Technical Data Sheet

Depth Filtration
BECO PROTECT® CS

Depth Filter Cartridges

BECO PROTECT CS CellStream depth filter cartridges are the first depth filter cartridges to be made of the proven and adapted BECOPAD® depth filter sheet material. The unique method of wrapping maximizes the filter area and additionally offers outstanding mechanical and thermal stability for all beverage filtration applications.

BECO PROTECT CS depth filter cartridges are equipped with appropriate adapters for installation in existing filter cartridge housings.

Features and Benefits

- Robust design for high economic efficiency (backwashable at up to 29 psig (200 kPa, 2 bar) at 176 °F (80 °C), steamable > 50 cycles)
- High retention of fine particles and colloids (BECO PROTECT CS 115) for optimum preparation and protection of downstream membrane filtration systems
- Cartridges fit in commercially available filter cartridge housings (code 2 and 7)
- Suitable for very small quantities

Configuration

BECO PROTECT CS depth filter cartridges are manufactured of high quality, wrapped BECOPAD depth filter sheet materials.

Materials

Filter material:	Special cellulose
Support fleeces:	Polypropylene
Cage, core:	Polypropylene
End cap/adapter:	Polypropylene, adapter with reinforcing ring
O-rings:	Silicone (standard)

The plastic components meet the requirements of Directive 10/2011/EC and amendments. BECOPAD depth filter media meet FDA requirements according to 21 CFR § 177.2260.

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Technical Data

Diameter:	2.75 in (70 mm)
Filter area:	30" = 5.4 ft² (0.5 m²) 40" = 7.5 ft² (0.7 m²)
Maximum operating temperature:	176 °F (80 °C)
Maximum differential pressure during filtration:	21.8 psid (150 kPa, 1.5 bar) at 68 °F (20 °C)
Maximum pressure during cleaning:	43.5 psig (300 kPa, 3.0 bar) at 68 °F (20 °C) 29 psig (200 kPa, 2.0 bar) at 176 °F (80 °C)
Steam sterilization:	< 249.8 °F (121 °C), < 14.5 psi (100 kPa, 1.0 bar) for max. 30 minutes
Hot water sterilization:	Max. 194 °F (90 °C) for 30 minutes

Do not exceed maximum allowable pressures.

Flow Capacity

30" element with water at 68 °F (20 °C)
(guide value)

CS115: 23 l/min at △ p = 14.5 psi (100 kPa, 1.0 bar)

CS170: 53 l/min at △ p = 14.5 psi (100 kPa, 1.0 bar)

CS270: 84 l/min at △ p = 14.5 psi (100 kPa, 1.0 bar)

Filter Types/Retention Ratings

Type	Adapted filter sheet types
CS115	BECOPAD 115C ≤ 0.2 µm
CS170	BECOPAD 170 ≤ 0.4 µm
CS270	BECOPAD 270 ≤ 0.7 µm

Adapter Codes

Code 2	Code 7
Single open end (SOE) 2-222 O-ring triple bayonet adapter with spear	Single open end (SOE) 2-226 O-ring double bayonet adapter with spear
	

Chemical Cleaning

Rinse in filtration direction or against the filtration direction. It is essential to sanitize the filter housing separately.

1. Install the pumps, hoses, and dosing tanks so that circulation pumping is possible
2. Flush BECO PROTECT CS depth filter cartridges first with cold and then with warm water (122 °F/50 °C)
3. Then rinse with a 0.5% NaOH caustic solution at a temperature of up to 122 °F (50 °C). If heavily soiled, Eaton recommends that the first few liters of the caustic rinsing solution be discarded
4. The circulation cleaning period is 5 to 10 minutes at an inlet pressure of approximately 14.5 psi (100 kPa, 1.0 bar)
5. After circulation cleaning, carefully add a 0.5% H_2O_2 solution and continue to circulate for another 30 minutes
6. At the end of cleaning, re-rinse with cold water until no more caustic solution is present (test with a pH strip)
7. Neutralize the BECO PROTECT CS depth filter cartridges by circulation pumping a 0.5% citric acid solution at a water temperature of approximately 86 °F (30 °C) for 5 minutes
8. Finally flush again with water until a neutral pH is reached

Chemical cleaning: maximum of 5 cycles.

Ordering Information

BECO PROTECT CS depth filter cartridges wrapped in protective film packed in cartons.

Filter type	Type of depth filter sheet	Adapter	Nominal length	Gasket
CS	115	2 = Code 2 (SOE)	3 = 30" (750 mm)	S = silicone
	170	7 = Code 7 (SOE)	4 = 40" (1000 mm)	
	270			

Example

CS	115	7	3	S

BECO PROTECT CS depth filter cartridges; with BECOPAD 115C depth filter sheet; code 7; 30" (750 mm); silicone gasket

Preservation

BECO PROTECT CS depth filter cartridges may be subjected to wet preservation with a 0.2% sulfurous acid or a hydrogen peroxide solution for example.

Rinse and sterilize the filter cartridges again before use.

Filter Preparation and Filtration

Flush the depth filter cartridges before the first filtration with 6.6 gal/sqm (25 l/m²) of water at 1.25 times the filtration flow rate. It is not necessary to soak the sheet cartridges before steaming.

After steaming, gently cool with hot and cold water. An alternative method is to cool the depth filter cartridges with compressed air (< 14.5 psi (100 kPa, 1.0 bar)).

Sterilization before Filtration

Sterilization with Steam

Sterilize with saturated steam at a temperature of < 249.8 °F (121 °C).

Steam quality: The steam must free of foreign particles and impurities

Temperature: Optimum is 230 °F (110 °C) at 7.3 psi (50 kPa, 0.5 bar) saturated steam

Duration: 30 minutes after steam escapes from all filter valves

Do not exceed a maximum differential pressure of 4.4 psi (30 kPa, 0.3 bar).

Sanitization with Hot Water

The flow rate should equal the filtration flow rate. The hot water should be softened and free of impurities.

Adhere to the following parameters:

Temperature: Max. 194 °F (90 °C)

Duration: 30 minutes after 185 °F (85 °C) is reached at all valves

Do not exceed a maximum differential pressure of 21.8 psi (150 kPa, 1.5 bar).

Regenerating

Always start regeneration after each filtration, at a blocking of △ p < 11.6 psi (80 kPa, 0.8 bar) at the latest.

Rinse as follows taking the maximum pressures into account:
Flush with cold water against direction of filtration for 3 to 5 minutes or until the rinsing water is clear. Set the flow rate to 1.5 times the filtration flow and the counterpressure to 7.3 psi (50 kPa, 0.5 bar).

Then flush with hot water (176 °F, 80 °C) against direction of filtration for at least 10 minutes. Also set flow rate here to 1.5 times the filtration flow and the counterpressure to 7.3 psi (50 kPa, 0.5 bar).

Ensure rinse water is free of lime and other impurities. Eaton recommends filtering the rinse water with a 1 µm BECO® depth filter cartridge.

Safety

When used and handled correctly, there are no known unfavorable effects associated with this product. No safety specifications are required for BECO PROTECT CS depth filter cartridges.

Storage, handling and transport do not present any environmental and health risks.

Disposal

BECO PROTECT CS depth filter cartridges should be treated as industrial waste. Any local and other official regulations in relation to the filtered product must be followed.

Storage

Store filter cartridges in their original packaging and in a dry, odor-free and UV ray protected place.

Use filter cartridges within 36 months after production date.

Certified Quality

During the production process, BECO PROTECT CS depth filter cartridges are regularly monitored to ensure consistent excellent quality control

North America
44 Apple Street
Tinton Falls, NJ 07724
Toll Free: 800 656-3344
(North America only)
Tel: +1 732 212-4700

Europe/Africa/Middle East
Auf der Heide 2
53947 Nettersheim, Germany
Tel: +49 2486 809-0

Friedensstraße 41
68804 Altlußheim, Germany
Tel: +49 6205 2094-0

An den Nahewiesen 24
55450 Langenlonsheim, Germany
Tel: +49 6704 204-0

China
No. 3, Lane 280,
Linhong Road
Changning District, 200335
Shanghai, P.R. China
Tel: +86 21 5200-0099

Singapore
4 Loyang Lane #04-01/02
Singapore 508914
Tel: +65 6825-1668

Brazil
Rua Clark, 2061 - Macuco
13279-400 - Valinhos, Brazil
Tel: +55 11 3616-8400

For more information, please email us at *filtration@eaton.com* or visit *www.eaton.com/filtration*

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