Filtration Products

BECO filter cartridges for food and beverage applications



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

Eaton provides high-quality wrapped and pleated 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 stabilisation 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. All BECO MEMBRAN filter cartridges are testable for integrity and therefore offer high process reliability for the user.

The product range contains numerous 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 (EU) 10/2011.









BECO Filter Cartridges

Selection guide

DEPTH FILTER CARTRIDGES



BECO PROTECT PG

Consist of up to 24 wrapped polypropylene fleeces that are graded from coarse to fine. The funnel design ensures that a wide particle spectrum can be absorbed, with a high retention rating and excellent backwashing capability.



BECO PROTECT CS Cellstream

Innovative wrapped cartridges using adapted BECOPAD® depth filter sheet material. These filter cartridges effectively reduce turbidity, fine colloids and bacteria while offering excellent backflush capabilities.



BECO PROTECT FS FineStream

Specially pleated polypropylene fleeces with a larger filter surface area and good depth effect. The variable flow rate from inside to outside results in minimal product loss during emptying. Self-supporting pleats ensure excellent backflush capabilities.



BECO PROTECT PP Pure

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

MEMBRANE FILTER CARTRIDGES



BECO MEMBRAN PS Beer

Specifically designed for the final filtration of beer, with a particular focus on long service life and safe retention of microorganisms. Available in retention ratings of 0.45 and 0.65 µm.



BECO MEMBRAN PS Wine

Membrane filter cartridges in 0.45 and 0.65 µm for the final filtration of wine and sparkling wine. They offer long service life and a combination of high microbiological retention with full maintenance of valuable flavor and color for the production of premium wines.



BECO MEMBRAN PS Aqua

Special polyethersulfone membrane filter cartridges with a retention rate of 0.2 µm offer high flow rates and long service life for the filtration of drinking water.



BECO MEMBRAN PS Pure

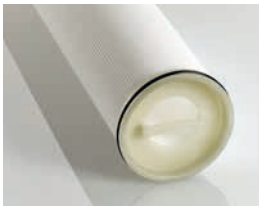
Pleated membrane filter cartridges constructed from special asymmetrical polyethersulfone (PES) material. With a wide range of retention rates from 0.2 to 1.0 µm, these filter cartridges generally meet all requirements for the final filtration of food and beverages.

FILTER CARTRIDGES FOR SERVICE MEDIA



BECO PROTECT PB

Depth filter cartridges manufactured from thermally bonded, melt-blown polypropylene filter material with high chemical resistance. The mechanical stability of this cartridge is so robust that no inner core or outer cage is required.



BECO PROTECT HF HighFlow

Depth filter cartridges made of pleated, multi-layer and thermally bonded polypropylene filter material, which offers a large surface area, maximum efficiency and exceptionally high flow rates.



BECO PROTECT CL Coreless

Depth filter cartridges made of wrapped polypropylene filter material with different layers from coarse to fine. The filter cartridges are manufactured without a core and with a large diameter to provide high flow rates.



BECO PROTECT KM

Stainless steel filter cartridges that are constructed from porous metal powder (316L) predominately used in steam filtration for the separation of rust particles and abraded matter. These cartridges are designed for liquid filtration at high temperatures.



BECO MEMBRAN H Air and H Air Mini

Membrane filter cartridges that retain contaminants up to 0.01 µm and are primarily 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 44 mm (bottom-most point)



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



Code 7: Single open end (SOE), 2-226 O-ring, double bayonet-adapter with spear, external diameter 56 mm (bottom-most point)

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Technical data

	BECO PROTECT PG	BECO PROTECT CS	BECO PROTECT FS	BECO PROTECT PP Pure	BECO PROTECT PB	BECO PROTECT HF	BECO PROTECT CL	BECO PROTECT KM
Article number	PG002 – PG995	CS115	FS002 – FS200	PPPB6 – PPP10	PB005 – PB250	HF010 - HF100	CL050 - CL400	KM10
Filter material	Polypropylene (PP)	Special cellulose	Polypropylene (PP)	Polypropylene (PP)	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	0.2, 0.3, 0.5, 0.6, 0.8 1, 2, 3, 5, 10, 20	0.6, 1.2, 3, 5, 10	0.5, 1, 5, 10, 25	1, 3, 5, 10	5, 10, 20, 40	10
Retention efficiency	99.98%	Nominal	99.98%	99.98%	90%	99.98%	99.98%	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"	40"	40"	10", 20", 30"
Adapter codes	X, F, 0, 2, 7	2, 7	F, 0, 2, 7	0, 2, 7	X, F	U**	X	7
Cages	Yes	Yes	Yes	Yes	No	Yes	No	No
Backwashability	Up to 2.0 bar at 80 °C	Up to 2.0 bar at 80 °C	Up to 2.0 bar at 80 °C	2.0 bar at 20 °C	Yes	–	–	Up to 1.0 bar at 25 °C
Chemical resistance	pH 1 – 14	Limited	pH 1 – 14	pH 1 – 14	pH 1 – 14	–	–	pH 1 – 14
Max. operating temperature	80 °C	80 °C	80 °C	80 °C	65 °C	80 °C	80 °C	200 °C
Max. differential pressure in flow direction	4.8 bar at 25 °C 2.0 bar at 80 °C	1.5 bar at 20 °C	4.8 bar at 25 °C 2.0 bar at 80 °C	5.0 bar at 20 °C 2.0 bar at 80 °C	3.2 bar at 20 °C 1.2 bar at 60 °C	3.4 bar at 20 °C	4.0 bar at 30 °C 1.0 bar at 80 °C	–
Steam cycles	> 100 at 110 °C in 30 minutes	> 100 at 110 °C in 30 minutes	> 100 at 110 °C in 30 minutes	> 100 at 110 °C in 30 minutes	Not recommended	Max. 10 at 121 °C in 15 minutes	–	–

	BECO MEMBRAN PS Beer	BECO MEMBRAN PS Wine	BECO MEMBRAN PS Aqua	BECO MEMBRAN PS Pure	BECO MEMBRAN H Air	BECO MEMBRAN H Air Mini
Article number	PSB04, PSB06	PSW04, PSW06	PSA02	PSP02, PSP04, PSP06, PSP10	PTC02	PTM02
Filter material	Polyethersulfone	Polyethersulfone	Polyethersulfone	Polyethersulfone	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	0.2	0.2
LRV (Titer reduction/cm²)*	> 7	> 7	> 7	> 7 1 µm: 6	> 7	> 7
Lengths	30", 40"	20", 30"	20", 30", 40"	10", 20", 30", 40"	10", 20", 30"	1", 5"
Adapter codes	2, 7	2, 7	2, 7	0, 2, 7	7	1, 4, 7
Cages	Yes	Yes	Yes	Yes	Yes	Yes
Pressure hold test Test pressure in bar and diffusion rate per 10"	**PSB04** 1.2 bar ≤ 15 ml/min **PSB06** 0.8 bar ≤ 5 ml/min	**PSW04** 1.5 bar ≤ 15 ml/min **PSW06** 1.0 bar ≤ 10 ml/min	**PSA02** 2.5 bar ≤ 20 ml/min	**PSP02** 2.5 bar ≤ 20 ml/min **PSP04** 1.5 bar ≤ 15 ml/min **PSP06** 1.0 bar ≤ 10 ml/min **PSP10** 0.7 bar ≤ 15 ml/min	**PTC02** Nitrogen diffusion at 20 °C per 10" ≤ 7 ml/min at 0.7 bar with 60% isopropanol	**PTM02** Bubble point test at 23 °C ≥ 1000 mbar in 60% isopropanol
Backwashability	Limited 2.0 bar at 20 °C	Limited 2.0 bar at 20 °C	Limited 2.0 bar at 20 °C	Limited 2.0 bar at 20 °C	–	–
Chemical resistance	pH 1 – 14	pH 1 – 14	pH 1 – 14	pH 1 – 14	pH 1 – 14	pH 1 – 14
Max. operating temperature	80 °C	80 °C	80 °C	80 °C	80 °C	80 °C
Max. differential pressure in flow direction	5.0 bar at 20 °C 0.3 bar at 121 °C	5.0 bar at 20 °C 0.3 bar at 121 °C	5.0 bar at 20 °C 0.3 bar at 121 °C	5.0 bar at 20 °C 0.3 bar at 121 °C	5.0 bar at 20 °C 0.5 bar at 134 °C	5.0 bar at 20 °C 0.5 bar at 134 °C
Steam cycles	≥ 100 at 105 °C in 30 minutes	≥ 100 at 105 °C in 30 minutes	≥ 100 at 105 °C in 30 minutes	≥ 100 at 105 °C in 30 minutes	≥ 150 at 134 °C in 20 minutes	50 at 134 °C in 20 minutes

* Please see technical data sheets for further information about the used test organisms ** Code U (SOE) for large diameter filter cartridge only



Application examples

Filtration level	Wine	Beer	Fruit juice	Water	Spirits
Rinsing water filtration (two-level combination possible)	BECO PROTECT PG; FS (0.5 – 10 µm)	BECO PROTECT PG; FS (0.5 – 10 µm)	BECO PROTECT PG; FS (0.5 – 10 µm)	BECO PROTECT PG; FS (0.5 – 10 µm)	BECO PROTECT PG; FS (0.5 – 10 µm)
Particle filtration	BECO PROTECT PG; FS; PP Pure (2 – 5 µm)	BECO PROTECT PG; FS; (5 – 20 µm)	BECO PROTECT PG; FS; (5 – 10 µm)	BECO PROTECT PG; FS; (5 – 10 µm)	BECO PROTECT PG; FS; (5 – 20 µm)
Fine filtration	BECO PROTECT PG; FS; PP Pure (0.5 – 1 µm)	BECO PROTECT PG; FS; (0.5 – 2 µm)	BECO PROTECT PG; FS; PP Pure (0.5 – 1 µm)	BECO PROTECT PG; FS; PP Pure (1 – 3 µm)	BECO PROTECT PG; FS; PP Pure (0.5 – 1 µm)
Membrane protection	BECO PROTECT PG; CS; FS; PP Pure (0.2 – 0.6 µm)	BECO PROTECT PG; FS; (0.3 – 0.6 µm)	BECO PROTECT PG; CS; FS; PP Pure (0.2 – 0.6 µm)	BECO PROTECT PG; FS; PP Pure (0.3 – 1 µm)	–
Membrane filtration	BECO MEMBRAN PS Wine (0.45 – 0.65 µm)	BECO MEMBRAN PS Beer (0.45 – 0.65 µm)	BECO MEMBRAN PS Pure (0.2 – 0.45 µm)	BECO MEMBRAN PS Aqua (0.2 µm)	–
Process water filtration	BECO PROTECT HF; CL (1 – 40 µm)	BECO PROTECT HF; CL (1 – 40 µm)	BECO PROTECT HF; CL (1 – 40 µm)	BECO PROTECT HF; CL (1 – 40 µm)	BECO PROTECT HF; CL (1 – 40 µm)
Rinse water filtration	BECO PROTECT PB (1 – 10 µm)	BECO PROTECT PB (1 – 10 µm)	BECO PROTECT PB (1 – 10 µm)	BECO PROTECT PB (1 – 10 µm)	BECO PROTECT PB (1 – 10 µm)
Steam filtration	BECO PROTECT KM (10 µm)	BECO PROTECT KM (10 µm)	BECO PROTECT KM (10 µm)	BECO PROTECT KM (10 µm)	BECO PROTECT KM (10 µm)
Gas filtration	BECO MEMBRAN H Air; H Air Mini (0.2 µm)	BECO MEMBRAN H Air; H Air Mini (0.2 µm)	BECO MEMBRAN H Air; H Air Mini (0.2 µm)	BECO MEMBRAN H Air; H Air Mini (0.2 µm)	BECO MEMBRAN H Air; H Air Mini (0.2 µm)

FILTER CARTRIDGE HOUSINGS



BECO INTEGRA CART KA/KB

These filter cartridge housings are manufactured from AISI 316L stainless steel and can be used for the liquid filtration in the food and beverage industry. They are available in 1-, 3-, 5-, 8-, 12-, 18-, 24- and 30-fold cartridge versions for pre-filtration or sterile filtration purposes.



BECO INTEGRA CART KHF/KCL

Manufactured of stainless steel AISI 316L and can be applied the filtration of liquids with high flow rates in Life Science applications. This series is available as a 1 x 40" version.



BECO INTEGRA CART KK

These filter cartridge housings are manufactured from AISI 316L stainless steel and designed for pressurized air or steam filtration applications.



BECO INTEGRA CART KLAV

These filter cartridge housings are manufactured from AISI 316L stainless steel and are used as vent filter housings for gas filtration. This series is suitable for sterile filtration for filter cartridges with a code 1 adapter.

TESTING DEVICES



BECO LiquiControl$_2$

The BECO LiquiControl$_2$ index measuring device is used to determine the filterability of any ready-to-bottle beverage. Prior to membrane filtration, a sample is filtered under defined conditions (constant pressure) through a reference membrane.



BECO Control Mini

The BECO Control Mini integrity test unit facilitates the execution of integrity tests for membrane filter cartridges. The extremely precise measurement of the pressure drop in mbar guarantees that the integrity of the membrane filter cartridges is maintained and thus ensures guaranteed microbiological stability.



BECO MAX$_2$

The fully automatic integrity test unit BECO MAX$_2$ is designed for the regular testing of membrane filter cartridges, and features an easy-to-use keypad and backlit four-line display in a stainless steel housing.

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