

# SELECTING THE RIGHT DUST CARTRIDGE FILTER

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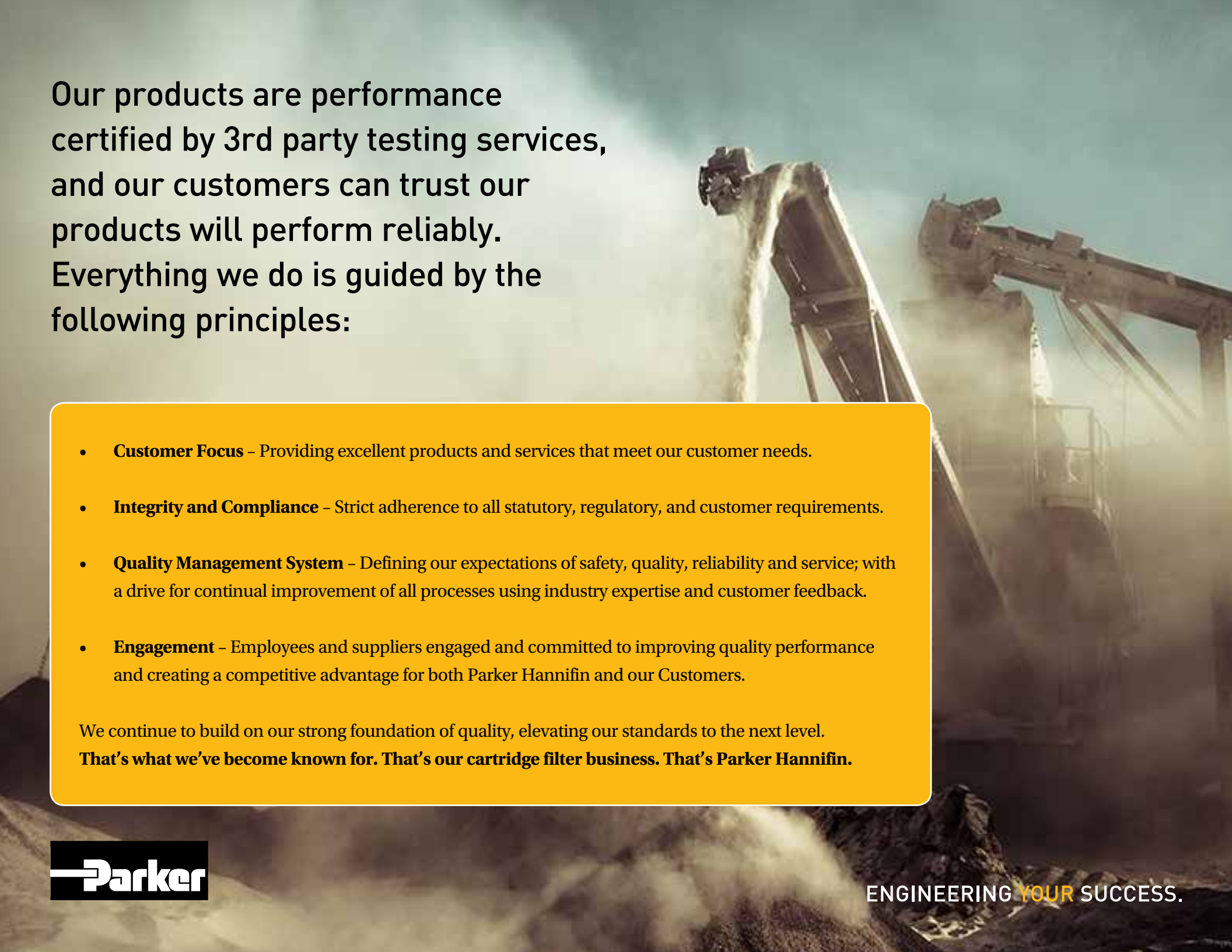


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At Parker Hannifin, when it comes to dust cartridge filters, we're known for delivering products that provide higher efficiencies with cleaner air, longer filter life and greater energy savings. We are at the forefront of technology and innovation; we develop and manufacture proprietary filter media technologies using our advanced research capabilities to ensure the latest developments are in our filters.



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Our products are performance certified by 3rd party testing services, and our customers can trust our products will perform reliably. Everything we do is guided by the following principles:

- **Customer Focus** – Providing excellent products and services that meet our customer needs.
- **Integrity and Compliance** – Strict adherence to all statutory, regulatory, and customer requirements.
- **Quality Management System** – Defining our expectations of safety, quality, reliability and service; with a drive for continual improvement of all processes using industry expertise and customer feedback.
- **Engagement** – Employees and suppliers engaged and committed to improving quality performance and creating a competitive advantage for both Parker Hannifin and our Customers.

We continue to build on our strong foundation of quality, elevating our standards to the next level.

**That's what we've become known for. That's our cartridge filter business. That's Parker Hannifin.**



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Application and operating conditions are important considerations. Temperature, moisture in the gas stream, presence of oils, spark carryover, FDA compliance and the abrasive nature of the particulates are all factors that need to be considered.

MERV ratings allow us to understand the clean, fractional efficiency of a filter. MERV ratings are assessed on a scale between 1 and 16. The higher the ratings, the more effective a filter is at capturing smaller airborne particulates.

For example, filters with a MERV rating of four or lower are usually good in an application for capturing things like, pollen, dust mites and spray paint dust, while a filter with a MERV rating of 13 or higher is good for things like bacteria and smoke.

Pressure and pressure loss (sometimes called pressure drop) is the resistance to airflow that is created by the cartridge filter and dustcake. If the filter has a higher pressure drop, the filtration system will require more energy to move air through the filter. Pressure is impacted by not only the filter and filter media, but also by the dust collected.



Load is how the particulates are collected within the filter, specifically on the filter media. There are two types of load, surface and depth.

Depth loading allows for the dust to be captured deep into the pores of the filter. This creates higher pressure loss and higher energy usage from the filtration system because portions of the filter media become blinded over time lowering the overall air permeability.

Surface filtration has a barrier on the surface that allows for the dust particles to be captured on top instead of in the voids. Surface loading allows for longer filter life, lower pressure drop and lower energy consumption over the life of the filters.

Generally speaking, surface filtration has a higher filtration efficiency rating than depth loading due to the smaller pore size of the media.

When media is properly applied it can minimize energy consumption and compressed air usage, while creating maximum lifespan for the cartridge filter.

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It's helpful to think about filter media in a layered approach. There is a base layer of media which is often sufficient for a variety of applications. From that base, a range of treatments can be added to the media fibers or to the surface to modify the filter performance. For example, treatments like fire retardant finishes are often added for environments with the potential for spark carryover. An oleophobic treatment will discourage media fouling due to oil residue in the gas stream. A fine filtration layer can be added such as nanofibers or ePTFE membrane to remove very fine particulate from the gas stream.



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## Cellulose and Cellulose Blends

Cellulose (or paper) typically have a lower MERV rating and not good for applications with fine or abrasive particulate or moisture. Cellulose can be good for applications that include weld fume, cement dust, lead dust and milled flour.

*Average MERV rating of 10 for the base media. MERV rating of 15 with nanofibers applied to the surface of the base media.*

*Temperature rating  
200F continuous.*

## Spunbond Polyester

Spunbond polyester is a fully synthetic media. It has similar filtration efficiencies to cellulose. It's strong, more resistant to abrasion, as well as moisture. It also has a better life cycle. It's good in applications such as chemical processing, industrial, pharmaceutical, and food.

*Average MERV rating of 10. MERV rating of 15 with nanofibers applied to the surface. MERV rating of 16+ with ePTFE membrane applied to the surface of the base media.*

*Temperature rating  
275F continuous.*

## PPS

PPS media is used in highly sterile environments and applications with high acidity content. It's used in applications such as diagnostics, biologicals, vaccines.

*Average MERV rating of 10 for the base media. MERV rating of 16+ with ePTFE membrane applied to the surface of the base media.*

*Temperature rating  
350F continuous.*



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## Aramid

Aramid offers better options for operating conditions in higher heat as well as applications like cement, gypsum, smelting and certain chemical applications.

***Average MERV rating of 10. MERV rating of 16+ with ePTFE membrane applied to the surface of the base media.***

***Temperature rating  
375F continuous.***

## Polyester Anti-static

Combustible dust. That's what you should think about when you think about anti-static filter media. Anti-static media keeps collected dust discharged, so it can be safely released when needed. Anti-static media is especially useful in environments where an application requires grounding.

***Average MERV rating of 10 for the base media. MERV rating of 16+ with ePTFE membrane applied to the surface of the base media.***

***Temperature rating  
275F continuous.***

## Polypropylene

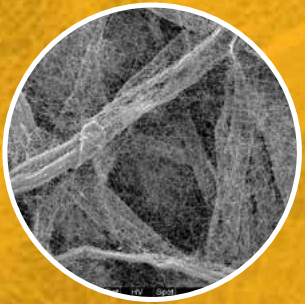
Polypropylene media is typically good with high levels of particulates and the presence of moisture. It offers a longer filter life, especially when compared to cellulose and cellulose blends. It's good in applications that include food, metals, resins and fine chemicals.

***Average MERV rating of 10 for the base media. MERV 16+ with ePTFE membrane applied to the surface of the base media.***

***Temperature rating  
170F continuous.***

# NANOFIBER TECHNOLOGY

Nanofibers are very small fibers approximately 200 nanometers in diameter deposited on the surface of the base media layer to reduce the pore size and improve the collection efficiency. A typical rating for a media with nanofibers is MERV 15 which means that it is greater than 85% efficient at capturing particulate in the 0.3 to 1.0 micron range on clean fabric, meaning media or fabric without a dustcake.



Protura DH nanofiber  
surface layer at 600x  
magnification



# EXPANDED PTFE MEMBRANE (ePTFE)

PTFE fine powder is processed into a tape that is stretched and laminated to the base media. The result is an average pore size of approximately 0.5 micron and a typical rating of MERV 16+ which means that it is greater than 95% efficient at capturing particulate in the 0.3 to 1.0 micron range. This rating signifies that ePTFE membranes are capable of reaching much higher filtration efficiencies such as HEPA ratings.

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# Selecting the Right Cartridge Filter

Consider these factors to help you choose the best cartridge filter for your industrial process

Part Number	Material	MERV Rating	General Usage*	Typical Applications
PR017	Protura Paper	15	For most applications	Abrasive blasting, carbon black, powder paints, dry chemical processing, pharmaceuticals etc.
PR018	Protura Paper	15	For applications where live sparks could enter the dust collector. Will not suppress fires if collected materials are combustible.	Welding flame cutting, plasma cutting, laser cutting, metal spraying, ferrous metal grinding, etc.
PR019	Protura Paper	15	Contact Product Specialist team for assistance	Contact Product Specialist team for assistance
PR022	Protura Paper	15	Contact Product Specialist team for assistance. DustHog® only	Contact Product Specialist team for assistance. DustHog® only
PR017	Protura Paper	15	For most applications	Abrasive blasting, carbon black, powder paints, dry chemical processing, pharmaceuticals etc.
PR010	Paper	10	Works well with most applications. Finish adds moisture resistance to the media.	Abrasive blasting, carbon black, powder paints, dry chemical processing, pharmaceuticals etc.
PR011	Paper	10	For applications where live sparks could enter the dust collector. Will not suppress fires if dust collected is combustible.	Welding flame cutting, plasma cutting, laser cutting, metal spraying, ferrous metal grinding, etc
PG001	Microfiber glass	14	Applications with larger particles or with hygroscopic or agglomerative dusts. Filter can be washed and reused.	Salt, sugar, clay, cocoa, coffee, detergents, milk powder, stearates, textiles, woodworking etc.
PR020	Paper	10	For applications where static dissipation is required. (Not to be used for odor control)	Various applications. Contact Product Specialist team for assistance

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Part Number	Material	MERV Rating	General Usage*	Typical Applications
PE825	Polyester	10	For applications where static dissipation is required. (Not to be used for odor control)	Grain, plastics, chemical processing. Contact Product Specialist team for assistance
PE806	Polyester	10	For applications where high strength media and excellent release characteristics are required	Cardboard, cement, cocoa, coffee, paper, rubber grinding, powder coating, polishing, etc.
PE806TR	Polyester	10	Same as PE806 - TR is a mild water-repellent finish	Excessive moisture present. General process industries
PE922	Polyester	10	For applications where high strength media and excellent release characteristics are required	Composite grinding, textiles, tobacco
PE836	Polyester	10	Same as PE806	Same as PE806
PE1013	Polyester	10	For applications where live sparks could enter the dust collector. Will not suppress fires if collected materials are combustible	Electric arc furnace applications. Other metal fume applications. Grinding, cutting, etc.
QP806, (PE806)	Preveil Polyester	16+	For applications demanding extremely high filtration efficiencies or difficult dust cake release requirements	Food, asbestos, pesticides, fluidized bed dryers, agglomerating materials
QP842, (PE842)	Preveil Polyester	16+	Roll Goods Only	Roll Goods Only
QP843, (PE842)	Preveil Polyester	16+	Roll Goods Only	Roll Goods Only

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Part Number	Material	MERV Rating	General Usage*	Typical Applications
QP825, (PE825)	Preveil Polyester	16+	For applications where static dissipation is required and a fine filtration layer is needed	Grain, plastics, chemical processing, etc. Please contact Product Specialist team for assistance
QP836, (PE836)	Preveil Polyester	16+	Same as QP806	Same as QP806
NX821	Aramid	10	For applications with high extreme temperatures	Cement Mills, Paint, Pigments, Coal, Gypsum, Coal-Fired Boiler Fly Ash Receivers, Dryers General Process
QN821, (NX821)	Preveil Aramid	16+	For applications with High Extreme temperatures with applications demanding high filtration efficiencies or difficult cake release	Cement Mills, Paint, Pigments, Coal, Gypsum, Coal-Fired Boiler Fly Ash Receivers, Dryers General Process
RY811	PPS	10	For applications with High Extreme temperatures with applications demanding high filtration efficiencies or difficult cake release.	Cement Mills, Paint, Pigments, Coal, Gypsum, Coal-Fired Boiler Fly Ash Receivers, Dryers General Process
QR811, (RY811)	Preveil PPS	16+	For applications with extreme temps demanding high filtration efficiency or difficult cake release. Possible acid gas stream. Caution on oxygen levels	Cement, Paint, Pigments, Coal-Fired Boilers, Dryers, Catalyst Manufacturing, Waste-to-Energy
PP794	Polypropylene	10	For low temp applications where moisture is present	General process industries including food, pharmaceuticals, dryers
QL794, (PP794)	Preveil Polypropylene	16+	For low temp applications - moisture is present and a fine filtration layer is needed or dustcake release is needed	General process industries including food, pharmaceuticals, dryers

The beauty of Parker cartridge filters is the level of customization available. If a customer or prospect has a specific need that is not a current part of the cartridge filter offering, we can always offer a custom solution when it comes to media.

When it comes to cartridge filters, it's about;

- MERV ratings and which is appropriate for which application
- Pressure and pressure drop
- Load, depth loading and surface loading
- Operating Conditions, such as temperature, moisture, condensation and abrasion
- Media – cellulose, cellulose blend, Aramid, spun bond polyester, PPS, or custom

When those things come together, we achieve higher efficiencies for our customers with cleaner air, longer filter life and greater energy savings.

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## Industrial Applications

- Abrasive Blasting
- Batch Mixing
- Blending
- Buffing
- Bulk Powder Handling
- Carbon Black
- Cast Iron
- Drilling
- Dry Chemicals
- Filling
- Finishing
- Grinding
- Material Handling
- Metal Working
- Packaging
- Paint Pigment
- Paper Dust
- Polishing
- Powder Coating
- Sanding
- Sawing
- Screening
- Smelting
- Spices
- Weighing
- Welding
- Wood Dust

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