

## Depth Filtration

# BECO Depth Filter Sheets Beer Range

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The BECO Beer Range depth filter sheets were developed especially to meet the high demands of beer filtration. These depth filter sheets are available in a complete range of defined porosities and can be used for coarse filtration, clarification filtration, fine filtration, germ-reducing filtration, and for sterile filtration. The stringent grading of the innovative pore structure enables users to select the filter sheet with the optimum performance for each application.

The specific benefits of the BECO Beer Range are:

- ▶ High efficiency through innovative pore matrix
- ▶ Optimum use of capacity due to good backwash capability
- ▶ Good haze reduction, improved brightness
- ▶ Low adsorption of positive foam substances
- ▶ Minimum migration of beer-soluble ions through use of high-purity raw materials
- ▶ High biological safety through ideal combination of zeta potential and mechanical straining effect

### Product Characteristics

The depth filter sheets are made of natural kieselguhrs (DE) without traceable crystalline components and particularly pure cellulose. Special processing of the raw materials and advanced technical manufacturing processes enable consistent retention characteristics for each BECO filter type.

BECO depth filter sheets ensure a high contaminant retention capacity and significantly improved brightness during filtration. The special action of an ideally adjusted zeta potential combined with high mechanical straining effect are crucial for the positive filtration result.

The pore volume is approx. 75 – 80 % so that approx. 3.5 liters (0.92 gal) of unfiltrate volume can be retained per square meter of effective filter area with a sheet thickness of 4 mm (0.16 in). The total capacity per filter assembly depends on the grade of the BECO filter sheet, the filterability of the beer, the contaminant loading of the prefiltrate and the type of beer.

Regular regenerating and sterilizing cycles are important in using reserve capacities to obtain improved efficiency.

### Guide to BECO Depth Filter Sheet Selection

BECO depth filter sheets can be used for final filtration of beer after all prefilter systems. The selection of the most suitable BECO filter grade depends mainly on the contaminant and turbidity load of the beer.

#### BECO B 150

Depth filter particularly suitable for sterile filtration of beer with high initial contaminant germ volume. Due to its inner structure this BECO depth filter sheets type offers a very high germ retention capacity.

#### BECO B 240

Depth filter suitable for germ-reducing filtration of beer with average initial contaminant germ volume. The high retention capacity for microorganisms, particles, and haze substances of this BECO depth filter sheet type ensures high brightness of the filtrate and cost-effective results.

#### BECO B 320

Depth filter sheet with high throughput suitable for application in fine filtration for safe yeast separation after kieselguhr filtration and production of bright beers.

#### BECO B 410

Depth filter sheet with high retention capacity for particles and haze substances for achieving particularly cost-effective filtration results. This BECO depth filter sheet type is also suitable for removing yeast, provided the number of yeast cells is not too high.

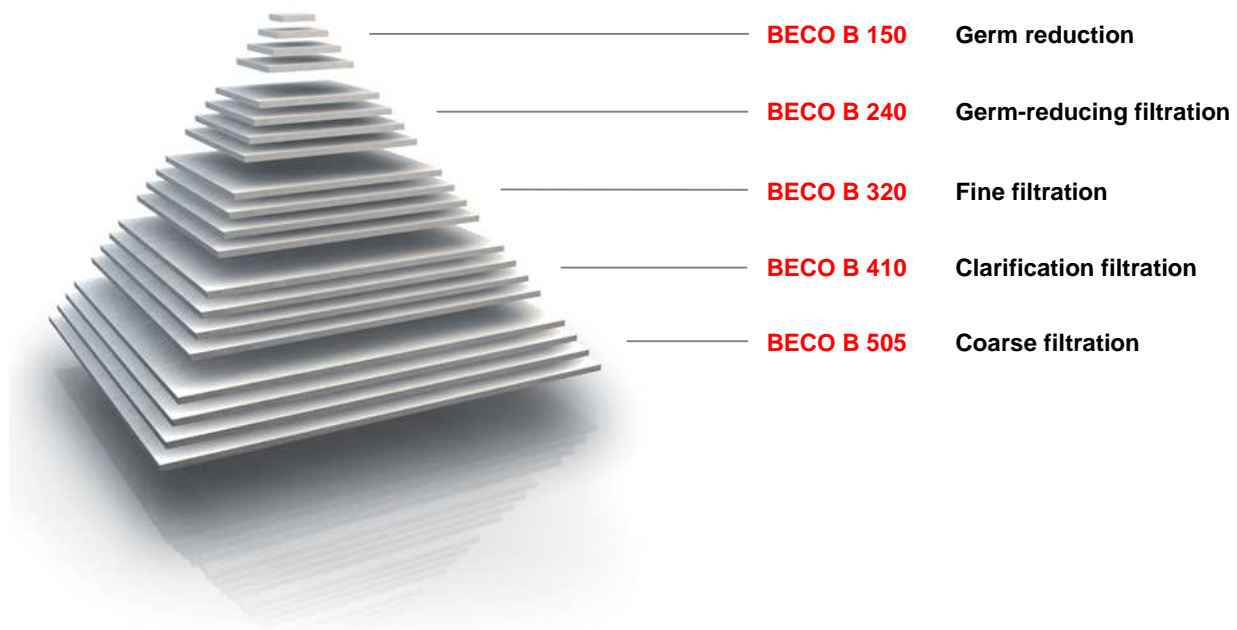
#### BECO B 505

Depth filter sheet with particularly high throughput. Ideally suited for particle retention. This depth filter sheet safely and reliably remains any filter aids which may pass older, damaged kieselguhr (DE) vessel filters, thereby providing protection from immediate sedimentation in the bottle.

## BECO Beer Range Type Overview

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Filtration grade pyramid



### Insertion of the Depth Filter Sheets

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Before inserting BECO depth filter sheets into the filter press, they should be inspected for damage.

Depth filter sheets have a well-distributed pore structure and require careful handling during transportation, storage, and insertion into the sheet filter.

The outlet side of the BECO filter sheet is even and marked with the grade and batch number. This side should always be placed against the clear filtrate plate. After insertion, the filter package should be pressed lightly together and the contact edges should be thoroughly wetted from the outside. Then rinse the filter with cold water in the direction of filtration until the flavor is neutral. This usually takes 10 to 20 minutes at a counterpressure of approx. 0.5 bar (7.25 psi).

The contact pressure during filtration should be set as recommended by the filter manufacturer. However, the contact pressure should be less than 130 bar (1885.5 psi) in order to prevent damage to the cavity structure of the depth filter sheets and associated reduction in filtration performance. For larger formats, a contact pressure up to 220 bar (3190 psi) may be used.

### Filter Preparation

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Prior to the first filtration, it is recommended to pre-rinse the closed filter with 50 liters (13.2 gal) of water per square meter at 1.25 times the flow rate. Depending on the application, this usually corresponds to 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 cannot be used with water for pre-rinsing should be circulated for 10 to 20 minutes. Disposal of the solution after rinsing.

### Sterilization

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BECO depth filter sheets can be sterilized with hot water or saturated steam up to a maximum temperature of 121 °C (250 °F) for approximately 20 minutes. The pressed filter package should be released slightly. Ensure complete sterilization of the entire filtration system. In order to avoid damage to the filter the filter package should be allowed to cool down before final pressing takes place.

#### Sterilization with hot water:

The flow velocity should at least match the nominal capacity of the filter.

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

Temperature: > 85 °C (185 °F)

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

Pressure: Approx. 0.5 bar (7.25 psi) counterpressure at the filter outlet so that complete filling can be ensured.

#### Sterilization with steam:

Quality: The steam must be free from foreign particles and impurities.

Temperature: Max. 121 °C (250 °F) (saturated steam)

Duration: approx. 20 minutes after steam emerges from all filter valves.

#### Important note:

**All vent and discharge valves must be slightly opened for optimum sterilization effect and to avoid the steam impact.**

## Filtration

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The following empirical filtration values are recommended:

Specific surface load: Max. 1.5 hl m<sup>-2</sup>h<sup>-1</sup>

With high contaminant loading: 1.0 – 1.2 hl m<sup>-2</sup>h<sup>-1</sup>

Maximum differential pressure: 1.5 bar (21.8 psi)

## Regeneration/Backwashing

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Positive backwashing characteristics enable the high efficiency reserves of the BECO depth filter sheets to be utilized, thereby reducing filtration costs.

We recommend using the following regeneration procedure:

- Cold rinsing: Removing of beer residues, e.g. in the feed tank or channel
- Following rinsing against the flow direction in the channel until the product is foam-free (approx. 5 minutes)
- Hot rinsing: Up to 70 – 80 °C (158 – 176 °F), against the direction of filtration, approximately up to the sterilization temperature in the channel until the product is foam-free (approx. 10 – 15 minutes) and transition to sterilization after rinsing (in flow direction).
- Pressure: Approx. 0.5 bar (7.25 psi) counterpressure at the filter outlet
- Flow velocity: Twice the filtration rate, if possible

### Note:

**The water must be of suitable quality, biologically safe and free from other impurities. Softened water is preferred. In breweries, brewing water is commonly used.**

**Adherence to these recommendations ensures optimum filtration performance.**

## Safety

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If used properly no negative effects are known.

An EC safety data sheet is available upon request.

## Disposal

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Due to their composition, BECO depth filter sheets are suitable for composting. Conform to current official regulations.

## Storage

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Depth filter sheets consist of strongly adsorbing materials. The product must be handled carefully during transport and storage. Depth filter sheets must be stored in a dry, odor-free, and well ventilated place

Do not expose the depth filter sheets in direct sun light.

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

## Delivery Information

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Available for all common square filter sizes. Special formats are available on request.

Depth Filter Sheet	Article number
BECO B 150	15.550
BECO B 240	15.540
BECO B 320	15.520
BECO B 410	15.510
BECO B 505	15.505

HS customs tariff number: 4812 00 00

## Quality Assurance According to DIN EN ISO 9001:2000

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The comprehensive BEGEROW quality management system is certified according to DIN EN ISO 9001:2000.

The certification confirms the functioning of the total system of quality assurance from product development through contract verifications, choice of suppliers as well as acceptance controls, production and final examination all the way through to storage and shipping.

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 foods and beverages.

BECO depth filter sheets meet the requirements of recommendation XXXVI/1 regarding the LFGB (German Food, Commodity and Feed Act) by the BfR (Federal Institute of Risk Assessment), and the test criteria of FDA directive CFR 21 § 177.2260.



Reg. No. 000480 QM

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