Donaldson®
Ultrafilter™

Ultradepth™ FF, MF, SMF

Coalescing Filter Elements

Coalescing depth filter elements for the removal of water, oil aerosols and solid particles from compressed air and gases with absolute retention efficiency.

Donaldson® Ultradepth™ FF, MF, and SMF filter elements utilize a three-dimensional Ultrair™ microfiber fleece media, which is made out of glass fibers. An integrated 1 µm prefilter media provides two-stage filtration. In addition, this media will capture and retain liquid aerosols and solid particles down 0.01 µm through direct impaction, sieving and diffusion.

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Applications

The Donaldson Ultradepth FF, MF, and SMF coalescing depth filter elements are ideal in the following industries and applications:

- Chemical
- Petrochemical
- Pharmaceutical
- Plastics
- Paint
- Food
- Beverage
- General machine fabrication
- Air conditioning technology
- Instrumentation and control air

Features	Benefits
Expanded inner and outer stainless steel support sleeves for the retention of the filter medium	No danger of corrosion – large openings ensure low differential pressure drop and high throughout
Borosilicate glass fiber depth filter media	Low differential pressure drop at high flow rate
Removal of liquid aerosols and solids particles down to 0.01 µm	Validated retention efficiency
Large surface area, large void volume (>94%)	High dirt holding capacity; long service lifetime

Ultradepth™ FF, MF, SMF

Specifications

Validation	Validation of high-efficiency filters by Technical University Dresden
Residual oil content at an inlet concentration of 3 mg/m³	FF = 0.1 mg/m³ MF = 0.03 mg/m³ SMF = <0.01 mg/m³
Retention rate related to particles of 0.01 µm	FF = 99.999% MF = 99.99998% SMF = 99.99999%
Maximum Differential Pressure	72.5 psi at 68°F regardless of system pressure
Initial Differential Pressure at Nominal Flow	FF = 0.73 psi MF = 1.20 psi SMF = 1.70 psi

Materials

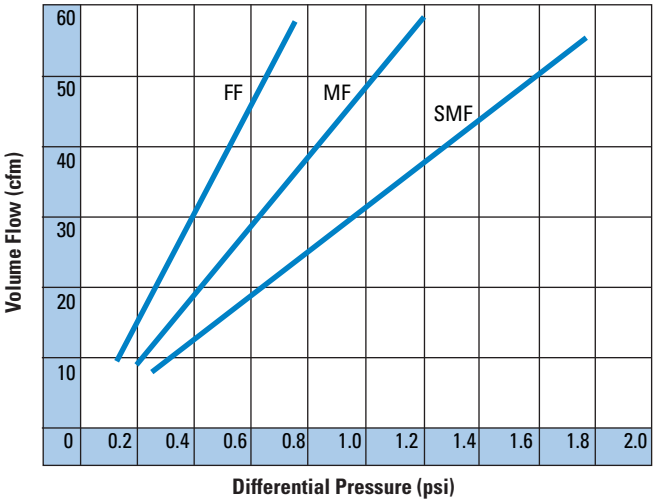
Filter Media	Borosilicate
Pre- & After-Filter Media	Cerex®*
Outer Foam Socks	Blue polyurethane foam sock up to 176°F HT/CR sock up to 248°F HT/NX sock up to 356°F
Bonding	Polyurethane
End Caps	Aluminum
Two O-Rings	Perbunan®**: silicone free and free of parting compound (standard)
Inner and Outer Support Sleeves	304 Stainless steel

Pressure Drop Calculations

Element Size	Correction Factor Filter Surface C_F
0205	0.08
0305	0.10
0310	0.12
0410	0.17
0420	0.19
0520	0.25
0525	0.32
0725	0.47
0730	0.68
1030	1.00
1530	1.55
2030†	2.10
3030†	3.20
3050†	5.65

† MF and SMF not available in 2030, 3030 and 3050.

Performance of FF, MF, SMF elements — compressed air
These curves define the flow of a 1030 filter element at standard conditions (14.7 psia; 68°F; R.H.= 70%)



The performance curve is based on 1030 element, or one ten inch equivalent (TIE), and the correction factor for filter surface C_f for a 1030 = 1.00.

Example 1: Low Flow Single Element

Given:

- Flow rate = 12 scfm
- Pressure = 80 psig
- Using AG0002 (1–0205 MF Element)

1. Convert flow given from standard cubic feet per minute to actual cubic feet per minute
   - 12 scfm x (14.7 psia / 94.7 psia) = 1.86 acfm (through the housing and element)
2. Divide by the correction factor
   - 1.86 / 0.08 = 23.25 acfm (through each TIE)
3. Pressure drop through this element = 0.45 psid

Example 2: High Flow Multiple Element

Given:

- Flow rate = 15,000 scfm
- Pressure = 150 psig
- Using SH2200 (27 - 3030 SMF Element)

1. Convert flow given from standard cubic feet per minute to actual cubic feet per minute
   - 15,500 scfm x (14.7 psia / 164.7 psia) = 1,383 acfm (through the housing)
2. Divide by number of elements
   - 1,383 / 27 = 51.2 acfm (through each element)
3. Divide by correction factor
   - 51.2 / 3.20 = 16 acfm (through each TIE)
4. Pressure drop through these elements = 0.52 psid

* Cerex® is a registered trademark of Cerex Advanced Fabrics, Inc.

** Perbunan® is a registered trademark of LANXESS Deutschland GmbH.

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