Technical Information

Depth Filtration
BECO Depth Filter Sheets - Standard Range

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BECO depth filter sheets of the Standard Range were developed to meet exceeding requirements in the filtration of liquids. The filter sheets of this series cover a complete range of filtration grades from 4.0 µm to 0.1 µm nominal rating In this way filtration applications for which a particular retention efficiency is required can be selected.

The specific advantages of the BECO Standard Range:

- Reliable retention of undesirable components thanks to an ideal pore structure.
- Excellent clarifying efficiency because of high-quality raw materials.
- Economical filter lifetimes through high contaminant holding capacity.
- Comprehensive quality control of all raw materials and auxiliary materials.
- In-process inspections to guarantee consistent quality.

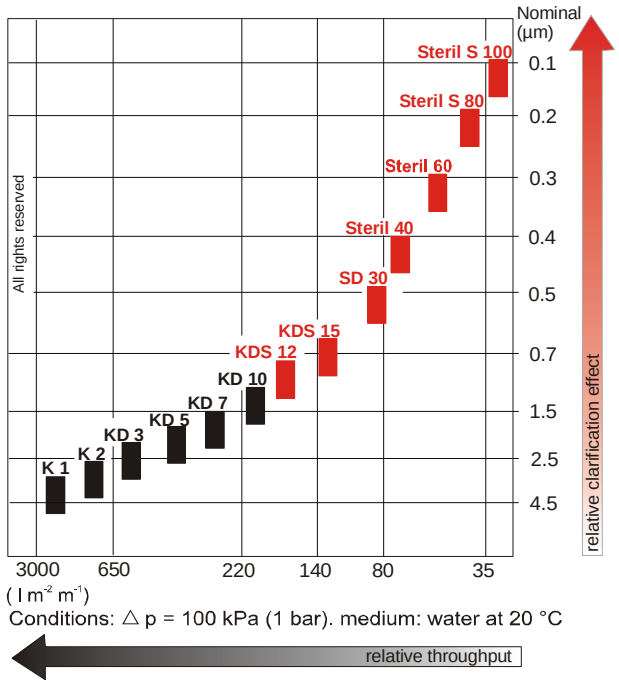
Sterilizing filtration

BECO Steril S 100, Steril S 80, Steril 60, Steril 40

BECO depth filter sheets with a high contaminant retention capacity. These filter sheet types are particularly suitable for cold sterile bottling or storage of liquids. The excellent retention capacity is ensured by the fine pore structure of BECO depth filter sheets combined with adsorptive electrokinetic properties.

Thanks to their high retention capacity for colloidal substances these filter sheet types do excellent service as a pre-filter before membrane filtration.

BECO depth filter sheets - Standard Range



Low-germ, fine filtration

BECO SD 30, KDS 15, KDS 12, KD 10, KD 7, KD 5

BECO depth filter sheets for achieving a high grade of clarification. These sheets retain ultrafine particles reliably and have a germ-reducing effect. They are therefore particularly suitable for haze-free filtering of liquids prior to storage and bottling.

Clarifying filtration

BECO KD 3, K 2, K 1

Depth filter sheets with a large-volume pore structure. These sheets have a high holding capacity for particles and are especially suitable for clarifying filtration applications.

Physical data

Selection Guidelines

Type	Article no.	Nominale retention rate [µm]	Thickness [mm]	Ash content [%]	Mass per unit area [g m^{-2}]	Bursting strength dry [kPa]	Bursting strength wet [kPa]	Water permeability at △ p = 100 kPa [l m^{-2} min^{-1}]
Steril S 100	26950	0.1	3.9	57.5	1375	> 200	> 50	30
Steril S 80	26800	0.2	3.9	50.0	1375	> 280	> 80	40
Steril 60	25600	0.3	3.8	50.0	1375	> 230	> 50	52
Steril 40	25400	0.4	3.8	49.0	1344	> 230	> 50	65
SD 30	24300	0.5	3.8	50.0	1344	> 230	> 50	80
KDS 15	23150	0.6	3.8	50.0	1344	> 250	> 50	124
KDS 12	23120	0.8	3.8	50.0	1344	> 250	> 50	155
KD 10	22100	1.0	3.8	50.0	1313	> 250	> 50	185
KD 7	22070	1.5	3.8	50.0	1281	> 250	> 50	240
KD 5	22050	2.0	3.8	50.0	1250	> 230	> 50	290
KD 3	22030	2.5	3.8	50.0	1188	> 200	> 40	470
K2	21020	3.0	3.8	46.0	1094	> 200	> 50	1625
K1	21010	4.0	3.8	42.0	1050	> 230	> 60	2000

The data and recommendations contained in this brochure reflect our current standard of know-how. Subject to alterations in the interest of technical progress. Upon request a manufacturer's certificate according to DIN EN 10204 can be established.

Chemical data

BECO depth filter sheets meet the requirements of recommendation XXXVI/1 regarding the LmBG* by the BfR**, and the test criteria of FDA directive CFR 21, § 177.2260.

Chemical compatibility of the depth filter material with respect to different solvents, contact time 3 hours at 20 ℃

Solvent	Mechanical strength	Appearance of solvent
Aqueous solutions		
Sugar solution 10 %	r	nc
With 1 % free chlorine	r	nc
With 1 % hydrogen peroxide		ncV
With 30 % formaldehyde		ncV
With 10 % ethanol	r	nc
With 40 % ethanol	r	nc
With 98 % ethanol	r	nc
Caustic soda lye of 1 %	r	nc
2 %	r	nc
4 %	r	0
Ammonia solution of 1%	r	nc
3 %	r	nc
5 %	r	nc

Solvent	Mechanical strength	Appearance of solvent
Hydrochloric acid of 1 %	r	nc
3 %	r	nc
5 %	r	nc
10 %	r	nc
Nitric acid of 1 %	r	nc
3 %	r	nc
5 %	r	nc
10 %	r	nc
Sulphuric acid of 1 %	r	nc
3 %	r	nc
5 %	r	nc
10 %	r	nc
Acetic acid of 1 %	r	nc
3 %	r	nc
5 %	r	nc
10 %	r	0

Solvent	Mechanical strength	Appearance of solvent
Organic solvents:		
Methanol	r	nc
Ethanol	r	nc
Isopropanol	r	nc
Toluol	r	nc
Xylol	r	nc
Acetone	r	nc
Methyl ethyl ketone	r	nc
n-Hexan	r	nc
Dioxan	r	nc
Cyclohexan	r	nc
Tetrachlorethylene	r	nc
Ethylen glykol	r	nc
Dimethyl sulfide	r	nc
N,N-Dimethyl formamide	r	nc

r = resistant *nc = no change* *0 = slight opalescence*

** = Law on Food Products and Articles of Daily Use; ** = Federal Institute of Risk Appreciation*

Components

BECO depth filter sheets are made from extremely pure natural materials and cationic resin. They contain varying quantities of finely fibrillated cellulose fibres of hardwood and softwood, kieselguhr and perlite.

Instructions for correct use

When inserting the depth filter sheets into the sheet filters, handle carefully. Avoid knocks, distortion or abrasion. Never use a damaged depth filter sheet.

Insertion of the depth filter sheets:

Depth filter sheets have one rough side and one smooth side each. The rough side faces the liquid to be filtered (= upstream). The smooth side is the filtrate side of the filter sheet (= downstream). When inserting take care to ensure that the smooth side is facing the filtrate plate.

Filter Preparation

Prior to the first filtration, it is recommended to pre-rinse the closed filter with 50 liters of water per square meter at 1.25 times the flow rate. As a rule, this equals a rinsing time of 10 to 20 minutes depending on the application. Test the entire filter for leakage at maximum operating pressure.

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

Sterilization

BECO filter sheets may be sterilized with saturated steam of **134 °C** or hot water. The pressed packed filter has to be slightly loosened. Make sure to sterilize the entire filter system thoroughly. Final pressure should be applied to the filter package once the entire filter has cooled down.

Sterilization with steam:

Steam quality:	Steam has to be free of foreign particles and impurities
Temperature:	max. **134 °C (saturated steam)**
Duration:	approx. 20 minutes after steam has exited from all filter valves

Sterilization with hot water:

Water quality:	The water should be softened and be free of impurities.
Temperature:	> 85 °C
Duration:	25 minutes, with the temperature achieving 85 °C at the valves
Pressure:	adjust to at least 0.5 bar at the filter outlet

Important notice:

All vent and discharge valves must be slightly opened for optimal sterilization effect and to avoid the steam shock.

Regeneration/back-washing

The high capacity of the BECO depth filter sheets can be used to a greater or lesser degree for filtration in damp environments via easy back-washing using softened water. In this way they contribute considerably to the reduction of filtration cost.

Proceed as follows in the regeneration:

Cold rinsing:	in direction of filtration
	approx. 5 - 10 minutes
Temperature:	15 °C - 20 °C
Duration:	approx. 5 minutes
Hot rinsing:	against direction of filtration
Temperature:	60 °C - 80 °C
Duration:	approx. 10 minutes

Safety

If used properly no negative effects are known.

Safety regulations according to DIN 52 900. An EC safety data sheet is available upon request.

Waste disposal

BECO depth filters can be composted due to their composition. Please observe the current valid official directives relation to filtration products.

Storage

Depth filters consist of strongly adsorbing materials. Careful handling is necessary during transportation and storage. Depth filters must be stored in a dry place that is well aerated.

BECO depth filter sheets are intended for immediate use and should be used within 36 months after delivery.

Forms of supply

BECO depth filters can be supplied for all current filter sizes, square or round. Special formats are available at request.

HS customs tariff number: 4812 00 00

Quality Assurance according to DIN EN ISO 9001:2000

The comprehensive Quality-Management-System of BEGEROW has been certified from DQS according to DIN EN ISO 9001:2000.

The certification confirms the functioning of the total system of Quality Assurance from product development through contract controls, choice of suppliers as well as acceptance controls, production and final examination all in the way to storage and dispatch.

Extensive quality assurance measures comprise the adherence to technical criteria regarding the function as well as the confirmation of chemical purity and quality recognized as safe under the German law governing the production of foodstuffs and beverages.

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