metal powders [6]

100 to 0.2  $\mu\text{m}$



## Wedge wire media [7]

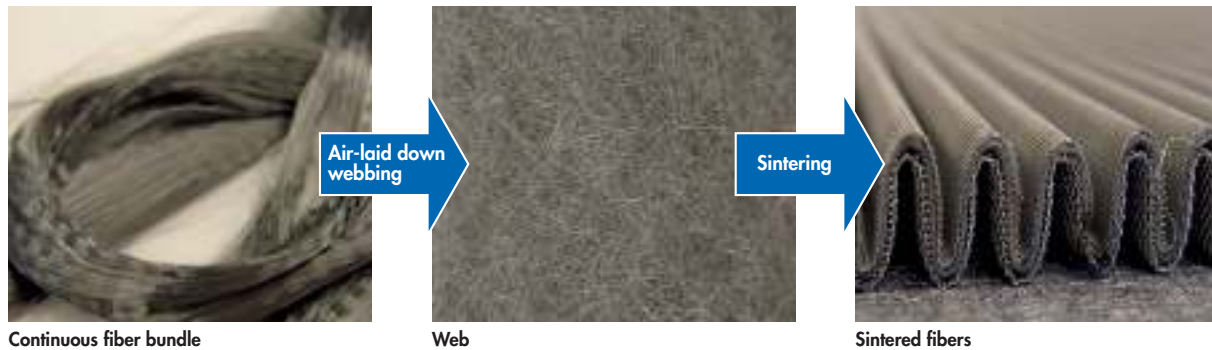
Available in different constructions and with openings as small as 20  $\mu\text{m}$ .

## Poroplate® Sintered Mesh [8]

Laminate of several wire clothes. (2 layers and more)

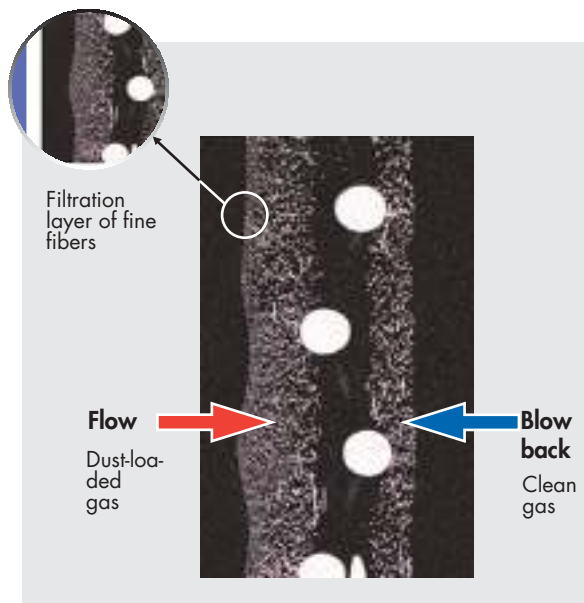
# From fiber to porous metal fiber media

Purolator Porofelt®: flexible and multi-functional



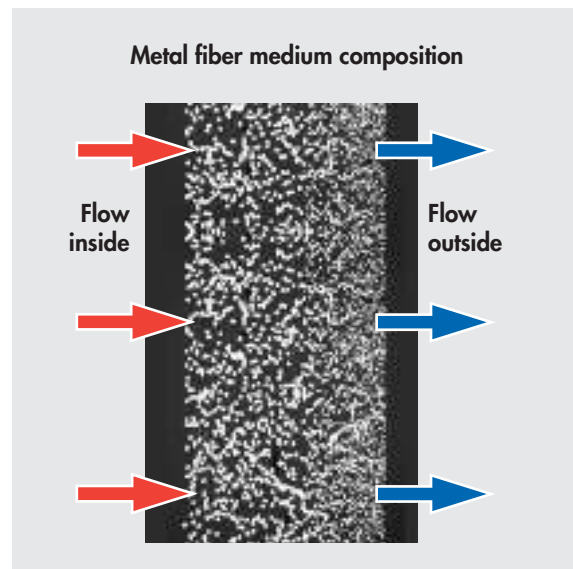
- A web is a composition of metal fibers, uniformly laid, to form a 3-dimensional non-woven porous web structure.
- Sintered fibers are a family of uniquely designed metal fiber media, produced by sintering of webs.
- This extremely porous, non-woven fiber matrix is available as a single- or multi-layer structure.
- This metal fiber media is also available with woven screen mesh sintered to either one or both sides. Adding wire meshes increases the strength, protects the fibers, and allows cross-drainage between the medium and the perforated core structure. Beyond standard compositions, we can also develop special compositions to meet your filtration requirements. Purolator sintered fiber media can be used in liquid, gas and polymer filtration applications, for a wide range of filter ratings.

## Surface filtration



The filtration will go from the fine fibers side to the coarser fibers side. This will allow for easier blowback of the cake created on the surface.

## Depth filtration



The filtration will go from the coarse fibers side to the fine fibers side. This media have very high porosity (up to 90%) and high dirt holding capacity (D.H.C.).

## Wide choice of materials

In addition to 316L stainless steel, other metals and alloys are available to meet your special requirements, such as greater temperature and corrosion resistance.

Stainless Steel: 316L, 304L, 310, 347, 430 - Hastelloy® C-276, C-22, X, N, B, B2 - Inconel® 600, 625, 690 - Nickel 200 and Monel® 400 (70Ni - 30Cu) - Titanium - Alloy 20 and many others.

# Metallic filter elements



Our metallic filter elements can be cleaned and reused, saving you time and money. Our elements are used in most industries and with a wide variety of applications.



## Filter candles [1]

Key features:

- Assembly by welding
- Crimping or bonding
- Pleated or non-pleated media
- Maximum length without intermediary jointing
- Different dimensions available



## Leaf discs [2]

You may profitably replace a set of candles with a stack of filter discs for applications where fine filtration is linked to high operating pressures. Most of these elements are using sintered metal fibers or sintered metal powder, but other media such as Purolator Multipor® can also be used.

Different sizes and hub configurations are available to meet your requirements.

### Purolator Removable Mesh Pack® [3]

This is an original patented design for a filter candle that can be dismantled. The sealing between the different parts is ensured by means of a metal sealing that provides 100% guarantee down to 20 µ m.

You will realize big savings because you only need to replace the Mesh Pack (the filtering part of the candle) when the element can no longer be cleaned.



3



4

### Filter baskets [4]

Ideal for low-pressure filtration with the flow from the inside to outside. These can also be pleated to increase the filtration area.



5

### Others [5]

Many other configurations (conical, cylindrical, etc.) and dimensions are also available. Ask us about your individual application and we will find the best solution for your situation.

## Purolator is always close to you

Being close to you is our goal. With multiple manufacturing sites in the U.S., Europe and Asia, and sales offices throughout the world, we are strategically positioned to offer round-the-clock sales and manufacturing support.

EUROPE,  
MIDDLE EAST AND AFRICA

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# Tailor-made solutions for unsurpassed performance



Engineering and R&D capabilities.

## Maximum precision in lab development

Filter system design often begins at the Purolator laboratories, where the results of small-scale runs are analyzed.

The next step is a pilot-scale filter test at your site to ensure compatibility with actual process conditions.

## Run the calculation

From basic to detailed engineering, the filter system will be designed to reach your process expectations.

## Meet the needs completely

Once final operating conditions are determined, the full-scale production of the final system is shipped and installed. Then we audit and optimize the performance on the line.



Detailed inspection of the filter.



Co-development is the key to our success.

## How can your company benefit from Purolator metal filter elements and systems?

This brochure explains how Purolator metal filter elements and systems can help you to improve your filter performance and reduce your total costs. If you want to find out how these high quality fibers, elements and systems can work for you, we are happy to advise.

Please contact your local Purolator specialist. Details are inside.