Technical Information

Depth Filtration
BECOPAD® P Range

Premium Mineral-Free Depth Filter Medium

BECOPAD P depth filter medium from Eaton's Begerow Product Line is characterized by unparalleled purity. The ion and endotoxin content is significantly lower than for conventional depth filter media.

In Eaton's innovative BECOPAD depth filter sheet's range, high-purity celluloses form a unique structure, which even for microbe removal does not require mineral components.

The specific advantages of BECOPAD P depth filter medium:

- Minimum endotoxin contents, this ensures product safety
- Increased endotoxin retention
- Mineral-free, therefore minimum ion content particularly of calcium, magnesium and aluminum ions
- Very high chemical resistance and mechanical stability
- 20% higher performance
- Rinsing volume reduced by 50%, resulting in reduced process costs

Ingredients

BECOPAD P depth filter medium is made only of high-purity cellulose and wet strength agents.

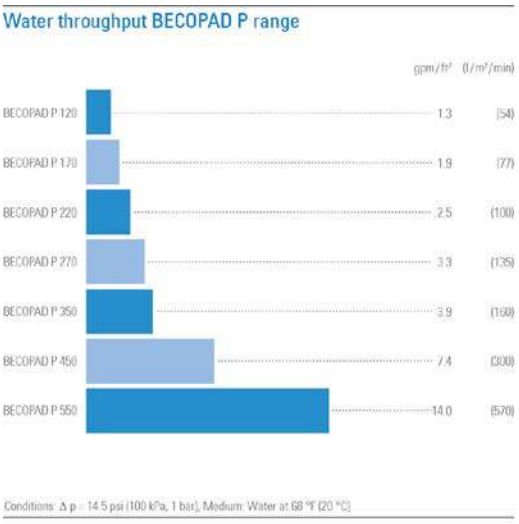
Areas of Application

BECOPAD P depth filter medium can be used for filtration of all liquid media. Application options range from coarse filtration to microbe removal.

BECOPAD P Depth Filter Medium

BECOPAD P depth filter medium is cationic. It is therefore characterized by charge-related adsorption during filtration. Additionally, the filter medium has a very low content of soluble ions, especially of calcium, magnesium and aluminum. The chemical resistance and bursting strength is extremely high.

BECOPAD P depth filter medium is therefore suitable for applications involving mechanical separation of particles and adsorptive retention of negatively charged particles. Due to the minimum endotoxin contents and the increased endotoxin reduction the filter medium is ideal for pharmaceutical processes.



Guide to Choosing the Right BECOPAD P Depth Filter Medium

BECOPAD P 120, BECOPAD P 170
Increased endotoxin retention, protection of downstream membrane filters, minimization of bioburden in the filtrate

BECOPAD P 220, BECOPAD P 270
Microbiological reduction and endotoxin-reducing filtration with average initial burden

BECOPAD P 350
Fine filtration, activated carbon removal

BECOPAD P 450
Clarifying filtration, particle separation

BECOPAD P 550
Coarse filtration, particle separation

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Physical Data

This information is intended as a guideline for the selection of BECOPAD P depth filter medium.

Type	Article no.	Nominal retention rate µm	Thickness in (mm)	Ash content %	Bursting strength wet psi (kPa)	Water throughput at Δ p = 14.5 psi gpm/ft²	Water throughput at (Δ p = 100 kPa* l/m²/min)	Endotoxin content** EU/ml
BECOPAD P 120	Q1112	0.1 – 0.3	0.15 (3.9)	< 1.0	> 21.8 (150)	1.3	(55)	< 0.025
BECOPAD P 170	Q1117	0.2 – 0.4	0.15 (3.9)	< 1.0	> 21.8 (150)	1.9	(80)	< 0.025
BECOPAD P 220	Q1122	0.3 – 0.5	0.15 (3.9)	< 1.0	> 21.8 (150)	2.5	(100)	< 0.025
BECOPAD P 270	Q1127	0.5 – 0.7	0.15 (3.9)	< 1.0	> 21.8 (150)	3.3	(135)	< 0.025
BECOPAD P 350	Q1135	0.7 – 1.0	0.15 (3.9)	< 1.0	> 21.8 (150)	3.9	(160)	< 0.025
BECOPAD P 450	Q1145	1.0 – 2.0	0.15 (3.9)	< 1.0	> 21.8 (150)	7.4	(300)	< 0.025
BECOPAD P 550	Q1155	2.0 – 3.0	0.15 (3.9)	< 1.0	> 21.8 (150)	14.0	(570)	< 0.025

The water flow is a laboratory value characterizing the different BECOPAD depth filter medium types. It is not the recommended flow rate.

* 100 kPa = 1 bar, ** Endotoxin content analysis after rinsing with 6.6 gal/sqm WFI (Water for Injection) (25 l/m²)

Chemical Data

BECOPAD P depth filter medium meets 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). The chemical compatibilities listed in the table below are a guide only.

Chemical compound		Max. tested temperature, Contact time	Mechanical resistance	Chemical compound		Max. tested temperature, Contact time	Mechanical resistance
Caustic:				**Organic solvents:**		68 °F (20 °C), 168 h	x
Ammonia solution	25%	68 °F (20 °C), 168 h	x	Acetone		68 °F (20 °C), 168 h	x
Potassium hydroxide	30%	68 °F (20 °C), 48 h	(x)	Butanol		68 °F (20 °C), 168 h	x
Sodium hydroxide	30%	68 °F (20 °C), 24 h	-	Cyclohexane		68 °F (20 °C), 168 h	x
	5%	68 °F (20 °C), 4 h	x	Dimethyl sulphide		68 °F (20 °C), 168 h	x
	2%	68 °F (20 °C), 48 h	(x)	Ethanol		68 °F (20 °C), 168 h	x
	1%	68 °F (20 °C), 72 h	x	Ethylene glycol		68 °F (20 °C), 168 h	x
	0.5%	68 °F (20 °C), 72 h	x	Ethyl methyl ketone		68 °F (20 °C), 168 h	x
				Isopropanol		68 °F (20 °C), 168 h	x
Acids:				Methanol		68 °F (20 °C), 168 h	x
Acetic acid	25%	68 °F (20 °C), 168 h	x	N,N dimethyl formamide		68 °F (20 °C), 168 h	x
Peracetic acid	0.1%	68 °F (20 °C), 168 h	x	N-hexane		68 °F (20 °C), 168 h	x
Peracetic acid	0.2%	68 °F (20 °C), 168 h	x	Tetrachloroethylene		68 °F (20 °C), 168 h	x
Peracetic acid	0.5%	68 °F (20 °C), 168 h	x	Toluene		68 °F (20 °C), 168 h	x
Nitric acid	20%	68 °F (20 °C), 24 h	x	Triethanolamine		68 °F (20 °C), 168 h	x
Hydrochloric acid	20%	68 °F (20 °C), 4 h	(x)	Xylene		68 °F (20 °C), 168 h	x
Sulphuric acid	20%	68 °F (20 °C), 72 h	x				
Citric acid	25%	68 °F (20 °C), 168 h	x	**Aqueous solutions:**			
				Iron trichloride	25%	68 °F (20 °C), 168 h	x
				Sodium hypochlorite		68 °F (20 °C), 168 h	x
				Hydrogen peroxide	10%	68 °F (20 °C), 72 h	x

x = resistant (x) = limited resistance - = not resistant

Ion Concentration after Extraction with 40% Ethanol

Ions	Content ppb*
Ca	< 50
Mg	< 25
Fe	< 5
Al	< 5

* After rinsing with 6.6 gal/sqm (25 l/m²) of 40% Ethanol

Instructions for Correct Use

BECOPAD P depth filter medium requires careful handling when inserting them into the plate and frame filter. Avoid banging, bending, and rubbing. Do not use damaged BECOPAD P depth filter media.

Inserting
Each BECOPAD P depth filter medium has a rough side and a smooth side. The rough side is the feed 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.

Sterilization (Optional)

The wetted BECOPAD P depth filter medium may be sterilized with 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 Steam

Steam quality:	The steam must be free of foreign particles and impurities
Temperature:	Max. **273.2 °F (134 °C) (saturated steam)**
Duration:	Min. 20 minutes after steam exits from all filter valves
Rinsing:	After sterilizing with 6.6 gal/sqm (25 l/m²) at 1.25 times the flow rate

Filter Preparation and Filtration

Unless already completed after sterilization, rinse the depth filter with 6.6 gal/sqm (25 l/m²) of water at 1.25 times the flow rate prior to the first filtration. Check the entire filter for leakage at maximum operating pressure.

High-proof alcoholic solutions and products that cannot be rinsed with water should be circulated with the product. Discard 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 removing micro-organisms.

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.

Disposal

Due to their composition, BECOPAD P depth filter media are 100% biodegradable. Relevant current regulations must be followed, depending on the filtered product.

Storage

BECOPAD P depth filter medium consists of strongly adsorbing materials. The product must be handled carefully during shipping and storage.

Store BECOPAD P depth filter medium in a dry, odor-free, and well ventilated place.

BECOPAD P depth filter medium is intended for immediate use and should be used within 24 months of delivery.

Delivery Information

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

For further information, please contact the sales manager responsible for your area.

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 Control According to DIN EN ISO 9001

The comprehensive Eaton's Begerow Product Line quality management system is certified according to DIN EN ISO 9001.

This certification confirms that a fully functioning and comprehensive quality control system covering product development, contract review, supplier selection, receiving inspection, production, final inspection, inventory management, and delivery has been implemented.

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.

The depth filter media used 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 (Food and Drug Administration) Directive CFR 21 § 177.2260.

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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.

All information and recommendations appearing in this brochure concerning the use of products described herein are based on tests believed to be reliable. However, it is the user's responsibility to determine the suitability for his own use of such products. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Eaton as to the effects of such use or the results to be obtained. Eaton assumes no liability arising out of the use by others of such products. Nor is the information herein to be construed as absolutely complete, since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

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