

BECO filter cartridges for food and beverage applications



EATON

Powering Business Worldwide

Wide range of filter cartridges offer complete filtration solutions for food and beverage applications

Eaton manufactures and provides high-quality pleated or wrapped depth filter and membrane filter cartridges.

The BECO® filter cartridge selection offers a wide range of solutions for applications in the food and beverage industry from clarifying and fine filtration with depth filter cartridges (BECO PROTECT®) to the reduction of microorganisms and microbiological stabilization with membrane filter cartridges (BECO MEMBRAN).

To extend service life and efficiently protect downstream membranes, Eaton can recommend the optimal combination of pre-filter and membrane filter cartridges.

BECO filter cartridges feature a variety of retention ratings, between 0.2 and 150 µm, suitable for an array of liquid filtration applications. In addition to sizes ranging from 10" (25 cm) to 40" (100 cm) and various adapter codes, filter cartridges are available with different filter material.

The product range contains a number of housings and system solutions for the use of depth filter and membrane filter cartridges, such as the BECO INTEGRA® CART stainless steel filter cartridge housings and complex, automatic StepFlow® filtration systems.

Eaton filter cartridges meet national and international quality standards, such as the LFGB standard (German Food, Commodity and Feed Act) in Germany and FDA guidelines (Food and Drug Administration) from the USA. The plastic components meet European Directive 10/2011.



BECO Filter Cartridges

Selection guide

DEPTH FILTER CARTRIDGES



BECO PROTECT PG depth filter cartridges

Feature wrapped polypropylene filter material with different layers ranging from coarse to fine, a high retention rating, and excellent backwashing capability.



BECO PROTECT CS CellStream depth filter cartridges

Feature the innovative wrapped design with adapted BECOPAD® depth filter sheet material. Maximizes filter area and provides excellent mechanical and thermal stability.



BECO PROTECT FS FineStream depth filter cartridges

Provide optimal protection of downstream membrane filter cartridges through the finest filter fleece. The innovative and unique special pleating increases the filter area and achieves unparalleled efficiency of retentions. The variable flow rate is also unique.



BECO PROTECT PP Pure depth filter cartridges

Consist of pleated polypropylene filter material, featuring a high efficiency of retention and a large filter area for high flow rates.

DEPTH FILTER CARTRIDGES



BECO PROTECT PB depth filter cartridges

Constructed of thermally bonded, melt-blown polypropylene filter material with a high chemical resistance and added dirt-holding capacity. No inner core or outer cage is required due to the mechanical stability of the cartridges.



BECO PROTECT KM stainless steel filter cartridges

Constructed from porous metal powder (316L) predominately used in steam filtration for the separation of rust particles and abraded matter. They are also used for liquid filtration at high temperatures.

MEMBRANE FILTER CARTRIDGES



BECO MEMBRAN PS Beer membrane filter cartridges

Specifically designed for beer final filtration for high service life and safe retention of microorganisms.



BECO MEMBRAN PS Wine membrane filter cartridges

Membrane filter cartridges for wine and sparkling wine final filtration. They offer long service life and combine high microbiological retention with full maintenance of valuable flavor and color for the production of premium wines.

MEMBRANE FILTER CARTRIDGES



BECO MEMBRAN PS Aqua membrane filter cartridges

Special polyethersulfone membrane filter cartridges for filtration of drinking water in the food and beverage industry, offering high flow rates and long service life.



BECO MEMBRAN PS Pure membrane filter cartridges

Pleated membrane filter cartridges constructed of polyethersulfone (PES) can be tested for integrity. This membrane provides high microbiological retention and a long service life due to excellent mechanical and chemical stability for food and beverage safe and gentle final filtration.



BECO MEMBRAN PFplus membrane filter cartridges

Pleated membrane filter cartridges constructed of polyvinylidene fluoride (PVDF) can be tested for integrity. This membrane provides high microbiological retention and a long service life thanks to excellent mechanical and thermal stability.



BECO MEMBRAN H Air and H Air Mini membrane filter cartridges

Retain contaminants up to 0.01 µm and used for sterile filtration of gases and air. Available in 1", 5", 10", 20" and 30".

ADAPTER CODES



Code X: Double open end (DOE) without end caps



Code F: Double open end (DOE) with two flat gaskets



Code 0: Single open end (SOE), 2-222 O-ring without spear, external diameter 1.57 in (44 mm) (bottom-most point)



Code 2: Single open end (SOE), 2-222 O-ring, triple bayonet-adapter with spear, external diameter 1.57 in (44 mm) (bottom-most point)



Code 7: Single open end (SOE), 2-222 O-ring, double bayonet-adapter with spear, external diameter 2.2 in (56 mm) (bottom-most point)

Technical data

Filter cartridge type	BECO PROTECT PG	BECO PROTECT CS	BECO PROTECT FS	BECO PROTECT PP Pure	BECO PROTECT PB	BECO PROTECT KM
Article number	PG002 – PG995	CS115, CS170, CS270	FS002 – FS200	PPPB6 – PPP20	PB005 – PB999	KM10
Filter material	Polypropylene (PP)	Special cellulose	Polypropylene (PP)	Polypropylene (PP)	Polypropylene (PP)	Stainless steel 316L (1.4404)
Retention rating (µm)	0.2, 0.3, 0.5, 0.6, 0.8 1, 2, 3, 5, 10, 15 20, 30, 40, 50, 75 100, 120, 150	0.2, 0.4, 0.7	0.2, 0.3, 0.5, 0.6, 0.8 1, 2, 3, 5, 10, 20	0.6, 1.2, 3, 5, 10, 20	0.5, 1, 3, 5, 10, 25 50, 75, 100	10
Retention efficiency	99.98%	Nominal	99.98%	99.98%	90%	Nominal
Lengths	9.75", 10", 19.5", 20", 29.5", 30", 40"	30", 40"	10", 20", 30", 40"	10", 20", 30", 40"	9.75", 10", 19.5", 20", 29.5", 30", 39", 40"	10", 20", 30"
Adapter codes	X, F, 0, 2, 7	2, 7	F, 0, 2, 7	F, 0, 2, 7	X, F	7
Cages	Yes	Yes	Yes	Yes	No	Yes
Structure	Wrapped	Wrapped	Special Pleated	Pleated	Melt-blown	Sintered
Pressure hold test Test pressure in psid and diffusion rate per 10"	–	–	–	–	–	–
Backwashability	Up to 29 psid (2.0 bar) at 176 °F (80 °C)	Up to 29 psid (2.0 bar) at 176 °F (80 °C)	Up to 29 psid (2.0 bar) at 176 °F (80 °C)	29 psid (2.0 bar) at 68 °F (20 °C)	Yes	Up to 14.5 psid (1.0 bar) at 77 °F (25 °C)
Chemical resistance	pH 1 – 14	Limited	pH 1 – 14	pH 1 – 14	pH 1 – 14	pH 1 – 14
Max. operating temperature	176 °F (80 °C)	176 °F (80 °C)	176 °F (80 °C)	176 °F (80 °C)	149 °F (65 °C)	392 °F (200 °C)
Max. differential pressure in flow direction	69.6 psid (4.8 bar) at 77 °F (25 °C) 29 psid (2.0 bar) at 176 °F (80 °C)	21.8 psid (1.5 bar) at 68 °F (20 °C)	69.6 psid (4.8 bar) at 77 °F (25 °C) 29 psid (2.0 bar) at 176 °F (80 °C)	72.5 psid (5.0 bar) at 68 °F (20 °C) 29 psid (2.0 bar) at 176 °F (80 °C)	46.4 psid (3.2 bar) at 68 °F (20 °C) 17.4 psid (1.2 bar) at 140 °F (60 °C)	–
Steam cycles	> 100 at 230 °F (110 °C) in 30 minutes	> 100 at 230 °F (110 °C) in 30 minutes	> 100 at 230 °F (110 °C) in 30 minutes	> 100 at 230 °F (110 °C) in 30 minutes	Not recommended	> 100

Filter cartridge type	BECO MEMBRAN PS Beer	BECO MEMBRAN PS Wine	BECO MEMBRAN PS Aqua	BECO MEMBRAN PS Pure	BECO MEMBRAN PFplus	BECO MEMBRAN H Air	BECO MEMBRAN H Air Mini
Article number	PSB04, PSB06	PSW04, PSW06	PSA02	PSP02, PSP04, PSP06, PSP10	KVBL, KVBB, KVBY, (KVBA)	PTC02	PTM02
Filter material	Polyethersulfone	Polyethersulfone	Polyethersulfone	Polyethersulfone	Polyvinylidene fluoride (PVDF)	Teflon (PTFE)	Teflon (PTFE)
Retention rating (µm)	0.45, 0.65	0.45, 0.65	0.2	0.2, 0.45, 0.65, 1	0.22, 0.45, 0.65, (1)	0.2	0.2
Retention	Absolute	Absolute	Absolute	Absolute	Absolute	Absolute	Absolute
Lengths	30", 40"	20", 30"	20", 30", 40"	10", 20", 30", 40"	30"	10", 20", 30"	1", 5"
Adapter codes	2, 7	2, 7	2, 7	0, 2, 7	7	7	1, 4, 7
Cages	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Structure	Pleated	Pleated	Pleated	Pleated	Pleated	Pleated	Pleated
Pressure hold test Test pressure in psig and diffusion rate per 10"	PSB04 17.4 psig (1.2 bar) ≤ (15 ml/min) PSB06 11.6 psig (0.8 bar) ≤ (5 ml/min)	PSW04 21.8 psig (1.5 bar) ≤ (15 ml/min) PSW06 14.5 psig (1.0 bar) ≤ (10 ml/min)	PSA02 36.3 psig (2.5 bar) ≤ (20 ml/min)	PSP02 36.3 psig (2.5 bar) ≤ (20 ml/min) PSP04 21.8 psig (1.5 bar) ≤ (15 ml/min) PSP06 14.5 psig (1.0 bar) ≤ (10 ml/min) PSP10 10.2 psig (0.7 bar) ≤ (15 ml/min)	KVBL = 0.22 µm 40.6 psig (2.8 bar), (15.2 ml/min) KVBB = 0.45 µm 21.8 psig (1.5 bar), 17.1 ml/min KVBY = 0.65 µm 8.7 psig (0.6 bar), 9.1 ml/min	PTC02 Nitrogen diffusion at 68 °F (20 °C) per 10" ≤ 11 ml/min at 10.3 psig (0.7 bar) with 60% isopropanol	PTM02 Bubble point test at 68 °F (20 °C) ≥ 14.5 psig (1000 mbar) in 60% isopropanol
Backwashability	Limited 29 psid (2.0 bar) at 68 °F (20 °C)	Limited 29 psid (2.0 bar) at 68 °F (20 °C)	Limited 29 psid (2.0 bar) at 68 °F (20 °C)	Limited 29 psid (2.0 bar) at 68 °F (20 °C)	Limited up to 50 psid (3.5 bar) at 77 °F (25 °C)	Yes	Yes
Chemical resistance	pH 1 – 14	pH 1 – 14	pH 1 – 14	pH 1 – 14	pH 1 – 12	pH 1 – 14	pH 1 – 14
Max. operating temperature	176 °F (80 °C)	176 °F (80 °C)	176 °F (80 °C)	176 °F (80 °C)	176 °F (80 °C)	176 °F (80 °C)	176 °F (80 °C)
Max. differential pressure in flow direction	72.5 psid (5.0 bar) at 68 °F (20 °C) 4.4 psid (0.3 bar) at 250 °F (121 °C)	72.5 psid (5.0 bar) at 68 °F (20 °C) 4.4 psid (0.3 bar) at 250 °F (121 °C)	72.5 psid (5.0 bar) at 68 °F (20 °C) 4.4 psid (0.3 bar) at 250 °F (121 °C)	72.5 psid (5.0 bar) at 68 °F (20 °C) 4.4 psid (0.3 bar) at 250 °F (121 °C)	72.5 psid (5.0 bar) at 68 °F (20 °C) 4.4 psid (0.3 bar) at 250 °F (121 °C)	72.5 psid (5.0 bar) at 68 °F (20 °C) 7.25 psid (0.5 bar) at 273 °F (134 °C)	72.5 psid (5.0 bar) at 68 °F (20 °C) 7.25 psid (0.5 bar) at 273 °F (134 °C)
Steam cycles	≥ 100 at 221 °F (105 °C) in 30 minutes	≥ 100 at 221 °F (105 °C) in 30 minutes	≥ 100 at 221 °F (105 °C) in 30 minutes	≥ 100 at 221 °F (105 °C) in 30 minutes	≥ 100 At 230 °F (110 °C) in 30 minutes	≥ 150 at 273 °F (134 °C) in 20 minutes	50 at 273 °F (134 °C) in 20 minutes



Application examples

Wine	Beer	Fruit juice	Mineral water	Spirits
Depth filter cartridges as particle filters (2 – 5 µm)	Depth filter cartridges as trap filters (5 – 20 µm)	Depth filter cartridges as particle filters (5 – 10 µm)	Depth filter cartridges as particle filters (10 – 20 µm)	Depth filter cartridges as particle filters (10 – 20 µm)
Depth filter cartridges as fine filters (0.3 – 1 µm)	Depth filter cartridges as fine filters (0.5 µm)	Depth filter cartridges as fine filters (0.5 – 1 µm)	-/-	-/-
Depth filter cartridges for membrane protection (0.2 – 0.6 µm)	Depth filter cartridges for membrane protection (0.3 – 0.5 µm)	Depth filter cartridges for membrane protection (0.2 – 0.6 µm)	Depth filter cartridges for membrane protection (0.3 – 1 µm)	-/-
Depth filter cartridges for service media (0.5 – 10 µm)	Depth filter cartridges for service media (0.5 – 10 µm)	Depth filter cartridges for service media (0.5 – 10 µm)	Depth filter cartridges for service media (0.5 – 10 µm)	Depth filter cartridges for service media (0.5 – 10 µm)
Hydrophilic membrane filter cartridges as sterile filters (0.45 µm, 0.65 µm)	Hydrophilic membrane filter cartridges as sterile filters (0.45 µm)	Hydrophilic membrane filter cartridges as sterile filters (0.45 µm)	Hydrophilic membrane filter cartridges as particle filters (0.2 µm, 0.45 µm)	Hydrophilic membrane filter cartridges as polishing filters (0.45 µm)
Hydrophobic membrane filter cartridges for sterile gas filtration (0.2 µm for liquids, 0.01 µm for gases)	Hydrophobic membrane filter cartridges for sterile gas filtration (0.2 µm for liquids, 0.01 µm for gases)	Hydrophobic membrane filter cartridges for sterile gas filtration (0.2 µm for liquids, 0.01 µm for gases)	Hydrophobic membrane filter cartridges for sterile gas filtration (0.2 µm for liquids, 0.01 µm for gases)	Hydrophobic membrane filter cartridges for sterile gas filtration (0.2 µm for liquids, 0.01 µm for gases)

Recommended flow rates [qpm (l/h)] for 30" filter cartridges

Filter cartridge types	White wine/ sparkling wine	Red wine	Beer	Fruit juice	Syrup (60 °Bx; 80 °C)	Mineral water	Clear spirits	Liqueur
Depth filter cartridge PG003 (0.3 µm)	2.2 (500)	1.7 (400)	1.7 (400)	-/-	-/-	6.6 (1500)	-/-	-/-
Depth filter cartridge PG006 (0.6 µm)	2.6 (600)	2.2 (500)	2.2 (500)	2.2 (500)	1.3 (300)	7.0 (1600)	-/-	-/-
Depth filter cartridge PG010 (1.0 µm)	3.1 (700)	2.6 (600)	2.6 (600)	2.6 (600)	1.7 (400)	7.9 (1800)	4.0 (900)	3.1 (700)
Depth filter cartridge PG030 (3.0 µm)	3.5 (800)	3.1 (700)	3.5 (800)	3.1 (700)	2.2 (500)	8.8 (2000)	4.8 (1100)	3.5 (800)
Depth filter cartridge PG050 (5.0 µm)	4.0 (900)	3.5 (800)	4.4 (1000)	3.5 (800)	3.1 (700)	9.7 (2200)	5.7 (1300)	4.0 (900)
Depth filter cartridge FS002 (0.2 µm)	2.2 (500)	1.7 (400)	1.7 (400)	-/-	-/-	7.5 (1700)	-/-	-/-
Depth filter cartridge FS003 (0.3 µm)	2.6 (600)	2.2 (500)	2.2 (500)	-/-	-/-	7.9 (1800)	-/-	-/-
Depth filter cartridge FS006 (0.6 µm)	3.5 (800)	3.1 (700)	2.6 (600)	3.1 (700)	2.2 (500)	8.4 (1900)	-/-	-/-
Depth filter cartridge FS010 (1.0 µm)	4.0 (900)	3.5 (800)	3.5 (800)	3.5 (800)	2.6 (600)	9.7 (2200)	5.7 (1300)	4.4 (1000)
Depth filter cartridge FS030 (3.0 µm)	4.4 (1000)	4.0 (900)	4.4 (1000)	4.0 (900)	3.1 (700)	11.0 (2500)	7.0 (1600)	5.7 (1300)
Depth filter cartridge FS050 (5.0 µm)	4.8 (1100)	4.4 (1000)	5.3 (1200)	4.4 (1000)	3.5 (800)	11.4 (2600)	8.4 (1900)	4.4 (1100)
Depth filter cartridge PPPB6 (0.6 µm)	4.0 (900)	3.5 (800)	3.1 (700)	3.5 (800)	2.6 (600)	8.8 (2000)	-/-	-/-
Depth filter cartridge PPP01 (1.2 µm)	4.4 (1000)	4.0 (900)	4.0 (900)	4.0 (900)	3.1 (700)	11.1 (2300)	6.2 (1400)	4.4 (1000)
Depth filter cartridge PPP03 (3.0 µm)	4.8 (1100)	4.4 (1000)	4.8 (1100)	4.4 (1000)	3.5 (800)	11.4 (2600)	7.5 (1700)	4.8 (1100)
Depth filter cartridge PPP05 (5.0 µm)	5.3 (1200)	4.8 (1100)	5.7 (1300)	4.8 (1100)	4.0 (900)	12.8 (2900)	8.8 (2000)	5.3 (1200)
Membrane filter cartridge PS Pure (1.0 µm)	3.1 (700)	2.6 (600)	2.2 (500)	2.6 (600)	-/-	-/-	-/-	-/-
Membrane filter cartridge PS Pure/PFplus (0.65 µm)	2.6 (600)	2.2 (500)	1.7 (400)	2.2 (500)	-/-	-/-	-/-	-/-
Membrane filter cartridge PS Pure/PFplus (0.45 µm)	2.2 (500)	1.7 (400)	1.3 (300)	1.7 (400)	-/-	11.0 (2500)	-/-	-/-
Membrane filter cartridge PS Pure/PFplus (0.20 µm)	-/-	-/-	-/-	-/-	-/-	8.8 (2000)	-/-	-/-
Membrane filter cartridge PS Beer (0.65 µm)	-/-	-/-	1.7 (400)	-/-	-/-	-/-	-/-	-/-
Membrane filter cartridge PS Beer (0.45 µm)	-/-	-/-	1.3 (300)	-/-	-/-	-/-	-/-	-/-
Membrane filter cartridge PS Wine (0.65 µm)	2.6 (600)	2.2 (500)	-/-	-/-	-/-	-/-	-/-	-/-
Membrane filter cartridge PS Wine (0.45 µm)	2.2 (500)	1.7 (400)	-/-	-/-	-/-	-/-	-/-	-/-
Membrane filter cartridge PS Aqua (0.20 µm)	-/-	-/-	-/-	-/-	-/-	8.8 (2000)	-/-	-/-



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