

PROCESS FILTRATION FROM PURE TO STERILE

LifeTec PES-BN



PRODUCT DESCRIPTION

The LifeTec PES-BN filter element is an absolute grade rated, pleated high performance Polyethersulfone membrane filter. It provides the greatest assurance of filtration performance, stability and service life for sterile filtration and microbial stabilization of highly colloidal liquids.

The outstanding performance of the LifeTec PES-BN filter element is based on its state-of-the-art filtration media. The Polyethersulfone membrane is inherently hydrophilic and distinguishes itself by having an 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 and subsequent amendments.

MAIN FEATURES & BENEFITS

- Absolute grade rating of 0.45 µm
- Excellent flow rate
- Highly resistant materials
- Highly asymmetrical membrane design
- High thermal and hydrolytic stability
- Approved for food contact use acc. to CFR Title 21 & EC/1935/2004

The filter element is manufactured in accordance with the GMP requirements as defined in EC/2023/2006, has no migration of filter media and is thermally welded.

All materials used do not contain any substances of very high concern (SVHC) as defined in EC/1907/2006 and EC/65/2011.

INDUSTRIES



- Breweries



- Wineries



- Beverages



- Soft Drinks and Water



- Chemical Industry

APPLICATIONS

The absolute rated LifeTec PES-BN membrane filter is designed and developed for the filtration of highly colloidal liquids:

Clarification and cold sterilization of beverages like:

- Beer
- Beer Mix
- Wine
- Wine Coolers

Clarification and final filtration of:

- Deionized Water
- Chemically treated Water
- High temperature Water
- Process Water
- Ingredient Water
- Soft Drinks
- Bottled Water

QUALITY TEST

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

- All 10" sterile filter modules are integrity tested to verify compliance with established quality and design specifications and to assure consistent and reliable performance.
- The traceability of each filter element according to EC/1935/2004 is provided by serial number.
- All LifeTec PES BN filter elements are completely staged, assembled, tested and packaged in Class 7 clean room facility, whose Quality Management System is approved by an accredited registering body to the appropriate ISO9001 Quality Systems Standard.

MATERIAL COMPLIANCE USA

All components of the LifeTec PES-BN filter element are FDA listed for food contact use in the Code of Federal Regulations (CFR), Title 21:

| Filter Materials | | CFR Title 21 |
|------------------|------------------|--------------|
| Membrane | Polyethersulfone | § 177.2240 |
| Upstream support | Polypropylene | § 177.1520 |
| Scrim | Polypropylene | § 177.1520 |
| Outer guard | Polypropylene | § 177.1520 |
| Core | Polypropylene | § 177.1520 |
| End caps | Polypropylene | § 177.1520 |
| O-rings | EPDM | § 177.2600 |
| | Silicone | § 177.2600 |
| Sealing method | Thermal bonding | |

MATERIAL COMPLIANCE EU

The Donaldson LifeTec PES-BN 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 EC/10/2011 relating to plastic materials and articles intended to come into contact with foodstuffs. Migration tests have been carried out in simulants (B, D1) after flushing or in flow conditions. All materials used do not contain any substances of very high concern (SVHC) as defined in EC/1907/2006 (REACH Guideline) and EC/65/2011 (RoHS Guideline) and are free of any Latex-based components. The PP materials used for Cage & Core are treated acc. to EMA/410/01 Rev.03 and thus bear no risk of transmitting TSE and BSE.

RETENTION RATES (According to HIMA Challenge per ASTM)

| Filter Grade | Microorganism | LRV / cm ² |
|--------------|------------------------|-----------------------|
| 0.45 µm | Pediococcus damnosus | > 7 |
| | Lactobacillus lindneri | > 10 |

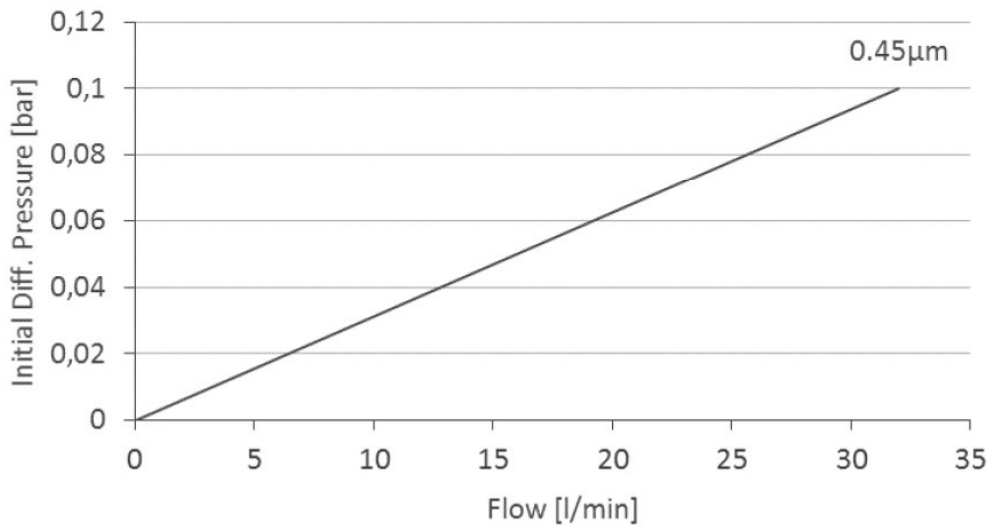


PRODUCT SPECIFICATIONS

| Product Specifications | | | | |
|-------------------------------|--|-----|-----------------------|-----|
| Filter Grade | 0.45 µm (absolute retention rate) | | | |
| Filtration Surface | 0.72 m ² per 250 mm element (10") | | | |
| Maximum Differential Pressure | Operating temperature | | Differential pressure | |
| | °C | °F | bar | psi |
| | 38 | 100 | > 15 | 217 |
| | 66 | 150 | > 11 | 159 |
| | 82 | 180 | > 9 | 130 |
| Cumulative Steaming Time* | 121°C – 125°C (30 minutes) saturated steam (forward flow) more than 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.

FLOW CHARACTERISTICS



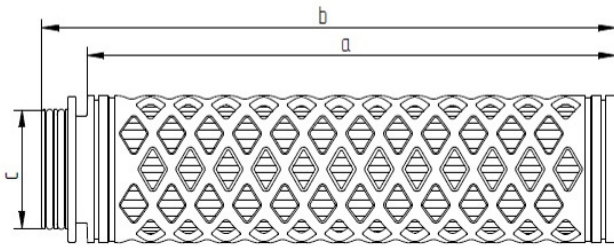
LifeTec PES-BN

10", Deionized water, 20°C

INTEGRITY TESTING

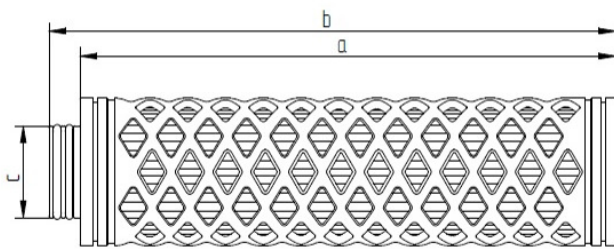
| Bubble-Point-Test | | | Diffusion Test / Forward Flow Test | |
|-------------------|----------------------|-------|------------------------------------|---------------------------------|
| Filter Grade | Minimum Bubble Point | | Filter Grade | Maximum Diffusion Values |
| | bar | psi | | |
| 0.45 µm | 1.30 | 18.85 | 0.45 µm | 20 ml/min @ 0.7 bar (10.15 psi) |





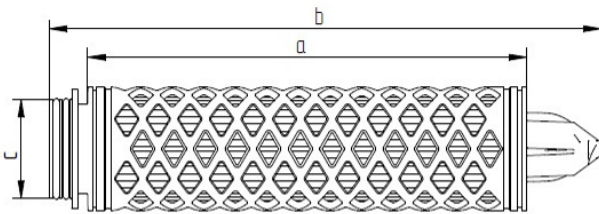
| Dimensions (CODE 2 connection) | | | | | | |
|--------------------------------|-----|------|------|------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | inch |
| 10" | 253 | 10.0 | 274 | 10.8 | 56 | 2.2 |
| 20" | 495 | 19.5 | 516 | 20.3 | 56 | 2.2 |
| 30" | 737 | 29.0 | 758 | 29.8 | 56 | 2.2 |
| 40" | 979 | 38.5 | 1000 | 39.4 | 56 | 2.2 |

CODE 2: 2 x 226 o-rings, bayonet 2 locking tabs, flat end cap, integrated reinforcement ring



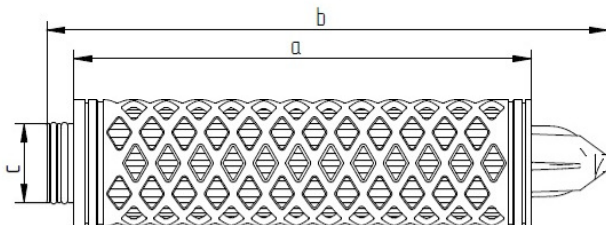
| Dimensions (CODE 3 connection) | | | | | | |
|--------------------------------|-----|------|-----|------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | inch |
| 10" | 256 | 10.1 | 271 | 10.7 | 44 | 1.7 |
| 20" | 498 | 19.6 | 513 | 20.2 | 44 | 1.7 |
| 30" | 740 | 29.1 | 755 | 29.7 | 44 | 1.7 |
| 40" | 982 | 38.7 | 997 | 39.3 | 44 | 1.7 |

CODE 3: 2 x 222 o-rings, plug connection, flat end cap, integrated reinforcement ring



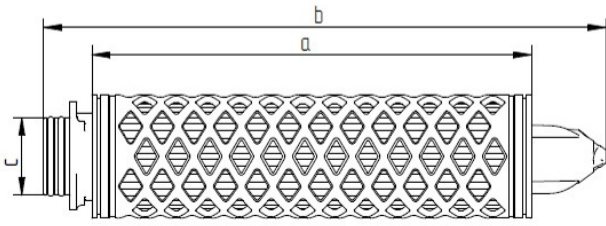
| Dimensions (CODE 7 connection) | | | | | | |
|--------------------------------|-----|------|------|------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | inch |
| 10" | 251 | 9.9 | 315 | 12.4 | 56 | 2.2 |
| 20" | 493 | 19.4 | 557 | 21.9 | 56 | 2.2 |
| 30" | 735 | 28.9 | 799 | 31.5 | 56 | 2.2 |
| 40" | 977 | 38.5 | 1041 | 41.0 | 56 | 2.2 |

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



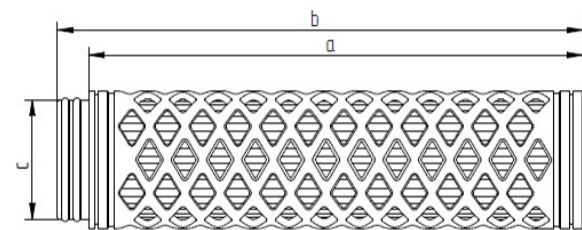
| Dimensions (CODE 8 connection) | | | | | | |
|--------------------------------|-----|------|------|------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | inch |
| 10" | 254 | 10.0 | 311 | 12.2 | 44 | 1.7 |
| 20" | 496 | 19.5 | 553 | 21.8 | 44 | 1.7 |
| 30" | 738 | 29.1 | 795 | 31.3 | 44 | 1.7 |
| 40" | 980 | 38.6 | 1037 | 40.8 | 44 | 1.7 |

CODE 8: 2 x 222 o-rings, plug connection, locating fin, integrated reinforcement ring



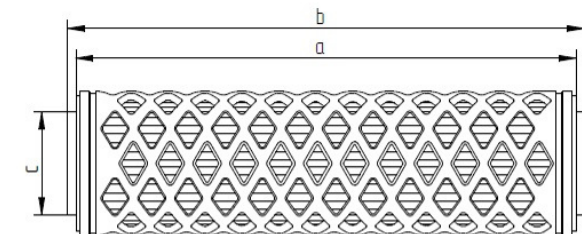
| Dimensions (CODE 9 connection) | | | | | | |
|--------------------------------|-----|------|------|------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | inch |
| 10" | 250 | 9.8 | 320 | 12.6 | 44 | 1.7 |
| 20" | 492 | 19.4 | 562 | 22.1 | 44 | 1.7 |
| 30" | 734 | 28.9 | 804 | 31.7 | 44 | 1.7 |
| 40" | 976 | 38.4 | 1046 | 41.2 | 44 | 1.7 |

CODE 9: 2 x 222 o-rings, bayonet 3 locking tabs, locating fin, integrated reinforcement ring



| Dimensions (UF connection) | | | | | | |
|----------------------------|-----|------|-----|------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | inch |
| 10" | 252 | 9.9 | 268 | 10.6 | 61 | 2.4 |
| 20" | 494 | 19.4 | 510 | 20.1 | 61 | 2.4 |
| 30" | 736 | 29.0 | 752 | 29.6 | 61 | 2.4 |

CODE UF: 2 x 226 o-rings, plug connection, flat end cap, integrated reinforcement ring



| Dimensions (DOE connection) | | | | | | |
|-----------------------------|------|------|------|------|----|------|
| Size | a | | b | | c | |
| | mm | inch | mm | inch | mm | inch |
| 10" | 244 | 9.6 | 250 | 9.8 | 50 | 2.0 |
| 20" | 500 | 19.7 | 506 | 19.9 | 50 | 2.0 |
| 30" | 754 | 29.7 | 760 | 29.9 | 50 | 2.0 |
| 40" | 1008 | 39.7 | 1014 | 39.9 | 50 | 2.0 |

DOE: Double open end with EPDM gaskets

Other end cap configurations on request