Product Data Sheet

Sterile Filter Elements EFSTP...SMPL

Application

Type EFSTP filter elements of filtration grade SMPL are membrane filter elements with an absolute retention rate of 0,2 µ in liquids and 0,02 µ in gases, suitable for filter housings of type FWP. They are mainly designed for separating micro-biological contaminants from compressed air flows, i.e. viruses, bacteria, etc. (sterile filtration). The filter elements can be sterilised (steaming and autoclaving) and are therefore used for generating sterile compressed air flows (sterile air). Filtra-tion grade SMPL filter elements, of course, also separate finest solid contaminants and are therefore used for fine dust separation to generate ultra clean compressed air flows (ultra clean air).

Features

Type EFSTP sterile filter elements of filtration grade SMPL are made by a pleated, hydrophobic PTFE membrane, supported by a polypropylene support on the inside and the outside. The pleated media pack is compactly located between two polypropylene cylinders and end caps and therefore completely integrated in the filter element. All the materials used fulfil the requirements of FDA 21CFR and USP Class VI.

Thanks to the pleating technology the effective filter surface is increased many times, resulting in a high 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. To avoid a breakthrough at an early stage and to achieve a high number of sterilisation cycles, the pleated filter media is provided with a pleated supporting fabric on the inside and outside. All media are located within the two polypropylene cylinders. In this way, breaking off completely or in parts of the filter layer used for filtration is impossible.

EFSTP...SMPL sterile filter elements are manufactured using polypropylene hardware and polyester media support and are assembled using the latest ther-mal welding technology. The welding process ensures a reliable, durable and thermal resistant joint of all components and is fundamental to the operational safety of a sterile filter element. There are no resin bonded joints that may soften during sterilisation or break due to different thermal expansions of different materials, both making the integrity of the sterile filter element a risk.

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, multi-layer, thermal welded design).

FST GmbH - Im Teelbruch 106 - 45219 Essen - Germany - ☏ +49 (0)2054 8735-0 - 🖷 +49 (0)2054 8735-100 - info@fstweb.de

Product Data Sheet
Sterile Filter Elements EFSTP...SMPL

Filtrations-Separations-Technik

Basic Data

Size	nom. volume flow (VN)*1	Max. operating pressure	Max. operating temperature	connection	height	Ø	Ø inlet (inner)
EFSTP 90	160 m³/h		+2°C - +80°C	T-Code	64 mm	56,0 mm	25 mm
EFSTP 120	500 m³/h			T-Code	122 mm	56,0 mm	25 mm
EFSTP 140	1.000 m³/h	–	Sterilisation *2	Code 7	249 mm	71,0 mm	43 mm
EFSTP 180	2.000 m³/h		> 150 cycles at	Code 7	496 mm	71,0 mm	43 mm
EFSTP 190	2.500 m³/h		135°C à 30 min	Code 7	744 mm	71,0 mm	43 mm

*1 - related to 1 bar(a) and 20°C at 7 bar operating pressure
*2 - steam- or autoclave sterilisation

Volume flow conversion factors

«F1» - Pressure (in bar)

0 bar	1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar	11 bar	12 bar	13 bar	14 bar	15 bar	16 bar
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 bar	18 bar	19 bar	20 bar	25 bar	30 bar	35 bar	40 bar	45 bar	50 bar
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	75	80
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	0,84	0,83

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

Purity Classes acc. ISO 8573-1

Contamination	
Solid Particles *3	classes 0 - 1
Humdity	-
Total oil content	-

*3 - typical result, on the assumption of suitable inlet concentrations as well as operating and marginal conditions

Maintenance rules

0 - 4 bar	Replacement of filter element latest after 150 sterilisation cycles, depending on the type of sterilisation (hard/soft) earlier, if required
5 - 16 bar	
17 - 50 bar	

FST GmbH - Im Teelbruch 106 - 45219 Essen - Germany - ☏ +49 (0)2054 8735-0 - 🖷 +49 (0)2054 8735-100 - info@fstweb.de

Product Data Sheet
Sterile Filter Elements EFSTP...SMPL

Filtrations-Separations-Technik

Product Specific Data

Specification	
Differential pressure dry *4	45 mbar
Burst pressure at flow a⇨i / i⇨a*5	4 bar / 3,0 bar
Micron rating nominal for air	0,02 µ
Micron rating nominal for water	0,2 µ*6
Guaranteed retention rate	LRV > 7

*4 - measured at 0 bar and nominal volume flow, size EFSTP140
*5 - at 20°C
*6 - average pore size of depth filter media; reference figures in process technologies (liquid filtration)

Materials

Component	
Membrane Media	PTFE
Supporting fabric of depth filter media	PP Polypropylene
Cylinders	PP Polypropylene
End caps	PP Polypropylene
Sealings	EPDM

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

Size	
all sizes	Filter elements are not part of the Pressure Equipment Directive 2014/68/EU

Other directives

Size	
all sizes	■ United States Food and Drug Administration (US FDA) Code of Federal Regulations Title 21 (21CFR) 174, 175, 176, 177 o General Indirect Food Additives (21 CFR 174) o Adhesives and Components of Coatings (21 CFR 175) o Paper and Paperboard Components (21 CFR 176) o Polymers (21 CFR 177) ■ U.S. Pharmacopoeia (USP) Plastics Class VI (Approved Medical Grade Plastic Materials)

Technical alterations reserved.

Version: 1.8.1	Author: Karsten Endrejat	Date: 06.06.2024

FST GmbH - Im Teelbruch 106 - 45219 Essen - Germany - ☏ +49 (0)2054 8735-0 - 🖷 +49 (0)2054 8735-100 - info@fstweb.de