



Donaldson.
FILTRATION SOLUTIONS

Process Filtration From Pure to Sterile

PF-PES „X“

MAIN FEATURES & BENEFITS:

- Absolute rating of 0,45 µm
- Very long service life time and outstanding flow rate
- Exorbitant contamination-holding capacity
- Extremely low adsorption of proteins
- Approved for Food Contact Use acc. to CFR Title 21 & 1935/2004/EC



INDUSTRIES:



- Breweries



- Wineries

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Donaldson®
Ultrafilter

PRODUCT DESCRIPTION

The PF-PES „X” filter element is an absolute rated, pleated high performance Polyethersulfone membrane filter. It provides very high flow rates and an outstanding contaminant-holding capacity and service lifetime even in high contaminant liquids like beer and wine.

The outstanding performance of the PF-PES „X” filter element is based on its state-of-the-art filtration media. The Polyethersulfone membrane is inherently hydrophilic and distinguishes itself by having a highly asymmetrically designed pore structure. The pore size steadily decreases towards the centre of the medium resulting in a highly porous structure.

This extremely durable design maintains consistent porosity and impurity retention throughout its service life without shedding or unloading contaminations.

All components meet the EU and USA requirements for Food Contact Use in accordance with **CFR (Code of Federal Regulations) Title 21** and **1935/2004/EC**. PF-PES „X” has passed the USP Class VI tests for plastics. The filter element is manufactured in accordance with the manufacturing requirements, has no migration of filter media, is non-fibre releasing and is thermally welded without the use of binders or other chemical additives.

The absolute rated PF-PES „X” membrane filter is designed and developed for the following applications:

Clarification and cold sterilization of

- Beer
- Beer Mix
- Wheat beer
- Ale
- Lager Pils

Clarification and cold sterilization of

- Wine
- Wine coolers
- Sparkling Wine
- Liquors
- Spirits

High Quality Filtration of

- Ingredient Water
- Process Water

PRODUCT SPECIFICATIONS

Product Specifications

Absolute Retention Rates

- 0,45 µm

Filtration Surface

- 0,72 m² per 250 mm element (10")

Maximum Differential Pressure

| Operating temperature [°C / °F] | Differential pressure [bar / psi] |
|------------------------------------|--------------------------------------|
| 38 / 100 | 5,5 / 80 |
| 66 / 150 | 4,1 / 60 |
| 82 / 180 | 2,1 / 30 |

Cumulative Steaming Time*

- 121°C – 125°C (30 minutes) Saturated Steam
(Forward Flow) up to 100 cycles

**Figures are based on lab tests to evaluate steaming resistance. Filter elements need to be checked in actual use. Contact Donaldson for recommended Autoclaving/Steaming procedures.*

MATERIAL COMPLIANCE EU

The Donaldson PF-PES „X“ filter element meets the guideline for Food Contact Use as given in **European Regulation (EC) Number 1935/2004**. All polymeric components (Polypropylene, Polyethersulfone) meet the requirements of EU Directive 2002/72/EC relating to plastic materials and articles intended to come into contact with foodstuffs (excluding O-rings).

Migration tests have been carried out in simulant after flushing or in flow conditions.

For specific details on the O-rings, please contact your Donaldson Sales Engineer.

MATERIAL COMPLIANCE USA

All components of the PF-PES „X“ filter element are FDA listed for food contact use in the **Code of Federal Regulations (CFR), Title 21**

| Filter Materials | CFR Title |
|----------------------------|--------------------------------|
| Membrane: | Polyethersulfone 177.2240 |
| Upstream Support: | Polypropylene 177.1520 |
| Downstream Support: | Polypropylene 177.1520 |
| Outer Guard: | Polypropylene 177.1520 |
| Core: | Polypropylene 177.1520 |
| End Caps: | Polypropylene 177.1520 |
| O-Rings: | EPDM 177.2600 |
| Alternatively: | Silicone 177.2600 |
| | Buna N 177.2600 |
| | PTFE over silicone 177.1550 |
| | PTFE over viton 177.1550 |
| Sealing Method: | Thermal Bonding |

All products have been inspected and released by Quality Assurance as having met the following requirements:

- All filters are fabricated without the use of binders, adhesives, additives or surface-active agents.
- All filter components based on plastics are non-toxic and are certified bio-safe in accordance with current USP Class VI Tests for Plastic.
- All sterile filters are integrity tested to verify compliance with established quality and design specifications and to assure consistent and reliable performance.
- Bacterial endotoxin levels in aqueous extracts of PF-PES „X“ filter elements are less than 0,5 EU/ml, as determined using the limulus amebocyte lysate (LAL) test.

RETENTION RATES (ACCORDING TO HIMA CHALLENGE PER ASTM)

| Filter Grade | Microorganism | LRV / cm ² |
|--------------------|---------------------------------|-----------------------|
| PF-PES „X“, 0,45µm | <i>Saccharomyces cerevisiae</i> | > 7 |
| | <i>Oenococcus oeni</i> | > 7 |

INTEGRITY TESTING

Bubble Point Test

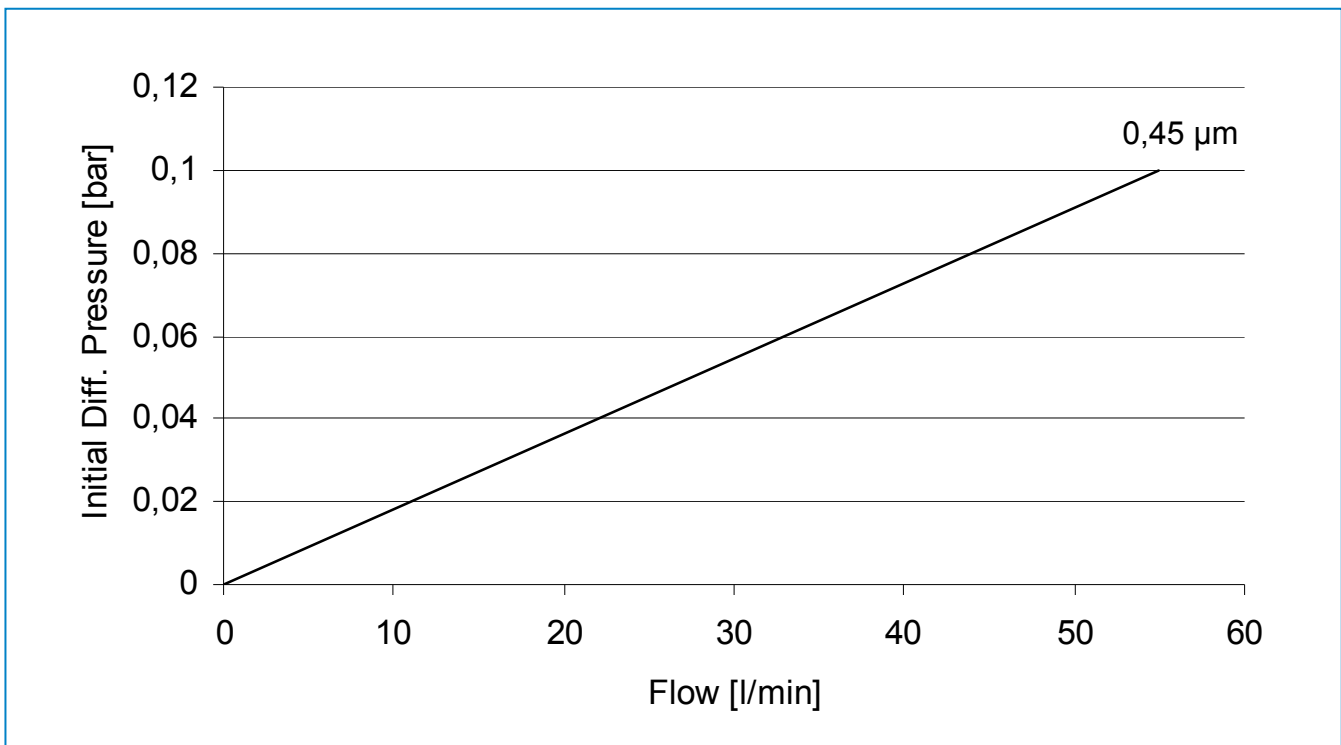
| Filter Grade | Minimum Bubble Point [bar / psi] |
|--------------|----------------------------------|
| 0,45µm | 1,52 bar / 22 psi |

Diffusion Test / Forward Flow Test

| Filter Grade | Maximum Diffusion Values [ml / min] |
|--------------|-------------------------------------|
| 0,45µm | 15 ml/min @ 0,7 bar (10 psi) |

FLOW CHARACTERISTICS

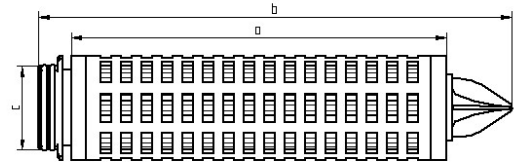
PF-PES „X“, 10", Deionized water, 25°C



AVAILABLE END CAP CONFIGURATIONS

Dimensions (CODE 7 connection):

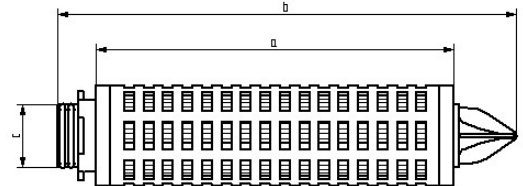
| CODE 7 | | | | | | |
|--------|-----|-------|-----|-------|------|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | Inch |
| 10” | 250 | 9,84 | 315 | 12,40 | 56,5 | 2,22 |
| 20” | 500 | 19,68 | 565 | 22,24 | 56,5 | 2,22 |
| 30” | 750 | 29,53 | 815 | 32,08 | 56,5 | 2,22 |



CODE 7: 2 x 226 o-rings, bayonet 2 locking tabs, locating fin

Dimensions (P9 connection):

| CODE 9 | | | | | | |
|--------|-----|-------|-----|-------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | Inch |
| 10” | 250 | 9,84 | 320 | 12,59 | 44 | 1,73 |
| 20” | 500 | 19,68 | 570 | 22,44 | 44 | 1,73 |
| 30” | 750 | 29,53 | 820 | 32,28 | 44 | 1,73 |



P9: 2 x 222 o-rings, bayonet 3 locking tabs, locating fin

Other end cap configurations on request.

Technical alterations reserved 04/2009

- Integrity test of this element to be done by Bubble Point or Forward Flow Test.
- For information on test equipment or test services, please contact your Donaldson Sales Engineer and visit our website at www.donaldson.com!

(Rev02 – 07/10)

