



Donaldson  
FILTRATION SOLUTIONS

# Compressed Air Filtration

DF

Depth Filter / Coalescence Filter /  
Particle Filter

UltraPleat® M

## MAIN FEATURES & BENEFITS:

- Coalescence / particle filter for the retention of oil and water aerosols as well as particles from compressed air or gases in industrial applications
- Innovative filtration technology UltraPleat®; pleated high performance filter media with special coating (oleophobic / hydrophobic) for reliable achievement of high retention rates with low differential pressure
- Validated performance data acc. to ISO 12500; reliable achievement of compressed air quality acc. to ISO 8573-1
- Flow-optimised design, minimum pressure loss for economic compressed air purification (saving of energy costs)
- Unique ease of changing the flow direction as coalescence filter or particle filter by changing the position of the coding clip in the filter bowl



Depth Filter  
UltraPleat® M

## INDUSTRIES



- Chemical and pharmaceutical industry



- PCB assembly and CD manufacturing



- Surface finishing



- Machine building industry and plant engineering / construction



- Energy and power generation

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Donaldson®  
Ultrafilter

## PRODUCT DESCRIPTION

The filter elements type UltraPleat® M are designed for the purification of compressed air or gases in industrial applications.

Validated performance data acc. to ISO 12500-1 (oil aerosol retention) and ISO 12500-3 (particulate retention) for reliable achievement of compressed air quality suitable to achieve ISO 8573-1 quality classes.

Due to a flow-optimised design of the filter element as well as the assigned filter media and the advanced production technology, the differential pressure is minimized and a continuously high separation efficiency is ensured.

The filter elements type UltraPleat® M are based on the three-dimensional micro fibre fleece made of coated borosilicate glass fibers, which works oleophobic and hydrophobic.

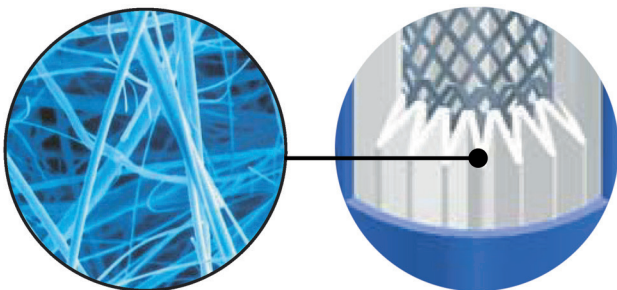
By utilising various filtration mechanisms such as retention by direct impact, sieve effect and diffusion effect, liquid aerosols and solid particles down to the size of 0.01µm are being retained in the filter.



Cross section of the depth filter

**The UltraPleat® M filter element is designed and developed for the following applications:**

- **Central compressed air processing:**  
Pre-filter for the protection of fridge dryers, high performance coalescence filter for the removal of oil and water aerosols as well as particles
- **Downstream applications:**  
Final filtration for control and process air
- **Automotive industry:**  
Purification of paint- and lacquering finishing air



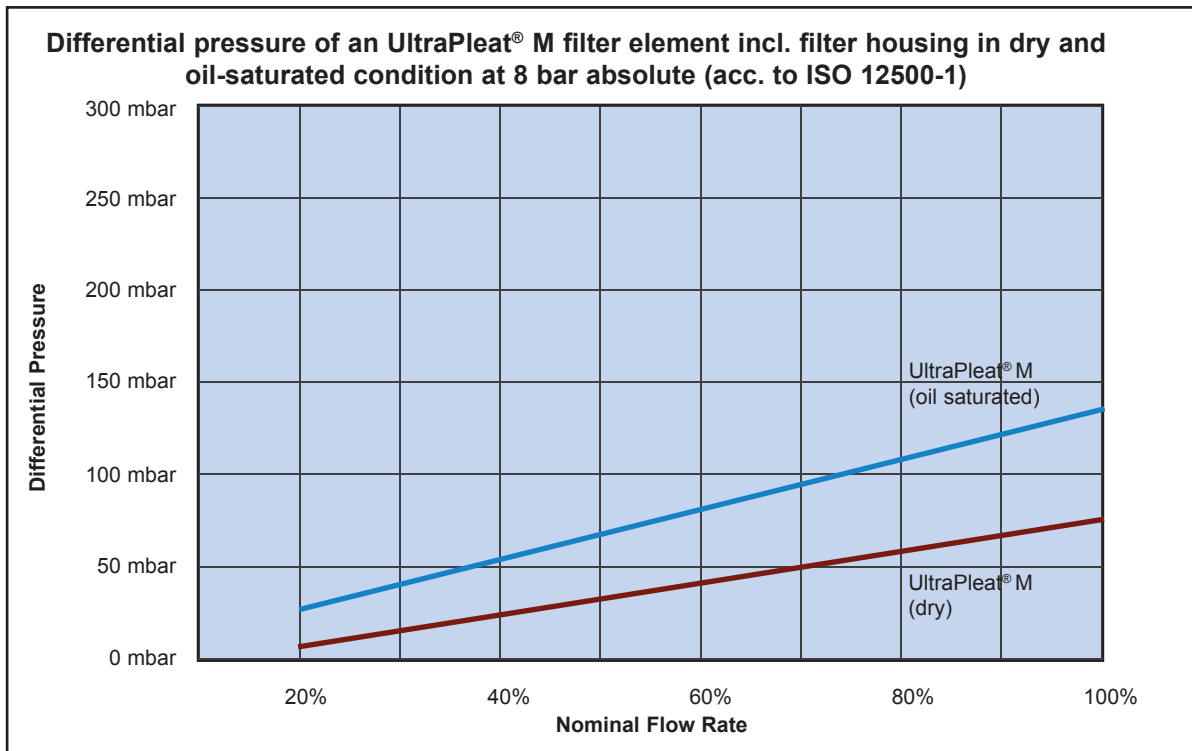
Cross section of the depth filter with SEM micrograph of the filter media

## PRODUCT SPECIFICATIONS

| Features   | Benefits   |
|--|--|
| UltraPleat® technology   | Reliable achievement of highest retention rate for oil and water aerosols as well as particles with lowest differential pressure                               |
| Validated performance data acc. to ISO 12500-1 and ISO 12500-3                       | Reliable achievement of the compressed air quality according to ISO 8573-1   |
| Intelligent overall concept  | Flow range, filtration grades, efficiencies and available options perfectly meet requirements of compressed air purification                                   |
| Flow-optimised Design  | Minimum pressure losses, thereby savings of energy costs   |
| Pleated filter media   | High dirt retention capacity by enlarged filter surface with lowest pressure loss  |
| Coalescence sleeve fixed by outside support liner                                    | Flow area between element and housing guaranteed long term and at any time; optimised drainage function by constant stable structure of the coalescence sleeve |
| Support liner made of stainless steel stretch metal                                  | Protection of the filter media against pressure shocks.<br>Low pressure loss by a large free cross-sectional area  |
| Use of stainless steel material in combination with glass fiber reinforced polyamide | Optimal corrosion protection   |

| Materials   |   |
|---|---|
| Filter media  | Borosilicate glass fibre fleece                         |
| Filter media support mesh   | Polypropylene   |
| Coalescence sleeve  | Polyester fleece  |
| Inner and outer support liner   | Stainless steel<br>1.4301 / 304                         |
| End caps  | Glass fibre reinforced polymer                          |
| O-rings   | Viton:<br>silicone free and free of compound (Standard) |
| Bonding   | Polyurethane  |
| Validation  |   |
| Validation of high-efficiency filters acc. to ISO 12500-1 and ISO 12500-3 |   |

PERFORMANCE DATA



| Operating pressure bar g | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Conversion factor fp     | 0,25 | 0,38 | 0,50 | 0,63 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,38 | 1,50 | 1,63 | 1,75 | 1,88 | 2,00 | 2,13 |

| Element Type | Nominal Flow Rate at 7 bar g m³/h* | Sizing example for pressure which deviates from nominal pressure  |
|--------------|------------------------------------|---|
| 0035         | 35                                 | $V_{nom} = 350 \text{ m}^3/\text{h}$ , operating pressure = 9 bar (g)<br>$V_{corr} = \frac{V_{nom}}{fp}$<br>$V_{corr} = \frac{350 \text{ m}^3/\text{h}}{1,25} = 280 \text{ m}^3/\text{h}$<br>Calculated size: Type 0320 |
| 0070         | 70                                 |   |
| 0120         | 120                                |   |
| 0210         | 210                                |   |
| 0320         | 320                                |   |
| 0450         | 450                                |   |
| 0600         | 600                                |   |
| 0750         | 750                                |   |
| 1100         | 1100                               |   |

\* m³ related to 1 bar abs. and 20°C

## CERTIFICATE

## Certificate of compliance with the order

according to  
DIN EN 10204 2.2

Confirmation of Design and Performance Data with Test Report.  
Results of the type test (validation) are listed below.

| Filter type   | UltraPleat® M | Filter size | 0035 - 1100 |                      |         |                                 |      |
|---|---------------|-------------|-------------|----------------------|---------|---------------------------------|------|
| <b>Retention of oil aerosols acc. to ISO 12500-1</b>                                  |               |             |             |                      |         |                                 |      |
| Oil retention rate at 8 bar absolute and 10 mg/m <sup>3</sup> inlet concentration     |               |             |             |                      |         | 99,4...99,9%                    |      |
| Residual oil concentration at inlet concentration of                                  |               |             |             | 10 mg/m <sup>3</sup> |         | 0,01...0,06 mg/m <sup>3</sup>   |      |
|   |               |             |             | 3 mg/m <sup>3</sup>  |         | < 0,01...0,02 mg/m <sup>3</sup> |      |
| <b>Retention of particles acc. to ISO 12500-3</b>                                     |               |             |             |                      |         |                                 |      |
| Particle diameter [µm]  | lower         | 0,19        | 0,24        | 0,36                 | 0,52    | 0,81                            | 1,16 |
|   | upper         | 0,24        | 0,36        | 0,52                 | 0,81    | 1,16                            | 1,78 |
| Particle retention rate at 8 bar absolute [%]   |               | 99          | 99,6        | 99,97                | 99,999  | 99,998                          | ---  |
| Particle retention rate related to particle diameter <b>0,01 µm</b> at 1 bar absolute |               |             |             |                      | 99,999% |                                 |      |


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