

Depth Filtration
BECO® CPS Range



Depth Filter Sheets for the Filtration of Highly Viscous Liquids

BECO CPS depth filter sheets from Eaton's Begerow Product Line are used in the chemical, cosmetics, and food industries for clarifying filtration of coarse, crystalline, amorphous, or gel-like impurities structures. A wide range of filtration tasks can be performed according to given specifications, even with highly viscous liquids.

The specific advantages of BECO CPS depth filter sheets:

- High dirt holding capacity for economic filtration.
- Differentiated fiber and cavity structure (internal surface area) for a widest possible range of applications and operating conditions.
- The ideal combination of filtration-active and adsorptive properties ensures maximum safety.
- Very pure raw materials and therefore minimum influence on filtrates.
- Comprehensive quality assurance for all raw and auxiliary materials and intensive in-process controls ensure consistent quality of the finished products.

BECO CPS filter sheets are the preferred type of filter sheet for coarse filtration of highly viscous liquids. Due to their large-pore cavity structure, the depth filter sheets offer high dirt holding capacity for gel-like impurities particles, especially when working at low filtration pressures. The depth filter sheets are used primarily in combination with filter aids to enable particularly economic filtration.

Coarse Filtration

BECO CP07S, CP03S, CP02S, CP01S

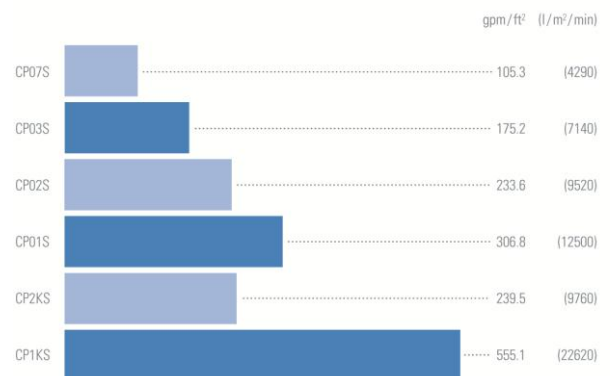
BECO depth filters with filter-active, mineral components for clarification of liquids with a coarser crystalline and amorphous, or gel-like particle structure. Suitable for high-viscosity liquids.

Application Examples:

Polishing filtration of concentrated sugar solution at approx. 65 °Brix and filtration of cooking oils, vegetable extracts, gelatin broths, ointment bases, oils, and filtration of Fuller's earth. Another area of application is separating activated carbon. Depending on the grain size distribution the separation in single-stage fine filtration is even possible.



Water throughput BECO CPS range



Conditions: Δ p = 14.5 psi (100 kPa, 1 bar), Medium: Water at 68 °F (20 °C)

Special Depth Filters

BECO CP1KS, CP2KS

These special BECO depth filter sheets were developed for highest demands in the chemical industry. By using and selecting high-purity cellulose, the content of washable ions is exceptionally low. Since these depth filters contain no mineral components, there are only traces of iron and aluminum migration. Complete separation of catalysts at high flow rates is also possible using BECO CPS depth filter sheets. Subsequent ashing enables virtually loss-free and nearly complete recovery of catalysts.

Physical Data

This information is intended as a guideline for the selection of BECO depth filter sheets.

Type	Article no.	Nominal retention rate μm	Thickness in (mm)	Ash content %	Bursting strength wet		Water throughput at	
					psi	(kPa)	$\Delta p = 14.5 \text{ psi}$ gpm/ft ²	($\Delta p = 100 \text{ kPa}^*$ l/m ² /min)
CP07S	27108	15.0	0.14 (3.6)	35.0	> 16.0	(110)	105.3	(4290)
CP03S	27123	20.0	0.15 (3.7)	35.0	> 13.1	(90)	175.2	(7140)
CP02S	27122	25.0	0.13 (3.3)	17.0	> 13.1	(90)	233.6	(9520)
CP01S	27121	30.0	0.18 (4.6)	16.0	> 14.5	(100)	306.8	(12500)
CP2KS	27031	27.0	0.11 (2.9)	< 1.0	> 21.8	(150)	239.5	(9760)
CP1KS	27021	40.0	0.18 (4.5)	< 1.0	> 43.5	(300)	555.1	(22620)

The water throughput is a laboratory value characterizing the different BECO depth filter sheets. It is not the recommended flow rate.

* 100 kPa = 1 bar

Chemical Data

BECO depth filter sheets meet the requirements of LFGB*, Recommendation XXXVI/1 issued by BfR**, and the test criteria of FDA*** Directive CFR 21 § 177.2260.

Chemical resistance of the BECO depth filter sheets to different solvents over a contact time of 3 hours at 68 °F (20 °C).

Solvent	Me- chani- cal strength	Solvent appear- ance	Solvent	Me- chani- cal strength	Solvent appear- ance	Solvent	Me- chani- cal strength	Solvent appear- ance
Aqueous solutions:						Organic solvents:		
Sugar solution, 10%	r	nc	Hydrochloric acid, 1%	r	nc	Methanol	r	nc
With 1% free chlorine	r	nc	Hydrochloric acid, 3%	r	nc	Ethanol	r	nc
With 1% hydrogen peroxide	r	nc	Hydrochloric acid, 5%	r	nc	Isopropanol	r	nc
With 30% formaldehyde	r	nc	Hydrochloric acid, 10%	r	nc	Toluene	r	nc
With 10% ethanol	r	nc	Nitric acid, 1%	r	nc	Xylene	r	nc
With 40% ethanol	r	nc	Nitric acid, 3%	r	nc	Acetone	r	nc
With 98% ethanol	r	nc	Nitric acid, 5%	r	nc	Methyl ethyl ketone	r	nc
Caustic soda, 1%	r	nc	Nitric acid, 10%	r	nc	n-hexane	r	nc
Caustic soda, 2%	r	nc	Sulfuric acid, 1%	r	nc	Dioxan	r	nc
Caustic soda, 4%	r	0	Sulfuric acid, 3%	r	nc	Cyclohexane	r	nc
Ammonia solution, 1%	r	nc	Sulfuric acid, 5%	r	nc	Tetrachloroethylene	r	nc
Ammonia solution, 3%	r	nc	Sulfuric acid, 10%	r	nc	Ethylene glycol	r	nc
Ammonia solution, 5%	r	nc	Acetic acid, 1%	r	nc	Dimethyl sulfide	r	nc
			Acetic acid, 3%	r	nc	N, N-Dimethyl formamide	r	nc
			Acetic acid, 5%	r	nc			
			Acetic acid, 10%	r	0			
<i>r = resistant</i>			<i>nc = no change</i>			<i>0 = slight opalescence</i>		
* = German Food, Commodity, and Feed Act			** = Federal Institute of Risk Assessment			*** = Food and Drug Administration; USA		

Components

BECO depth filter sheets are made from particularly pure natural materials and cationic charge carriers. Finely fibrillated cellulose fibers from deciduous and coniferous trees and different quantities of high-quality diatomaceous earth are used.

Instructions for Correct Use

BECO depth filter sheets require careful handling when inserting them into the plate and frame filter. Avoid banging, bending, and rubbing the sheets. Do not use damaged depth filter sheets.

Inserting

The depth filter sheets have a rough side and a smooth side. The rough side of the filter sheet is the unfiltrate side; the smooth side is the filtrate side. Always ensure that the filtrate side is in contact with the clear filtrate plate when inserting the sheets.

Sanitizing and Sterilizing (Optional)

The wetted BECO depth filter sheets may be sterilized with hot water or saturated steam up to a maximum temperature of **273.2 °F (134 °C)**. The pressed filter package should be loosened slightly. Make sure to sterilize the entire filter system thoroughly. Do not apply final pressure until after the filter package has cooled down.

Sterilizing with Hot Water

The flow velocity should at least equal the filtration capacity.

Water quality: The water should be softened and free of impurities.

Temperature: > 185 °F (85 °C)

Duration: 25 minutes after the temperature has reached 185 °F (85 °C) at all valves.

Pressure: At least 7.2 psi (50 kPa, 0.5 bar) at the filter outlet.

Sterilizing with Steam

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

Temperature: Max. **273.2 °F (134 °C)**
(saturated steam)

Duration: Approx. 20 minutes after steam escapes from all filter valves.

Rinsing: After sterilizing with 13.2 gal/sqm (50 l/m²) at 1.25 times the flow rate.

Filter Preparation and Filtration

Unless already completed after sterilization, Eaton recommends pre-rinsing the closed filter with 13.2 gal (50 l) of water per square meter at 1.25 times the flow rate prior to the first filtration. Depending on the application, this usually equals a rinsing time of 10 – 20 minutes. Test the entire filter for leakage at maximum operating pressure.

High-proof alcohol solutions and chemical products that do not allow pre-rinsing with water should be circulated for 10 to 20 minutes. Dispose of the rinsing solution after rinsing.

Differential Pressure

Terminate the filtration process when a differential pressure of 43.5 psi (300 kPa, 3 bar) is reached.

For safety reasons, a differential pressure of 21.8 psi (150 kPa, 1.5 bar) should not be exceeded in applications for separating microorganisms.

Regeneration/Backwashing

The high capacity of the BECO depth filter sheets can be used to a greater or lesser degree for filtration under wet conditions through trouble-free backwashing with softened water, which contributes considerably to reducing the cost of filtration.

Proceed as follows to regenerate:

Cold rinsing: In the direction of filtration

Temperature: 59 – 68 °F (15 – 20 °C)

Duration: Approx. 5 minutes

Hot rinsing: Opposite to the direction of filtration

Temperature: 140 – 176 °F (60 – 80 °C)

Duration: Approx. 10 minutes

Safety

When used and handled correctly, there are no known unfavorable effects associated with this product.

Further safety information can be found in the relevant Material Safety Data Sheet, which can be downloaded from our website.

Waste Disposal

Due to their composition BECO depth filter sheets are biodegradable. Relevant current regulations must be followed, depending on the filtered product.

Storage

BECO depth filter sheets consist of strongly adsorbing materials. The product must be handled carefully during shipping and storage. Store the depth filter sheets in a dry, odor-free, and well-ventilated place.

Do not expose the depth filter sheets to direct sunlight.

BECO depth filter sheets are intended for immediate use and should be used within 24 months of delivery.

Available Formats

All common square or round filter sizes are available for delivery. Special formats are available on request.

HS Customs Tariff: 4812 00 00

Quality Assurance According to DIN EN ISO 9001

Eaton's Begerow Product Line comprehensive Quality Management System has been certified according to DIN EN ISO 9001.

This certification verifies that a fully functioning comprehensive Quality Assurance System covering product development, contract controls, choice of suppliers, receiving inspections, production, final inspection, inventory management, and shipment has been implemented. Extensive quality assurance measures incorporate adherence to technical function criteria and chemical purity and quality recognized as safe under the German legislation governing the production of foods and beverages.

All information contained herein is current as of the issue of this document. Subject to change in the interest of technical progress.

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For more information, please e-mail us at filtration@eaton.com or visit us online at eaton.com/filtration for a complete list of Eaton's filtration products.

Not all products in Eaton's Begerow Product Line are available in all regions. Please contact your local Eaton office to determine availability.

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