



Donaldson
FILTRATION SOLUTIONS

Compressed Air Filtration

AG / SG / HD

Depth Filter / Coalescence Filter /
Particle Filter

UltraPleat® SMF

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)



Depth Filter
UltraPleat® SMF

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® SMF 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 by 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® SMF are based on the three-dimensional micro fibre fleece made of coated borosilicate glass fibers, which works oleophobic and hydrophobic.

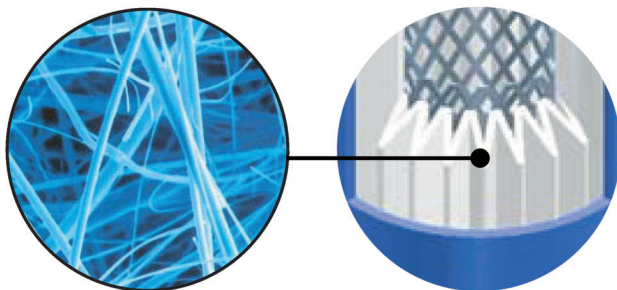
By utilising various filtration mechanisms such as retention by direct impact, sieve effect and diffusion effect, liquid aerosols and solid particles down to the size of 0.01µm are being retained in the filter.



Cross section of the depth filter

The UltraPleat® SMF 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



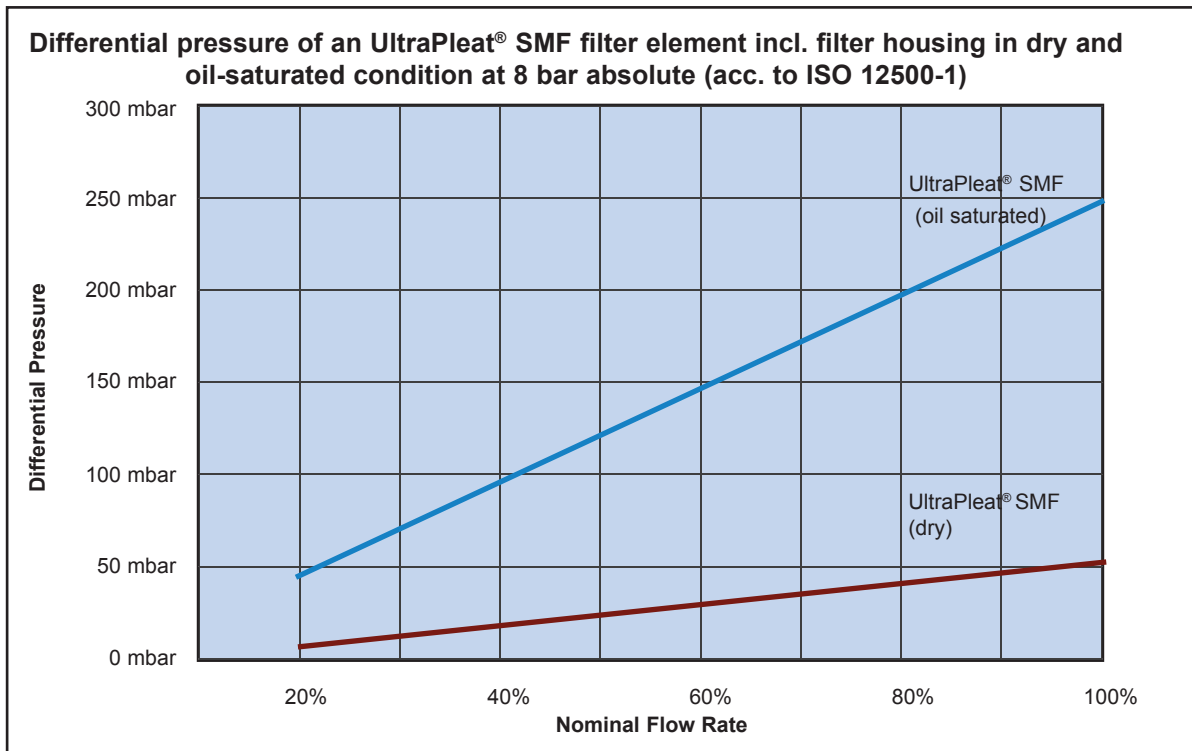
Cross section of the depth filter with SEM micrograph of the filter media

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. Low pressure loss by a large free cross-sectional area
Use of stainless steel material in combination with aluminium	Optimal corrosion protection and high temperature resistance

Materials	
Filter media	Borosilicate glass fibre fleece
Coalescence sleeve	Polyester fleece
Inner and outer support liner	Stainless steel 1.4301 / 304
End caps	Aluminium
O-rings	NBR: 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
02/05	20	$V_{nom} = 192 \text{ m}^3/\text{h}$, operating pressure = 9 bar (g) $V_{korr} = \frac{V_{nom}}{fp}$ $V_{korr} = \frac{192 \text{ m}^3/\text{h}}{1,25} = 153,6 \text{ m}^3/\text{h}$ Calculated size: Type 05/20
03/05	40	
03/10	60	
04/10	90	
04/20	120	
05/20	180	
05/25	270	
07/25	360	
07/30	480	
10/30	720	
15/30	1080	
20/30	1440	
30/30	1920	
30/50	2880	

* 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® SMF	Filter size				02/05 - 30/50	
Retention of oil aerosols acc. to ISO 12500-1							
Oil retention rate at 8 bar absolute and 10 mg/m ³ inlet concentration						99,9%	
Residual oil concentration at inlet concentration of				10 mg/m ³		≤ 0,01 mg/m ³	
				3 mg/m ³		< 0,01 mg/m ³	
Retention of particles acc. to ISO 12500-3							
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 [%]		99,979	99,9952	99,999	99,998	99,996	---
Particle retention rate related to particle diameter 0,01 µm at 1 bar absolute					99,99999%		


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