



Donaldson  
FILTRATION SOLUTIONS

# Process Filtration From Pure to Sterile

## (P)-SRF N

### MAIN FEATURES & BENEFITS:

- Developed for the sterile filtration of air and gases in compressed gas applications as well as venting applications.
- High dirt holding capacity at a low differential pressure and a high flow rate
- Excellent dewetting characteristic
- Suited for vapour phase hydrogen peroxide (VPHP) sterilization
- Approved for Food Contact Use acc. to CFR Title 21 & EEC/1935/2004



### INDUSTRIES:



- Dairy



- Food & Beverage



- Fermentation



- Pharmaceutical



- Chemical

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Donaldson®  
**Ultrafilter**

## PRODUCT DESCRIPTION

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The P-SRF N filter element is a pleated depth filter element with inner and outer liners and end caps made from stainless steel. The retention rate is > 99.99998 % related to 0,2 µm and > 99.999998 % related to 0,02 µm. The P-SRF N pleated, three dimensional borosilicate depth media has a large void volume of 95 %. This ensures a high dirt holding capacity at a low differential pressure and a high flow rate. The filter media is inherently hydrophobic.

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The P-SRF N was developed for the safe & sterile filtration of compressed air and other process gases. The filter element fulfils the high requirements in food & beverage (dairies, food processing, soft drinks) and pharmaceutical industries and works reliable even under extreme operating conditions.

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The depth filter medium is non-fiber releasing and complies with the FDA requirements (Food and Drug Administration 21 CFR 211.72 latest edition) and EC/1935/2004 for indirect Food Contact Use. The sturdy stainless steel construction permits more than 100 possible sterilization cycles at specified conditions and withstands high differential pressures in both flow directions. P-SRF N sterile filter elements ensure a safe and reproducible production.

**The pleated sterile depth filter P-SRF N is designed and developed for the following applications:**

### Filtration of air and gases

- Compressed Air
- Carbon Dioxide
- Fermentation Air
- Tank Ventilation
- Technical Gases

**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 sterile filters are integrity tested according to ASTM D 2986-91 and DIN EN 1822 to verify compliance with established quality and design specifications and to assure consistent and reliable performance.
- A Factory Test Certificate according to DIN EN 10204 is available upon request.

## PRODUCT SPECIFICATIONS

## Product Specifications

<b>Retention Rate:</b>	<ul style="list-style-type: none"> <li>• &gt; 99,99998 % at 0,2 µm</li> <li>• &gt; 99,9999998 % at 0,02 µm</li> </ul>
<b>Filtration Surface:</b>	<ul style="list-style-type: none"> <li>• 0,84 m<sup>2</sup> per 254 mm element (10")</li> <li>• For other element sizes see correction factor CF in section "Available end cap configurations".</li> </ul>
<b>Temperature Range:</b>	<ul style="list-style-type: none"> <li>• -20°C (-4°F) to 200°C (400°F)</li> <li>• &gt; 150°C (300°F) only for dry air</li> </ul>
<b>Maximum Differential Pressure:</b>	<ul style="list-style-type: none"> <li>• 5 bar (75 psid)</li> <li>• (-20°C up to 150°C), independent of the system pressure or the flow direction</li> </ul>
<b>Typical Continuous Air Service Life Time:</b>	<ul style="list-style-type: none"> <li>• 12 months</li> </ul>
<b>Typical Vent Service Life Time:</b>	<ul style="list-style-type: none"> <li>• 6 months</li> </ul>
<b>Cumulative Steaming Time*:</b>	<ul style="list-style-type: none"> <li>• 121°C (250° F) <ul style="list-style-type: none"> <li>○ Saturated Steam: 180 cycles (30 minutes)</li> </ul> </li> <li>• 131°C (270° F) <ul style="list-style-type: none"> <li>○ Saturated Steam: 150 cycles (20 minutes)</li> </ul> </li> <li>• 141°C (290° F) <ul style="list-style-type: none"> <li>○ Saturated Steam: 150 cycles (10 minutes)</li> </ul> </li> </ul> <p>Independent of flow direction; forward and reversed steam flow possible</p>
<b>VPHP Suitable:</b>	<ul style="list-style-type: none"> <li>• 130°C @ &gt; 1.000 ppm H<sub>2</sub>O<sub>2</sub> &gt; 50 hours</li> </ul>

\* 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 (US & EU)

- All components of the P-SRF N filter cartridge are FDA listed for food contact use in the Code of Federal Regulations (CFR), Title 21. Donaldson Filtration Deutschland GmbH confirms that all materials used for the P-SRF element meet regulatory and legislative requirements and guidelines for food contact as detailed in European Regulation (EC) Number 1935/2004. These articles are intended for indirect food use in filtration of gases, therefore migration testing has been limited to an atmospheric and watery environment.

Filter Materials	CFR Title
<b>Filter Matrix:</b>	Borosilicate 177.2260
<b>Coating:</b>	Polydimethylsiloxane (PDMS) 177.1520
<b>Upstream Support:</b>	Stainless Steel 1.4301 211.65
<b>Downstream Support:</b>	Stainless Steel 1.4301 211.65
<b>Outer Gard:</b>	Stainless Steel 1.4301 211.65
<b>Inner Gard:</b>	Stainless Steel 1.4301 211.65
<b>End Caps:</b>	Stainless Steel 1.4301 211.65
<b>Bonding Material:</b>	Silicone 177.2600
<b>O-Rings:</b>	Silicone 177.2600
<b>Alternatively:</b>	Buna 177.2600
	EPDM 177.2600
	PTFE over silicone 177.1550
	PTFE over viton 177.1550

## RETENTION OF MICRO-ORGANISMS

The P-SRF N sterile filter elements were challenged with a specified bacteria and phage aerosol for a defined time. Down stream analysis of the filtered air was done using impactor and impinger.

The validation documents are available on request.

**Brevundimonas Diminuta ( $\geq 0,2 \mu\text{m}$ )**

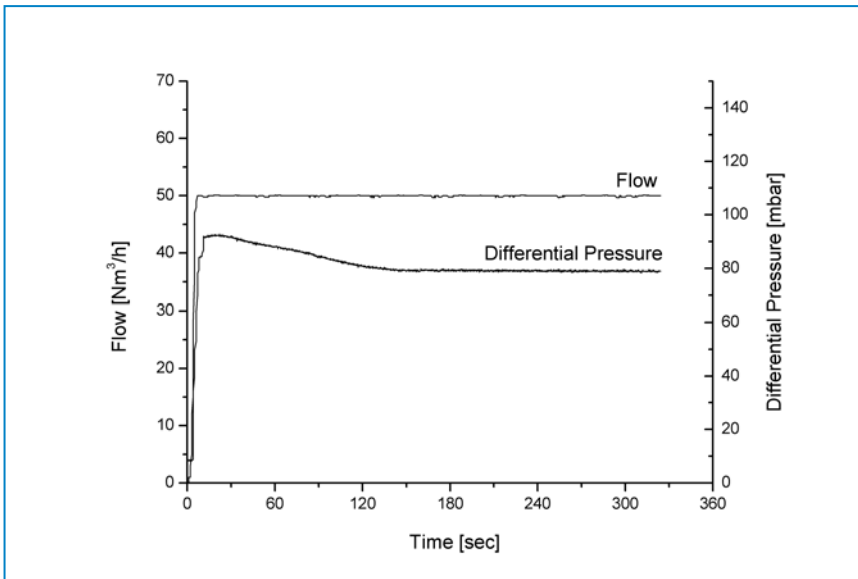
**LRV > 7/cm<sup>2</sup>**

**MS2 Coliphages ( $\geq 0,02 \mu\text{m}$ )**

**LRV > 9/cm<sup>2</sup>**

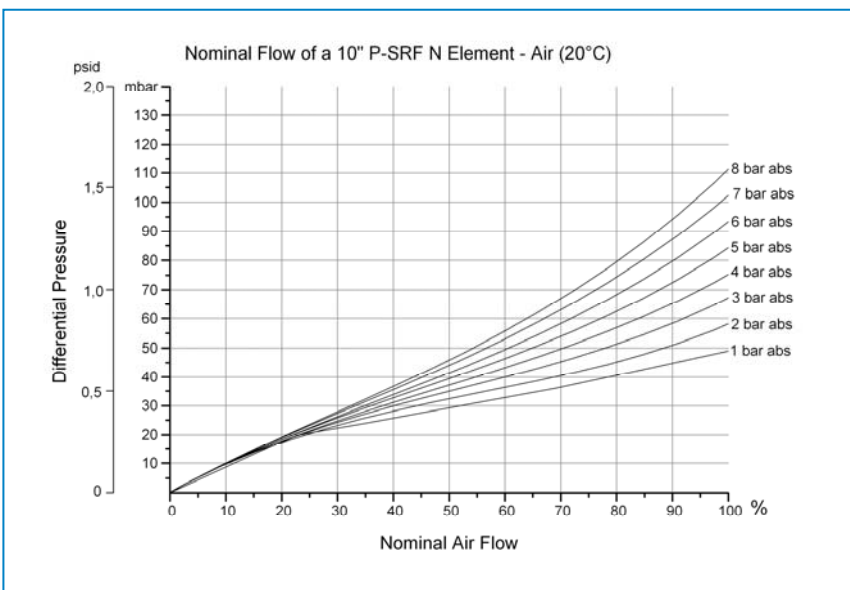
$$\text{LRV} = \log_{10} \left( \frac{\text{Number of organisms in challenge}}{\text{Number of organisms in filtrate}} \right)$$

**DEWETTING CHARACTERISTICS**



Dewetting characteristic of a P-SRF N 05/25 after steaming at 1 bar for 30 minutes. Flow is 50 Nm<sup>3</sup>/h at 1,2 bar absolute. Normal conditions are reached after ~ 150 seconds.

**FLOW CHARACTERISTICS**



Type SRF N		Flow at 7 barg [m <sup>3</sup> /h]	
housing	element	nominal	maximum
0006	03/10	60	90
0009	04/10	90	120
0012	04/20	120	180
0018	05/20	180	270
0027	05/25	270	360
0036	07/25	360	480
0048	07/30	480	720
0072	10/30	720	1080
0108	15/30	1080	1440
0144	20/30	1440	1920
0192	30/30	1920	2280
0288	30/50	2880	4320

P-SRF N, air, 20°C, 1 bar absolute (14,5 psi) to 8 bar absolute (116 psi). The given nominal flow rate in the table represents 100 % Nominal Air Flow in the diagram.

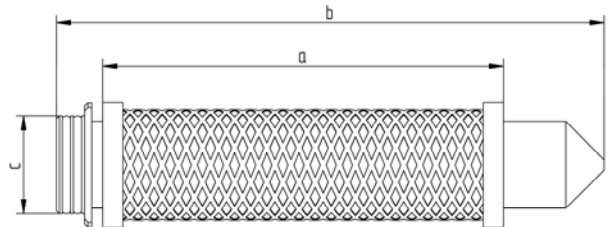
Pressure [barg]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Correction Factor	0,25	0,36	0,5	0,6	0,75	0,9	1	1,1	1,2	1,4	1,5	1,6	1,75	1,9	2	2,1

Nominal and maximum Flow for other pressures can be calculated with the above correction factors.

AVAILABLE END CAPS CONFIGURATION

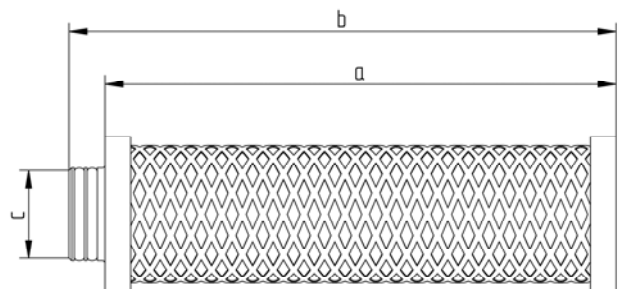
Dimensions (CODE 7 connection):

CODE 7						
Size	a		b		c	
	mm	inch	mm	inch	mm	inch
5"	125	4,92	190	7,48	56,5	2,22
10"	250	9,84	315	12,40	56,5	2,22
20"	500	19,68	585	22,24	56,5	2,22
30"	750	29,53	815	32,08	56,5	2,22



Dimensions (uf – plug connection):

uf – plug Connection							
Size	a		b		C*		CF**
	mm	inch	mm	inch	mm	inch	
03/10	76	2,99	87	3,42	30	1,18	0,12
04/10	104	4,09	118	4,64	30	1,18	0,17
04/20	104	4,09	118	4,64	37	1,46	0,17
05/20	128	5,04	142	5,59	37	1,46	0,21
05/25	128	5,04	142	5,59	37	1,46	0,29
07/25	180	7,08	194	7,64	37	1,46	0,42
07/30	180	7,08	196	7,71	61	2,40	0,7
10/30	254	10	270	10,63	61	2,40	1
15/30	381	15	397	15,63	61	2,40	1,28
20/30	510	20	526	20,63	61	2,40	2,00
30/30	764	30	780	30,63	61	2,40	2,56



\* Plug- type connection with double-o-ring

\*\* Correction Factor Filtration Surface

Other end cap configurations available on request.

Technical alterations reserved 04/2009

- Integrity test of this element to be done by DOP Test.
- For information on test equipment or test services, please contact your Donaldson Sales Engineer and visit our website at [www.donaldson.com](http://www.donaldson.com)!

(Rev03 – 08/10)

