



Image: Mast-Jägermeister SE

A MANIFESTO FOR CLEAR HERBAL LIQUEUR

Stacked disc cartridges safely remove haze-causing substances from super-premium herbal liqueur

Certain polyphenols and long-chain fatty acid esters can cause an alcoholic product to have a cloudy appearance. In order to avoid this unwanted effect in 'Jägermeister Manifest,' its super-premium herbal liqueur, Mast-Jägermeister SE uses Eaton's Becodisc BS and BA stacked disc cartridges. This combination not only selectively removes haze-causing agents; it also reliably preserves valuable ingredients.

For the first time in its history, traditional family-owned company Mast-Jägermeister SE has extended its line of the most successful herbal liqueur in the world by launching a super-premium version: Jägermeister Manifest. The complex extraction of more than 56 herbs, a two-stage barrel aging process in small and large oak barrels and an alcohol content of 38 %vol. results in a nuanced composition that sets new standards of taste. "Although legally this is defined as an herbal liqueur, we have in fact created a product that is so unique it deserves to be in a category of its own. The notes produced from the barrel aging blend harmoniously with the herbs to create a genuine super-premium liqueur for connoisseurs," explains Dr. Berndt Finke, Head of R&D, Products and Quality.

Challenge: Haze during cooling and storage

However, the new product presented fresh challenges for the Jägermeister liqueur experts: "The fact that Jägermeister Manifest has so many ingredients meant we were facing different types of challenges in production that we had never seen before." In particular, the liqueur tends to go slightly cloudy after extended storage periods. "Our recipe calls for more than 56 herbs, which are also used in higher quantities than in our traditional Jägermeister. In addition to this, storage in wooden barrels introduces phenolic compounds into the liqueur. These compounds polymerize after a few months of storage and can sometimes result in a cloudy appearance. This visual phenomenon does not comply with

our approach to quality, which is to achieve nothing short of perfection," adds Dr. Finke. Since Mast-Jägermeister SE has been implementing filtration solutions from Eaton for many years, both companies worked together to find an optimal solution that would resolve this issue.

Solution: Sustainable removal of haze-causing agents

Because a standard filtration solution would not be sufficient to meet the requirements of such a complex product, Eaton conducted targeted experiments with Jägermeister Manifest in Mast-Jägermeister SE's laboratory in Wolfenbüttel, Germany. The Beco Integra LAB 220™, a portable filtration unit

with pump and round filter, was used to perform extensive tests on different types of depth filter sheets on a small scale. The final filtration solution was subsequently scaled up to the actual production plant, making it easier to find suitable depth filter sheets and cost savings. Results from the Jägermeister laboratory test indicated that the most effective way to remove the haze-causing substances was to combine the depth filter sheets from the Beco® standard and Beco Selecta A™ ranges. This involved using Becodisc stacked disc cartridges from the BS range with a retention rate of 2.5 µm as the pre-filter and Becodisc BA 20 with a retention rate of 0.8 µm for fine filtration.

The depth filter sheets in the Becodisc BS stacked disc cartridges feature a large-volume cavity providing a particularly high haze-removal capacity. The pore structure not only enables the components requiring separation to be reliably retained, but also results in an economic service life. During the downstream fine filtration process, the liqueur passes through Becodisc BA 20 stacked disc cartridges, which were specially developed for applications in the spirits industry. The filters not only retain the finest particles, they also specifically retain long-chain fatty acid esters that cause haze in the liqueur and can also have a negative effect on the sensory profile and taste. Short-chain fatty acid esters, adding sensory qualities to the liqueur, can pass through the filter material almost entirely. A special feature of these filter sheets is the low iron, calcium and magnesium ion content, that can cause haze and discoloration in alcoholic products. Moreover, because the material only adsorbs a minimum amount of color, the dark copper tones of Mast-Jägermeister's premium herbal liqueur remain unaffected.

Stacked disc cartridges enable easy handling

The production volume of the premium Jägermeister Manifest is significantly lower than that of the company's traditional herbal liqueur produced in Wolfenbüttel, Germany. This means that, rather than being passed through the large plate and frame filters used for standard large-scale produc-



Becodisc BS standard stacked disc cartridges with excellent clarification performance for reliable removal from particles to microorganisms. Becodisc BA special stacked disc cartridges with reduced calcium and magnesium content for prevention and removal of haze while preserving color and flavor (Image: Eaton)

tion, the liqueur is instead passed through stacked disc cartridge housings. Not only do these stacked disc cartridges offer the optimal capacity for filtering the premium liqueur, they also constitute a secure, enclosed system. The handling of the filter material is also very simple. "Since we also use the stacked disc cartridge housings to filter other products, such as Schlehenfeuer, the filters need to be switched over each time we change the product," explains Dr. Finke. "With this filtration solution, one employee can do this all on their own."

The individual filter cells are manufactured from the Beco depth filter sheets. The outer edges of two of these filter sheets are overmolded around a drainage plate with polypropylene. This creates a precise seal and offers maximum bypass security. Depending on the design, a stacked disc cartridge unit will comprise a different number of filter cells. The unit is held together securely by stainless steel sleeves divided into three segments. Intermediate profile rings seal the area between the filter cells. The cold filtration process for Jägermeister Manifest uses two 16-inch stacked disc cartridge housings in series, with each housing containing 16 filter cells. The first housing consists of four Becodisc BS stacked disc cartridges, with four BA stacked disc cartridges in the second housing.

"We use these stacked disc cartridges to cold filter the Jägermeister Manifest – that is, we cool

the product down to between 30 and 32 °F (-1 and 0 °C) so that the haze-causing substances can be safely removed by the filters," reports Dr. Finke.

Result: No haze and a longer shelf life

"Eaton's solution will keep Jägermeister Manifest clear and undamaged," said Dr. Finke. "The choice of filters fits our needs exactly as they precisely cover the range of substances responsible for turbidity. The stacked disc cartridges not only give us the exact result we want, they also have a long service life and are easy to use." The enclosed system ensures that none of the precious liqueur is lost during filtration. Most importantly, the Beco depth filter sheets enable very gentle filtration, which ensures that the aroma and the dark copper tones of the super-premium liqueur are unaffected. Finally, Jägermeister Manifest is best enjoyed chilled or at room temperature – and thanks to Eaton's filtration solutions, this drink offers "clear" enjoyment in every sense of the word. □

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