

## Depth Filtration BECOPAD® P Range

### Premium Depth Filter Medium with High-Purity Cellulose

BECOPAD P depth filter medium 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 microbial 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
- Without the addition of mineral components, therefore minimum ion content particularly of calcium, magnesium and aluminum ions
- Very high chemical resistance and mechanical stability
- Rinsing volume reduced by up to 50%, resulting in reduced process costs
- A Validation Guide is available upon request

#### Ingredients

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

#### Areas of Application

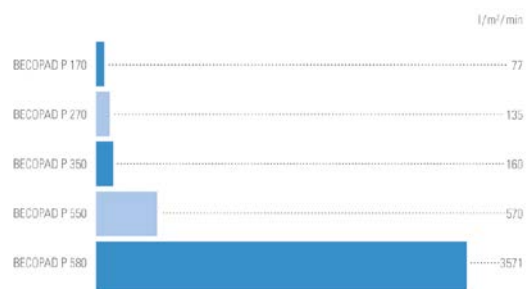
BECOPAD P depth filter medium can be used for filtration of all liquid media. Application options range from coarse filtration to microbial removal.

#### 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.



Water throughput BECOPAD P range



Conditions:  $\Delta p = 100 \text{ kPa (1 bar)}$ , Medium: Water at 20 °C

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

## Physical Data

This information is intended as a guideline for the selection of BECOPAD P depth filter medium. The water flow is a laboratory value characterizing the different BECOPAD P depth filter medium types. It is not the recommended flow rate.

Type	Article no.	Nominal retention range µm	Thickness in (mm)	Ash content %	Bursting strength wet psi (kPa*)	Water throughput at		Endotoxin content ** EU/ml
						Δ p = 14.5 psi gpm/ft <sup>2</sup>	Δ p = 100 kPa* l/m <sup>2</sup> /min)	
BECOPAD P 170	Q1117	0.2 – 0.4	0.15 (3.9)	< 1	> 21.8 (150)	1.9	(80)	< 0.025
BECOPAD P 270	Q1127	0.5 – 0.7	0.15 (3.9)	< 1	> 21.8 (150)	3.3	(135)	< 0.025
BECOPAD P 350	Q1135	0.7 – 1.0	0.15 (3.9)	< 1	> 21.8 (150)	3.9	(160)	< 0.025
BECOPAD P 550	Q1155	2.0 – 3.0	0.15 (3.9)	< 1	> 21.8 (150)	14.0	(570)	< 0.025
BECOPAD P 580	Q1158	8.0 – 10.0	0.15 (3.9)	< 1	> 21.8 (150)	87.6	(3571)	< 0.025

\* 100 kPa = 1 bar

\*\* Endotoxin content analysis after rinsing with 0.61 gal/ft<sup>2</sup> (25 l/m<sup>2</sup>) of WFI (Water for Injection)

## 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. 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
<b>Caustic:</b>			<b>Organic solvents:</b>	68 °F (20 °C), 168 h	x
Ammonia solution	25% 68 °F (20 °C), 168	x	Acetone	68 °F (20 °C), 168 h	x
Potassium hydroxide	30% 68 °F (20 °C), 48	(x)	Butanol	68 °F (20 °C), 168 h	x
Sodium hydroxide	30% 68 °F (20 °C), 24	-	Cyclohexane	68 °F (20 °C), 168 h	x
	5% 68 °F (20 °C), 4	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
<b>Acids:</b>			Methanol	68 °F (20 °C), 168 h	x
Acetic acid	25% 68 °F (20 °C), 168	x	N,N dimethyl formamide	68 °F (20 °C), 168 h	x
Peracetic acid	0.1 68 °F (20 °C), 168	x	N-hexane	68 °F (20 °C), 168 h	x
Peracetic acid	0.2 68 °F (20 °C), 168	x	Tetrachloroethylene	68 °F (20 °C), 168 h	x
Peracetic acid	0.5 68 °F (20 °C), 168	x	Toluene	68 °F (20 °C), 168 h	x
Nitric acid	20% 68 °F (20 °C), 24	x	Triethanolamine	68 °F (20 °C), 168 h	x
Hydrochloric acid	20% 68 °F (20 °C), 4	(x)	Xylene	68 °F (20 °C), 168 h	x
Sulphuric acid	20% 68 °F (20 °C), 72	x			
Citric acid	25% 68 °F (20 °C), 168	x	<b>Aqueous solutions:</b>		
			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 0.61 gal/ft<sup>2</sup> (25 l/m<sup>2</sup>) of 40% Ethanol

## Guide to Choosing the Right BECOPAD P Depth Filter Medium

### BECOPAD P 170

Microbial removal and increased endotoxin retention

### BECOPAD P 270

Microbial and endotoxin reduction

### BECOPAD P 350

Fine filtration, activated carbon removal

### BECOPAD P 550

Clarifying filtration, particle separation

### BECOPAD P 580

Coarse filtration, particle separation

## 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.

## Sanitizing and Sterilizing (Optional)

The wetted BECOPAD P 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. 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.

### 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 0.61 gal/ft<sup>2</sup> (25 l/m<sup>2</sup>) at 1.25 times the flow rate.

## Filter Preparation and Filtration

Unless already completed after sterilization, rinse the depth filter with 0.61 gal/ft<sup>2</sup> (25 l/m<sup>2</sup>) 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 36 months after production date.

## Delivery Information

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

## Quality Control According to DIN EN ISO 9001

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.

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