MANN+HUMMEL Activated Carbon Filters
MANN+HUMMEL Activated carbon media ...

MANN+HUMMEL activated carbon media have been providing clean air for people, the environment and industry for many years. They protect people from unpleasant odours or from harmful gases. In production facilities and clean rooms they enhance process reliability and prevent harmful gases entering the environment. Working closely with industry, MANN+HUMMEL is able to use its products, experience and expertise to find solutions to many filtration tasks. We offer our customers solutions for the adsorption of alkaline or acidic corrosive gases, combined products for gases and particles as well as special solutions with, for example, an anti-bacterial treatment.

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No application is the same as the next. Accordingly, MANN+HUMMEL fine-tunes its service and product solutions to meet the different requirements of its customers.

Cleaning the circulating air in operating rooms and hospitals

Process air filtration in clean rooms

Clean air for offices and administration buildings
The MANN+HUMMEL product range offers a variety of different activated carbon media. Our standard range of products with various types of activated carbon, varying activated carbon overlays and carrier material thicknesses, with the option of different types of impregnation for some media, can be used to put together customised solutions for your application.

**Activated carbon**

**Product overview**

- Fabrics coated with activated carbon powder
- Foam coated with activated carbon powder
- Foam coated with granulated activated carbon
- Activated carbon panels
- Filter cells

Application examples in private homes: refrigerators, cooker hoods, vacuum cleaners, garbage cans

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**Applications**

<table>
<thead>
<tr>
<th>Applications</th>
<th>Activated carbon performance characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean room technology</td>
<td>Reducing the number of rejected parts&lt;br&gt;Lowering production costs&lt;br&gt;Increase process reliability&lt;br&gt;Improving product quality&lt;br&gt;Avoiding corrosion</td>
</tr>
<tr>
<td>Production facilities, air-conditioning and ventilation technology</td>
<td>Protection for people&lt;br&gt;Compliance with workplace environmental exposure limits&lt;br&gt;Reducing emissions and immissions&lt;br&gt;Improvement of air quality</td>
</tr>
<tr>
<td>Consumer products and electronic devices *</td>
<td>Reducing odours&lt;br&gt;Lowering energy costs&lt;br&gt;Minimising wear&lt;br&gt;Noise Reduction&lt;br&gt;Environmentally-friendly solution&lt;br&gt;Ozone reduction&lt;br&gt;Regenerative</td>
</tr>
</tbody>
</table>

* e.g. cooker hoods, vacuum cleaners, mobile room air systems, laser copiers, laser printers
Non-woven elements coated with activated carbon powder mainly find use in air-conditioning and ventilation technology, consumer goods and electronic devices.

Media structure:
Voluminous polyester non-woven coated with activated carbon powder.

Performance characteristics:
- Different shapes possible
- Partly pleatable
- Available in rolls or cuts
- Impregnated options for adsorption of special gases
- Various differential pressures adjustable by fiber mixtures and compression
- Most economically priced activated carbon medium with standard performance

Specifications **

<table>
<thead>
<tr>
<th>Media description</th>
<th>MHPV 70-3</th>
<th>MHPV 120-6</th>
<th>MHPV 520-12</th>
<th>MHPV 570-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material thickness (mm)</td>
<td>3.0 +/- 0.5</td>
<td>6.0 +/- 2.0</td>
<td>12.0 +/- 3.0</td>
<td>18.0 +/- 3.0</td>
</tr>
<tr>
<td>Substrate weight (g/m²)</td>
<td>200</td>
<td>260</td>
<td>1000</td>
<td>1150</td>
</tr>
<tr>
<td>Activated carbon weight (g/m²)</td>
<td>70</td>
<td>120</td>
<td>520</td>
<td>570</td>
</tr>
<tr>
<td>Differential pressure (Pa) at 0.8 m/s *</td>
<td>&lt; 80</td>
<td>&lt; 20</td>
<td>&lt; 50</td>
<td>&lt; 40</td>
</tr>
</tbody>
</table>

* Standard values tested according to DIN 71460

Differential pressure

![Differential pressure graph](image)

Flow rate (m/s) vs. Differential pressure (Pa) for MHPV 70-3, MHPV 120-6, MHPV 520-12, and MHPV 570-18.
Foams coated with activated carbon powder

Activated carbon powder foams are characterised by excellent uniformity and good air permeability. They are especially suitable for use in air-conditioning and ventilation technology, consumer products and electronic devices.

Media structure:
Open-pored polyurethane foam coated with activated carbon powder.

Performance characteristics:
- Multi-layer package available for high performance
- Excellent uniformity regarding air permeability, material thickness and adsorption performance
- Low differential pressure
- Differential pressure can be individually set through varying the distribution of pores
- Flexible shapes possible
- Available in rolls or cuts
- Impregnated options for adsorption of special gases

Media description

<table>
<thead>
<tr>
<th>Material thickness (mm)</th>
<th>MHPS 195-2</th>
<th>MHPS 90-5</th>
<th>MHPS 400-10</th>
<th>MHPS 570-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 +/- 0.3</td>
<td>5.0 +/- 0.5</td>
<td>10.0 +/- 0.5</td>
<td>21.0 +/- 1.0</td>
<td></td>
</tr>
<tr>
<td>Substrate weight (g/m²)</td>
<td>325</td>
<td>240</td>
<td>850</td>
<td>1300</td>
</tr>
<tr>
<td>Activated carbon weight (g/m²)</td>
<td>195</td>
<td>90</td>
<td>400</td>
<td>570</td>
</tr>
<tr>
<td>Differential pressure (Pa) at 0.8 m/s *</td>
<td>&lt; 100</td>
<td>&lt; 30</td>
<td>&lt; 30</td>
<td>&lt; 20</td>
</tr>
</tbody>
</table>

* Standard values tested according to DIN 71460

Differential pressure

** The listed performance data are based on average values taken from the current production.
Foams coated with granulated activated carbon

Foams coated with granulated activated carbon are high quality adsorption media and can be used in many applications. Typically in air-conditioning and ventilation systems, clean rooms, consumer products and electronic industry.

Media structure:
Open-pored polyurethane foam coated with granulated activated carbon.

Performance characteristics:
• High adsorption performance
• Combinations available with different media and functions with acidic and/or alkaline impregnation
• Available with or without encasing material
• Multi-layer package available for high performance
• Differential pressure adjustable by porosity of the foam and grain size of the activated carbon granulate
• Media flexible for different shapes

Specifications **

<table>
<thead>
<tr>
<th>Media description</th>
<th>MHGS 1100-6</th>
<th>MHGS 1400-11</th>
<th>MHGS 1600-15</th>
<th>MHGS 2200-20</th>
<th>MHGS 2700-24</th>
<th>MHGS 2600-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material thickness (mm)</td>
<td>6.5 +/- 0.5</td>
<td>11.0 +/- 0.5</td>
<td>15.0 +/- 1.0</td>
<td>20.5 +/- 1.0</td>
<td>24.0 +/- 1.0</td>
<td>30.0 +/- 3.0</td>
</tr>
<tr>
<td>Substrate weight (g/m²)</td>
<td>1500</td>
<td>2000</td>
<td>2500</td>
<td>3400</td>
<td>4100</td>
<td>4300</td>
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<tr>
<td>Activated carbon weight (g/m²)</td>
<td>1100</td>
<td>1400</td>
<td>1600</td>
<td>2200</td>
<td>2700</td>
<td>2600</td>
</tr>
<tr>
<td>Differential pressure (Pa) at 0.8 m/s *</td>
<td>&lt; 20</td>
<td>&lt; 30</td>
<td>&lt; 20</td>
<td>&lt; 20</td>
<td>&lt; 30</td>
<td>&lt; 30</td>
</tr>
</tbody>
</table>

* Standard values tested according to DIN 71460

Differential pressure

<table>
<thead>
<tr>
<th>Flow rate (m/s)</th>
<th>MHGS 1100-6</th>
<th>MHGS 1400-11</th>
<th>MHGS 1600-15</th>
<th>MHGS 2200-20</th>
<th>MHGS 2700-24</th>
<th>MHGS 2600-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>1.5</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>140</td>
</tr>
<tr>
<td>2.0</td>
<td>60</td>
<td>90</td>
<td>120</td>
<td>150</td>
<td>180</td>
<td>210</td>
</tr>
<tr>
<td>2.5</td>
<td>80</td>
<td>120</td>
<td>160</td>
<td>200</td>
<td>240</td>
<td>280</td>
</tr>
</tbody>
</table>

** Media structure:
Activated carbon panels

Activated carbon panels are suitable for use in demanding applications such as, in particular, clean room applications and air-conditioning and ventilation systems where the highest filtration performance is required. MANN+HUMMEL offers a product range for a wide range of applications.

**Media structure:**

Polyester non-woven covered with activated carbon granulate, pleated and stabilized with support frame.

**Performance characteristics:**

- Highest adsorption performance achievable with low differential pressure
- Combination medium available for the simultaneous filtration of gas and particles
- Large filter surfaces possible
- Use of filter element in compact filter cells is possible
- Ideal for rectangular shapes
- Various impregnations available against special gases

Activated carbon panels are suitable for use in demanding applications such as, in particular, clean room applications and air-conditioning and ventilation systems where the highest filtration performance is required.

**Media specifications **

<table>
<thead>
<tr>
<th>Media description</th>
<th>MHGV 700-4</th>
<th>MHGV 1000-5</th>
<th>MHGV 1000-5S</th>
<th>MHGV 1000-5A</th>
<th>MHGV 1000-5C</th>
<th>Combination filter</th>
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</thead>
<tbody>
<tr>
<td>Material thickness (mm)</td>
<td>4.0</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Activated carbon weight (g/m²)</td>
<td>700</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>900</td>
</tr>
<tr>
<td>Substrate weight (g/m²)</td>
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<td>1150</td>
<td>1150</td>
<td>1150</td>
<td>1150</td>
<td>1050</td>
</tr>
<tr>
<td>Differential pressure (Pa) at 0.8 m/s</td>
<td>&lt; 110</td>
<td>&lt; 120</td>
<td>&lt; 120</td>
<td>&lt; 120</td>
<td>&lt; 120</td>
<td>&lt; 130</td>
</tr>
</tbody>
</table>

1 Standard values tested according to DIN 71460
2 Impregnated against sulphurous gases
3 Impregnated against alkaline gases
4 Impregnated against acidic gases

**Differential pressure**

![Differential pressure graph](image)

**The listed performance data are based on average values taken from the current production.**
Compact filter cells for gas filtration

MANN+HUMMEL compact filter cells are proven in the fields of clean room technology, air-conditioning and ventilation systems, as well as in industrial processes. They are chemical adsorption filters suitable for use in technical applications to remove harmful gases and odours from the air. The core of the filter cells are activated carbon panels, as described on page 7.

Filter cell structure:

The cell sides are made in polystyrene in various sizes respectively with eight compact activated carbon panels glued into a polystyrene frame (various sizes available).

Specifications **

<table>
<thead>
<tr>
<th>Description</th>
<th>MHVZ 44</th>
<th>MHVZ 36</th>
<th>MHVZ 21</th>
<th>MHVZ 63</th>
<th>MHVZ 52</th>
<th>MHVZ 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>1/1</td>
<td>5/6</td>
<td>1/2</td>
<td>1/1</td>
<td>5/6</td>
<td>1/2</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>592x592x292</td>
<td>490x592x292</td>
<td>287x592x292</td>
<td>592x592x292</td>
<td>490x592x292</td>
<td>287x592x292</td>
</tr>
<tr>
<td>Total weight (kg)</td>
<td>9.2</td>
<td>8.3</td>
<td>5.3</td>
<td>11.0</td>
<td>9.9</td>
<td>6.3</td>
</tr>
<tr>
<td>Activated carbon weight (kg)</td>
<td>4.4</td>
<td>3.6</td>
<td>2.1</td>
<td>6.3</td>
<td>5.2</td>
<td>3.0</td>
</tr>
<tr>
<td>Filter surface (m²)</td>
<td>6.3</td>
<td>5.2</td>
<td>3.0</td>
<td>6.3</td>
<td>5.2</td>
<td>3.0</td>
</tr>
<tr>
<td>Flow rate (m³/h)</td>
<td>3400</td>
<td>2700</td>
<td>1600</td>
<td>3400</td>
<td>2700</td>
<td>1600</td>
</tr>
<tr>
<td>Differential pressure with above flow rate (Pa) *</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

* Standard values tested according to DN 71460

Differential pressure

![Differential pressure graph](image)
Combination filter for gas and particle filtration

The combination of gas and particle filtration in a single filtration stage is space saving and an economic alternative to two separate filtration stages.

Filter cell structure:
The cell sides are made in polystyrene in various sizes respectively with eight compact activated carbon panels glued into a polystyrene frame (various sizes available).

Typical applications for compact filter cells for gas filtration or combined gas and particle filtration:

- Air-conditioning and ventilation systems at airports, hospitals, office and administration facilities
- Clean room technology in micro electronics, medical engineering, pharmaceutical and food industry
- Industrial plants such as paper mills, dye factories, paint and welding shops, printworks, dry-cleaning facilities and energy technology

Specifications **

<table>
<thead>
<tr>
<th>Description</th>
<th>MHVZ 44K</th>
<th>MHVZ 36K</th>
<th>MHVZ 21K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>1/1</td>
<td>5/6</td>
<td>1/2</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>592x592x292</td>
<td>490x592x292</td>
<td>287x592x292</td>
</tr>
<tr>
<td>Total weight (kg)</td>
<td>9.2</td>
<td>8.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Activated carbon weight (kg)</td>
<td>4.4</td>
<td>3.6</td>
<td>2.1</td>
</tr>
<tr>
<td>Filter surface area (m²)</td>
<td>5.3</td>
<td>4.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Filter class</td>
<td>F7</td>
<td>F7</td>
<td>F7</td>
</tr>
<tr>
<td>Dust holding capacity with AC fine (g)</td>
<td>650</td>
<td>540</td>
<td>320</td>
</tr>
<tr>
<td>Flow rate (m³/h)</td>
<td>3400</td>
<td>2700</td>
<td>1600</td>
</tr>
<tr>
<td>Differential pressure with above flow rate (Pa) *</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
</tbody>
</table>

* Standard values tested according to DN 71460

Differential pressure

** The listed performance data are based on average values taken from the current production.
# MANN+HUMMEL Industrial Filters worldwide

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E-Mail: oleg.paratnov@mann-hummel.com  
Internet: www.mann-filter.ru
Conversion factors

Temperature
\[ ^\circ F = \left( ^\circ C \times \frac{9}{5} \right) + 32 \]
\[ ^\circ C = \left( ^\circ F - 32 \right) \times \frac{5}{9} \]

Flow rate
1 l/min = 0.0353 cfm
1 m³/min = 35.3140 cfm
1 m³/h = 0.5886 cfm
1 UK gallon/min = 0.1605 cfm

Length
1 m = 1000 mm = 39.38 inch = 3.281 ft.
1 inch = 25.4 mm = 0.0254 m = 0.08333 ft.
1 ft. = 304.8 mm = 0.3048 m = 12 inch

Volumes
1 m³ = 1000 litres = 35.31 ft³ = 61020 inch³
1 ft³ = 28.32 litres = 0.02832 m³ = 1728 inch³
1 l = 0.2642 US gallons = 0.2201 UK gallons
1 US gallon = 3.785 litres = 231 inch³
1 UK gallon = 4.544 litres = 277 inch³

Weight
1 kg = 2.205 lb = 35.27 Oz
1 lb = 0.4536 kg = 16 Oz
1 Oz = 0.02835 kg = 0.0625 lb

Pressure
1 bar = 100 KPa = 14.5 psi = 401.5 IN. H₂O
10 mbar = 1 KPa = 0.145 psi = 4.015 IN. H₂O
10 psi = 68.95 KPa = 0.6895 bar = 27.68 IN. H₂O
1 IN. H₂O = 0.2491 KPa = 2.491 mbar = 0.03613 psi
Please indicate your application for the adsorption filter:

• Application (e.g. clean room technology, kitchen air, etc.): ________________________________

• Harmful gases or odours requiring filtration: ________________________________

• Type of air: □ Incoming air □ Circulating air □ Outgoing air

• Air volume in m³/h: ________________________________

• Concentration of harmful gases in (e.g. µg/m³, ppm, ppb): ________________________________

• Maximum installation size for the filter (length / width / height): ________________________________

• Is a frame required: □ Yes □ No

  If yes, what sort of frame (e.g. compact filter cell, metal frame)? ________________________________

• Permissible pressure drop (Pa): ________________________________

• Required separation performance in %: ________________________________

• Required service life in operational hours: ________________________________

• Environmental conditions:  
  Temperature in °C: ________________________________  
  Air humidity in %: ________  Air pressure in bar: _____

• Other requirements: ________________________________
MANN+HUMMEL Industrial Filters

The MANN+HUMMEL Group is an international company with its headquarters in Ludwigsburg, Germany. The group employs approx. 9100 people worldwide at more than 40 locations.

The company develops, produces and sells technically complex components for the automotive industry and many other fields. A key area is high quality filtration products for vehicles, engines and industrial applications. The OEM business with global market leaders and producers of vehicles, machines and installations defines the quality and performance of the group. Filters for the international aftermarket are sold under numerous international brands as well as under the MANN-FILTER brand.

The Industrial Filters Business Unit with its headquarters in Speyer, Germany is specialised in meeting the requirements of off-highway vehicle and - engine applications, compressed air and vacuum technology, mechanical engineering and plant construction. For these and other industrial fields MANN+HUMMEL Industrial Filters offers high performance products for the filtration and separation of air, gases and liquids.