Product Data Sheet
Filter Elements EFST..ZN,XN,XXN /TC, /EX

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Field of application

Type EFST filter elements of filtration grades ZN, XN, XXN in TC version (high temperature and chemical resistant) or EX version (like TC, but additionally with electrical conductivity between all parts of the element and connection for protecting earth) are mainly designed for separating liquid aerosols, i.e. smallest, nebulous liquid droplets (coalescing filtration, wet-type filtration) as well as for separating finest dust contaminants (fine dust filtration, dry-type filtration) from compressed air flows up to 100°C. Larger droplets or amounts of liquids are, of course, also separated during this process.

Features

Type EFST filter elements of filtration grades ZN, XN, XXN consist of a pleated depth filter media and a separately located drainage media. The two functional layers are compactly located between the two stainless steel cylinders and therefore completely integrated in the filter element.

Thanks to the pleating technology the effective filter surface is increased many times resulting in a higher dirt holding capacity and a longer service life. At the same time the flow resistance and therefore differential pressure generated by the filter element is considerably reduced. Due to the separation of the two function units, filtration and drainage, which are both fundamental for the filter element, the function of the remaining layer is guaranteed even if one filter layer breaks. To avoid a breakthrough at an early stage, the pleated depth filter cylinder has two or more layers. In addition, it is provided with a pleated supporting fabric on the inside and outside. All media are located within the two stainless steel cylinders. In this way, breaking off completely or in parts of the filter layer used for filtration is impossible.

All the features mentioned above are a contribution to a filter element which has a high performance (high separation efficiency) combined with economic efficiency (low differential pressure) and maximum operating safety (integrated design).

Tested acc. to **ISO 12500-1**[*0]

*0 - measured with model EFST30, oil test aerosol with viscosity of 32 mm²/s, inlet concentration 10 mg/m³

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Basic data

Model	Nominal volume flow (VN)*1	Max. operating pressure	Min./Max. operating temperature
EFST 25	35 m³/h (1.00)	---	Constant 2°C - 100°C Short time 2°C - 120°C
EFST 30	50 m³/h (1.00)		
EFST 50	70 m³/h (1.02)		
EFST 70	100 m³/h (0.67)		
EFST 90	160 m³/h (0.87)		
EFST 110	330 m³/h (0.91)		
EFST 120	500 m³/h (0.92)		
EFST 130	800 m³/h (0.91)		
EFST 140	1,000 m³/h (0.93)		
EFST 170	1,500 m³/h (0.92)		
EFST 180	2,000 m³/h (0.95)		
EFST 190	2,500 m³/h (0.95)		

*1 – refers to 1 bar(a) and 20°C at 7 bar operating pressure
The factor in brackets specifies the relation of the flow of the filter element for each cm² of surface compared to the EFST30 reference element.

Purity classes according to ISO 8573-1

Contamination	ZN	XN	XXN
Solid particles*2	Class 2	Class 1	Class 0-1
Water content	---	---	---
Total oil content*2 *3	Class 2	Class 1	Class 0-1

*2 - typical result, on the assumption of suitable inlet concentrations as well as operating and marginal conditions.
*3 - the amount of oil vapour is not taken into account and may reduce the purity class.

Volume flow conversion factors

«F1» - Pressure (in bar)

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0.125	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

25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	>400
3.1	5.1	6.5	7.6	8.5	9.3	9.9	10.5	11.0	11.5	11.9	12.3	12.7	13.0	13.0	13.0	13.0

«F2» - Temperature (in °C)

2	5	10	15	20	25	30	35	40	45	50	55	60	70	80	90	100
1.07	1.05	1.04	1.02	1.00	0.98	0.97	0.95	0.94	0.92	0.91	0.89	0.88	0.85	0.83	0.81	0.79

Calculation of the converted volume flow

Converted volume flow VK	Nominal required volume flow VN_{min}
$VK = VN \times F1 \times F2$	$VN_{min} = VK / F1 / F2$

VK : Converted volume flow calculated for the operating conditions
VN_{min}: Nominal required volume flow calculated for the operating conditions, based on the volume flow at operating conditions

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Maintenance rules

Pressure range	
0-4 bar	Replacement of filter element once a year the latest on a differential pressure of 50 mbar
5-16 bar	Replacement of filter element once a year the latest on a differential pressure of 350 mbar
17-50 bar	Replacement of filter element once a year the latest on a differential pressure of 500 mbar
> 50 bar	Replacement of filter element once a year the latest on a differential pressure of 750 mbar

Product specific data

Specification	ZN	XN	XXN
Differential pressure, dry*4	30 mbar	40 mbar	80 mbar
Differential pressure, wet*4	125 mbar	140 mbar	190 mbar
Separation efficiency, dry (nominal)	99.9999% (1µ)	99.9999% (0.01µ)	99.99999% (0.01µ)
Separation efficiency (ISO 12500-3) *5	99.98% (0.3µ)	99.995% (0.3µ)	99.9995% (0.3µ)
Residual oil content (nominal)	≤ 0.5 mg/m³	≤ 0.01 mg/m³	≤ 0.001 mg/m³
Residual oil content (ISO 12500-1) *6	---	0.02 mg/m³	---

*4 - measured at 7 bar operating pressure and at nominal volume flow, model EFST30
*5 - measured referring to ISO 12500-3 at 7 bar and at nominal volume flow, model EFST30, MPPS - Most Penetrating Particle Size
*6 - measured according to ISO 12500-1, model EFST30, oil test aerosol with viscosity of 32 mm²/s, inlet concentration 10 mg/m³

Materials

Component	
Depth filter media	Glass fibre
Drainage media	PES (polyester)
Supporting fabric of depth filter media	Nylon
Bonded joint	Epoxy
Cylinders	Stainless steel 1.4301
End caps	Stainless steel 1.4301
Sealing materials	Viton

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Dimensions

Model	Height (total height)	∅	∅ Inlet (inside)
EFST 140	510 mm (510 mm)	92 mm	55 mm
EFST 170	760 mm (760 mm)	92 mm	55 mm
EFST 190	762 mm (762 mm)	140 mm	96 mm

Classification according to Pressure Equipment Directive 2014/68/EU for group 2 fluids

Model	Volume	Category
All models	Filter elements are not part of the Pressure Equipment Directive 2014/68/EU	

Other directives

Model	
All models	---

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