Filtrations-Separations-Technik

Product Data Sheet
Filter Elements EFSTP..V,ZN,XN,XXN,A

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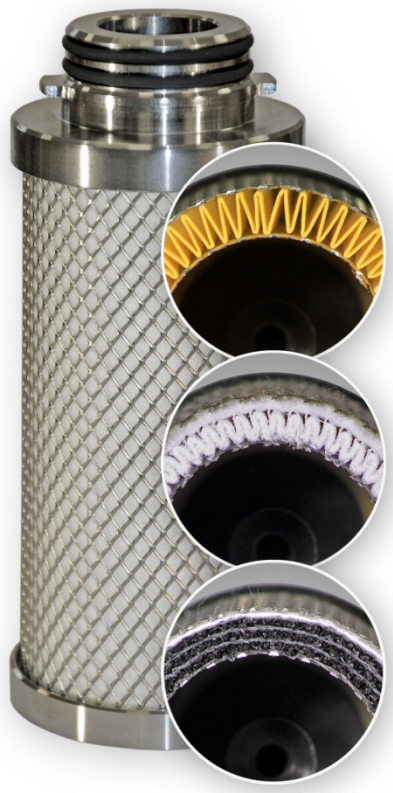
Field of application

Type EFSTP filter elements of filtration grades V, ZN, XN, XXN and A are filter elements with standard filtration grades suitable for filter housings of type FWP. Both, type FWP filter housings and the entire body of EFSTP filter elements are fully made out of stainless steel. Therefore this series is especially suitable for applications requiring ultra clean air or applications with extended demands in regards to temperature or chemical resistance.

Features

Type EFSTP filter elements of filtration grade V (coarse filter) consist of a pleated coarse filter media, filter elements of filtration grades ZN, XN, XXN (coalescing filter) of a pleated depth filter media and a separate drainage media. 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 flow resistance and therefore differential pressure, generated by the filter element, are considerably reduced. Due to the separation of the two functional units, filtration and drainage, which are both fundamental for a coalescing 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 at least two or even more layers. In addition, it is provided with a pleated supporting fabric on the inside and outside. Filter elements of filtration grade A (adsorption filter) comprise a special filter media consisting of a loose activated carbon granulate, embedded between two coarse filter layers. In addition, a separate general purpose filter layer (Z) is located towards the outer side, in order to reliably prevent even the finest activated carbon dust from leaving the filter element. Using loose activated carbon granulate results in, for each filter element, an averagely large amount of activated carbon (1.2 kg of activated carbon for each m² of filter surface). This considerably increases the separation capability and the service life. The 3-layer design of the filter media contributes to an adequate thickness of the activated carbon bed and thus to a long contact time between compressed air and activated carbon. This results in an extremely low residual oil content. The general purpose filter layer downstream of the activated carbon usually eliminates the need for additional downstream filtration. All media are securely located between the two stainless steel cylinders. In this way, breaking off completely or in parts is impossible. All the features mentioned above contribute to a filter element which has a high performance (high separation efficiency) combined with economic efficiency (low differential pressure, long service life) and maximum operating safety (integrated design).



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Specifications subject to change without notice Date 25.03.2020 Latest version see www.fstweb.de

Basic data

Model	Nominal volume flow (VN)*1.1	Max. operating pressure	Min./Max. operating temperature*1.2
EFSTP90	160 m³/h (2.06)	---	+2°C - +65°C (V) +2°C - +100°C (ZN, XN, XXN) +2°C - +45°C (A)
EFSTP120	500 m³/h (3.07)		
EFSTP140	1,000 m³/h (2.01)		
EFSTP180	2,000 m³/h (1.92)		
EFSTP190	2,500 m³/h (1.58)		

*1.1 - 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.
*1.2 - a 20% higher operating temperature is permissible for a short time period

Purity classes according to ISO 8573-1

Contamination	V	ZN	XN	XXN	A
Solid particles*2	Class 6	Class 2	Class 1	Class 0-1	(Class 2)
Water content	---	---	---	---	---
Residual oil content*2	Class 4*3	Class 2*3	Class 1*3	Class 0-1*3	Class 0-1*4

*2 - typical result, on the assumption of suitable inlet concentrations as well as operating and marginal conditions
*3 - the oil vapour content is not taken into account, it may reduce the purity class
*4 - the liquid residual oil content is not taken into account and may reduce the purity class (should be separated in advance by means of fine filtration)

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

17	18	19	20	25	30	35	40	45	50
2.24	2.35	2.45	2.6	3.1	3.6	4.0	4.4	4.7	5.1

«F2» - Temperature (in °C)

2	5	10	15	20	25	30	35	40	45	50	55	60	65	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	0.87	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 x F1 x 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	V, ZN, XN, XXN	A
0-4 bar	Replacement of filter element once a year, the latest on a differential pressure of 50 mbar	Replacement of filter elements every 3 months, depending on the operating temperature and therefore on the specified oil vapour amount earlier if required
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	V	ZN	XN	XXN	A
Differential pressure, dry*5	10 mbar	30 mbar	40 mbar	80 mbar	60 mbar
Differential pressure, wet*5	20 mbar	125 mbar	140 mbar	190 mbar	---
Separation efficiency (nominal)	99.99% (3µ)*6	99.9999% (1µ)	99.9999% (0.01µ)	99.99999% (0.01µ)	---
Residual oil content (nominal)	---	≤ 0.5 mg/m³	≤ 0.01 mg/m³	≤ 0.001 mg/m³	≤0.003 mg/m³ *7

*5 - measured at 7 bar and at nominal volume flow, model EFST30
*6 - after initial occurring of a filter cake in the surface filtration phase
*7 - at an inlet concentration of ≤ 0,01 mg/m³, residual oil content is not taken into account (should be separated in advance by means of fine filtration)

Materials

Component	
Coarse filter	Cellulosic fibres, impregnated (acrylic basis)
Depth filter media	Glass fibres
Drainage media	PES (polyester)
Supporting fabric of depth filter media	Nylon
Filter media, activated carbon	Activated carbon granulate, PES (polyester) fibre layer
Filter media, general purpose filtration	Glass fibres
Bonded joint	PU (polyurethane)
Cylinders	Stainless steel 1.4301
End caps	Stainless steel 1.4301
Sealing materials	FKM (Viton)

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Dimensions

Model	Height (total height)	∅	Connection	∅ Inlet (inside)
EFSTP90	69 mm (88 mm)	62 mm	T-Code	25 mm
EFSTP120	127 mm (146 mm)	62 mm	T-Code	25 mm
EFSTP140	253 mm (278 mm)	86 mm	Code 7	42 mm
EFSTP180	507 mm (532 mm)	86 mm	Code 7	42 mm
EFSTP190	759 mm (784 mm)	86 mm	Code 7	42 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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