

**What is BECOPAD?**

**BECOPAD** is the first and only mineral-free depth filter sheet to enable sterilizing filtration.

**What are the special features of BECOPAD?**

**BECOPAD** only contains organic fibrous material, i.e. no inorganic constituents.

**BECOPAD** is characterized by high purity. The ion content and other extractable constituents are low enough to enable the flushing volume to be reduced by 50 %. This also applies to the sensory assessment before wine filtration.

**BECOPAD** offers 90 % less drip losses than current-generation depth filter sheets.

**BECOPAD** offers longer service life with the same retention rate.

**What is BECOPAD made of?**

**BECOPAD** consists only of high-purity celluloses.

**Why does BECOPAD not require kieselguhr?**

The task of the kieselguhr is taken over by a special cellulose produced with the bepure technique.

**Is the cellulose contained in BECOPAD chemically modified?**

No.

**What else does BECOPAD contain?**

In addition to high-purity celluloses, **BECOPAD** only contains wet strength resins.

**What are wet strength resins?**

The purpose of wet strength resins is to provide adequate strength for depth filter sheets in applications requiring sterilization.

**What materials with high wet strength are used in BECOPAD?**

All materials with high wet strength used by E. Begerow GmbH & Co., usually polyamino-epichlorohydrin resins, meet the requirements of LFGB recommendation XXXVI/1 (German Food and Feed Code) and FDA.

**What benefits does BECOPAD offer?**

The high purity of BECOPAD minimizes interference with the product to be filtered (quality improvement) and enables a significant reduction of flushing volumes (cost and time saving). Lower drip losses increase the external hygiene of the filter and its surroundings. Better handling of BECOPAD during packing of the filter saves work time and costs.

**Why is BECOPAD more expensive than other sheets with the same clarifying sharpness?**

The bepure technique and the high purity of BECOPAD lead to higher manufacturing costs.

**How is BECOPAD produced?**

BECOPAD is produced using the bepure technique. This is a trade secret of E. Begerow GmbH & Co.

**What is bepure?**

bepure is the technique developed by E. Begerow GmbH & Co. for manufacturing mineral-free depth filter sheets.

**Which competitor product corresponds to BECOPAD?**

No competitor product matches BECOPAD! Only BECOPAD offers the unique BECOPAD features.

**What is the retention rate of BECOPAD?**

BECOPAD offers nominal retention rates for all filtration ranges, starting with 0.1 µm.

**What is the service life of BECOPAD?**

BECOPAD offers service lives that are up to 20 % higher than conventional sheets with the same retention rate.

**What is the LRV?**

The Logarithmic Retention Value is calculated as follows:

$LRV = \log_{10} (\text{bacterial count before filtration} / \text{bacterial count after filtration})$ . In practice it indicates by how many factors of ten the bacterial count for a given test germ is reduced by the filtration.

**What is the water value?**

The water value is a measure for the permeability of a depth filter sheet. It indicates how much water flows through a depth filter sheet with a known area at a specified pressure (the unit is l/m<sup>2</sup>min). The higher the water value, the higher the permeability of the depth filter sheet.

**Is BECOPAD suitable for composting?**

BECOPAD is fully suitable for composting, provided the product remnants contained in the sheet allow this.

**How is BECOPAD disposed of?**

BECOPAD can be disposed of with organic waste or general domestic waste.

**What is low-cationic/high-cationic?**

Cationicity is a measure for the positive charges available on the inner surface of a depth filter sheet.

**Is BECOPAD low-cationic or high-cationic?**

BECOPAD is available as a low-cationic version or a high-cationic version.

**What is the difference between the low-cationic and high-cationic version of BECOPAD?**

The only difference between the two versions is their cationicity. All other filtration-relevant parameters are identical for the same retention rate.

**Is the retention rate of the high-cationic BECOPAD higher with the same flow?**

No.

**Is the high cationic BECOPAD more expensive?**

No.

**Which BECOPAD is used for which filtration?**

Which BECOPAD is used largely depends on the product to be filtered. Red wine cannot be filtered with a high-cationic BECOPAD, because high colorant losses are to be expected. High-cationic BECOPAD are mainly used in the chemical and pharmaceutical sector, e.g. for separation of endotoxins.

**How does deposition at charged filter media work?**

When a liquid flows through BECOPAD negatively charged particles are deposited at the positively charged inner surface (Coulomb interaction), and a region with increased cation concentration is formed in the fluid. Particles with negative surface charge are again attracted (boundary layer formation). This formation of several successive boundary layers with different charge density continues, although the effect becomes weaker with increasing distance from the original charge, i.e. the inner surface of BECOPAD. In simple terms, this is what is referred to as zeta potential. It enables separation of particles that are smaller than the smallest depth filter sheet pores.

**Does the separation capacity become exhausted as the filter medium becomes charged?**

The charge potential of any depth filter sheet decreases with increasing filtration operation. In addition to the zeta potential, there are further mechanisms that influence the separation of particles. The increase in differential pressure during the filtration is a reliable measure for assessing the exhaustion state of a depth filter sheet.

**Is the zeta potential measurable in depth filter sheets?**

The zeta potential is only measurable for suspended fibrous material, not for intact sheets. For depth filter sheets, the colorant adsorption is measured, which correlates with the zeta potential. The higher the measured colorant adsorption, the higher the zeta potential.

**How does the permeability of BECOPAD differ at the same nominal retention rate?**

The permeability of BECOPAD is higher at the same nominal retention rate.

**How does the service life of BECOPAD differ at the same nominal retention rate?**

The service life of BECOPAD is around 20 % higher at the same nominal retention rate.

**How do the drip losses of BECOPAD differ at the same nominal retention rate?**

The drip losses of BECOPAD are up to 90 % lower at the same nominal retention rate.

**Is the bursting strength of BECOPAD as high as that of conventional sheets?**

The bursting strength of BECOPAD is significantly higher than that of conventional depth filter sheets.

**Why does BECOPAD contain fewer flushable constituents?**

BECOPAD contains no mineral constituents. These represent the main source of flushable constituents in other depth filter media.

**How much lower is the quantity of flushable constituents?**

Since many relevant measurements undertaken as part of German Food and Feed Code and FDA tests are below the detection limit of the respective technique, no general statement can be made regarding the percentage reduction of flushable constituents.

**What advantage does a reduced quantity of flushable constituents have?**

Less flushable constituents means reduced rinsing time and reduced rinsing water quantity before the first filtration.

**What is the nominal retention rate?**

The nominal retention rate is defined as the diameter of the smallest particle that is retained by the sheet with a ratio of 99.98 %.

**Does BECOPAD require acid wash?**

No.

**After which throughput is the colorant adsorption of BECOPAD exhausted, and how does this compare with a conventional sheet?**

Low-cationic depth filter sheets, including current-generation sheets, show no colorant adsorption from the start of the filtration.

**Can BECOPAD be used for final cellar filtration that guarantees freedom from particles, including very small particles?**

Yes, if a BECOPAD sheet that is suitable for removing microbials is used.

**How many filtration and sterilization cycles are guaranteed for BECOPAD?**

BECOPAD can be used for at least as many filtration and sterilization cycles as conventional sheets.

**Can the filter be purged empty with BECOPAD in place?**

Yes.

**How do the cold and hot flushing quantities required for BECOPAD compare with conventional depth filter sheets?**

The cold rinsing quantity required by BECOPAD is around 50 % lower.

The hot rinsing quantity is not lower, since hot rinsing is used for sterilization.

**Can BECOPAD be compacted dry?**

No, brief wetting is required, because BECOPAD expands when it absorbs water, like all depth filter sheets.

**What LRV values do BECOPAD sheets have?**

Initially we will only specify nominal retention ranges, no LRVs.

**Does BECOPAD have higher steam resistance compared with conventional sheets?**

Yes.

**Can BECOPAD be operated with higher flow velocities?**

Particle separation depends on the flow velocity, which means that the flow velocity cannot be increased with BECOPAD.

**Does BECOPAD offer higher protection against fibers detached from the filtrate side?**

No.

**What maximum differential pressures apply for BECOPAD?**

BECOPAD can be operated up to the maximum differential pressures of conventional sheets.

**What certificates are available for BECOPAD?**

BECOPAD sheets are certified according to FDA and German Food and Feed Code requirements.

**What about backwashability?**

BECOPAD is fully backwashable.