

## Pre-coat Filtration BECO® ENDURA® Range

### Support Sheet for Sterilization with Hot Water or Saturated Steam

Eaton's BECO ENDURA support filter sheets are a unique type of washable, reusable protective sheets for pre-coat filtration in diatomite frame filters offering particularly notably high performance.

Due to their excellent wet strength and optimized surface the filter cake can be removed with ease and a service life of up to 30 pre-coating cycles is possible dependent on the liquid to be filtered and the filter aids used.

#### Insertion of the Support Sheet

The outlet side of the BECO support sheet is smooth and is marked by the pattern impression of the production screen with the BECO filter sheet type and batch number. The outlet side of the support sheet should show against the filter plate outlet side for the filtered liquid. The rough surface of the inlet side is pointing into the direction of the diatomaceous earth frame.

BECO support sheets must be well moistened after insertion and before closing the diatomaceous earth-frame-filter. Support sheets have a sensitive structure that requires extremely careful handling during transportation, storage and insertion in the diatomaceous earth-frame-filter. Their structure can be destroyed by jarring, bending or scraping. Thus, the sheets should always be inspected for possible damage before final use in the diatomaceous earth-frame-filter.

#### Filter Preparation

Unless already completed after sterilization, Eaton recommends pre-rinsing the closed filter with 1.23 gal/ft<sup>2</sup> (50 l/m<sup>2</sup>) of water 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 products that cannot be used with water for pre-rinsing should be circulated for 10 to 20 minutes. Dispose of the solution after rinsing.



#### Sanitizing and Sterilizing (Optional)

The wetted BECO ENDURA support sheets may be sterilized with hot water or saturated steam up to a maximum temperature of **250 °F (121 °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. The water should be softened and free of impurities.

Temperature: 185 °F (85 °C)

Duration: 30 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.



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### Sterilizing with Steam

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

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

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

Rinsing: After sterilizing with 1.23 gal/ft<sup>2</sup> (50 l/m<sup>2</sup>) at 1.25 times the flow rate.

### Performance of Pre-coat Filtration

**Body feed** with approx. 0.08 – 0.13 lb/ft<sup>2</sup> (400 – 600 g/m<sup>2</sup>) coarse diatomaceous earth, e.g., BECOGUR™ 3500 or BECOGUR 4500, alternatively perlite, e.g., BECOLITE™ 5000.

Uniform pre-coating of diatomaceous earth or perlite on the support sheet must be ensured through sufficiently high flow velocity. The optimum approach velocity is 0.20 – 0.29 gal/ft<sup>2</sup>/h (5 – 7 hl/m<sup>2</sup>/h).

To ensure complete venting, a counter-pressure of approx. 7.2 psi (50 kPa, 0.5 bar) should be set at the outlet valve. During pre-coating of the filter complete venting must be ensured.

**Pre-coating** with approx. 0.10 – 0.16 lb/ft<sup>2</sup> (500 – 800 g/m<sup>2</sup>) of filter aids or a mixture corresponding to the current dosage. Here too, the optimum approach velocity is 0.20 – 0.29 gal/ft<sup>2</sup>/h (5 – 7 hl/m<sup>2</sup>/h).

The dirt holding capacity of the cake frames should be considered during filtration. Set the mixing ratio of the filter aids and dosage for optimum filtration results in terms of haze reduction and total throughput. The application engineers of Eaton will be happy to assist you with further question.

### Regeneration in Beverage or Food Applications

After completion of filtration and/or filling of the diatomaceous earth frames, the used filter aids and sediments are removed by washing this support sheets with a gentle water jet, or by careful use of compressed air, or by careful scraping off from the BECO ENDURA support sheet. Care must be taken that the support sheets are not damaged.

The filter can be regenerated by rinsing with cold, warm or hot water. The optimum regeneration effect is achieved with hot water at 176 °F (80 °C). The water should be of suitable quality and biologically sound, and it should be free from other forms of contamination.

The filter should be rinsed in filtration direction. The approach velocity should be at least 1.25 times the filtration velocity, but no higher than twice that value. Rinsing is complete once clear water emerges at the filter outlet. The diatomaceous earth frame filter can be sterilized again.

### Product Characteristics

Chemical and technical data:

Dry material:	> 96%
Residue on ignition:	< 1%
Thickness:	0.13 in (3.4 mm)
Bursting strength wet:	> 101.53 psi (> 700 kPa, 7 bar)
Water flow rate, $\Delta p = 14.5$ psi: ( $\Delta p = 100$ kPa):	105.3 gpm/ft <sup>2</sup> 4290 l/m <sup>2</sup> /min

### Chemical Resistance

Impervious to organic, aqueous liquids in a pH value range between 2 and 10 not impervious to cellulose dissolving liquids.

### 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

BECO ENDURA support sheets can be disposed of with domestic waste or organic waste. Regional regulations may apply. Certain ingredients of the filtered liquids may lead to disposal restrictions.

### Storage

BECO ENDURA support sheets are intended for immediate use and should be used within 36 months after production date.

BECO ENDURA support sheets consist of adsorptive materials. The product must be handled carefully during transport and storage. It should be stored in a dry, odor-free, and well ventilated place, under no circumstances together with, or in the vicinity of evaporating chemicals, oils, fuels, etc.

Do not expose support sheets to direct sunlight.

### Forms of Supply

The article number for BECO ENDURA support sheets is 29.200.

They can be supplied for all common types of diatomaceous earth (DE) frame filters. Special formats are available at request.

## **Quality Assurance According to DIN EN ISO 9001**

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The Quality Management System of Eaton Technologies GmbH 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 is given to the best of our knowledge. However, the validity of the information cannot be guaranteed for every application, working practice and operating condition. Misuse of the product will result in all warranties being voided.

Subject to change in the interest of technical progress.

**North America**  
44 Apple Street  
Tinton Falls, NJ 07724  
Toll Free: 800 656-3344  
(North America only)  
Tel: +1 732 212-4700

**Europe/Africa/Middle East**  
Auf der Heide 2  
53947 Nettersheim, Germany  
Tel: +49 2486 809-0

Friedensstraße 41  
68804 Altlußheim, Germany  
Tel: +49 6205 2094-0

An den Nahewiesen 24  
55450 Langenlonsheim, Germany  
Tel: +49 6704 204-0

**China**  
No. 3, Lane 280,  
Linhong Road  
Changning District, 200335  
Shanghai, P.R. China  
Tel: +86 21 5200-0099

**Singapore**  
100G Pasir Panjang Road #07-08  
Singapore 118523  
Tel: +65 6825-1668

**Brazil**  
Rua Clark, 2061 - Macuco  
13279-400 - Valinhos, Brazil  
Tel: +55 11 3616-8400

**For more information, please  
email us at [filtration@eaton.com](mailto:filtration@eaton.com)  
or visit [www.eaton.com/filtration](http://www.eaton.com/filtration)**

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