

3M™ High Flow Series 0.5µm Cartridges strip barrel char from bourbon and whiskey.



The Problem

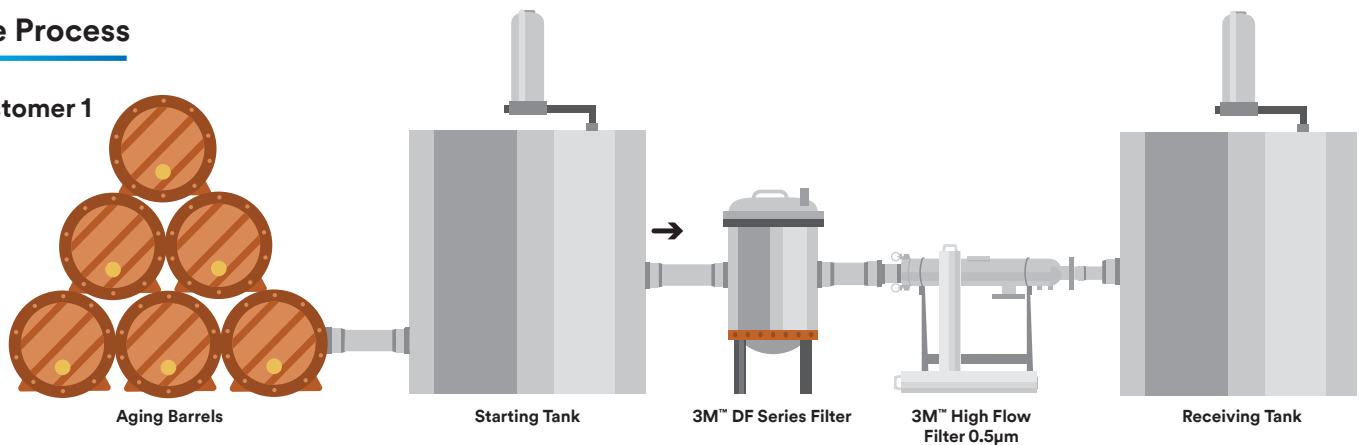
From the purest single malt whiskey to a perfectly cured brandy, many spirits are aged for decades, and some can be worth in excess of thousands of dollars per bottle. As the value of a spirit is often much more than any other beverage per ounce, reducing waste and loss can vastly improve economics within the distilling process.

Clear distilled spirits mature in charred barrels to impart color and distinct character, while the carbon char improves the harsher spirit elements. Barrel char and other contaminants that remain in the spirits can detract from the appearance, taste, and perceived value of the finished product. Filter presses, common in the industry, cannot always process an entire batch in a single run. Each filter press pad change increases time, increases fluid loss, and increases cost.

One distillery partnered with 3M to improve the process of removing barrel char. Existing filtration of the 250+ gallon bourbon batches required four shutdowns for filter press pad changes. A single batch operation cost of filtration (5 PAD change-outs) included (14) man hours and (150) filter pads with associated fluid loss per shut down.

The Process

Customer 1



The Solution

The bourbon producer evaluated the 3M™ High Flow Series Filter 0.5µm product line extension. The 3M Application Engineering team provided pre-production filters and trial filter vessels at no cost to the customer, monitored the filters in service, and reported findings to the customer. The 99.9% (Beta 1000) efficient 3M High Flow Series Filter 0.5µm incorporates a diamond shaped pleat structure, which offers a substantial increase in surface area. 3M High Flow polypropylene media retains minimal fluid as compared to filter press pads cellulosic/filter aid sheets. The 3M High Flow Series Filter 0.5µm is for distilleries and bottlers to reduce barrel char and other contaminants, while eliminating burdensome and ergonomically unfavorable filter presses. The labor saving and ergonomic benefits of a high flow, large format filter coupled with an increase in distilled product output and decrease in overall waste was a win for this customer.

The Result

A bourbon distillery filtered an entire 250-gallon batch in a single pass through the 10" 3M™ High Flow Series Filter 0.5µm, as compared to 5 filter pad changes using the competitive filter press. The High Flow Series Filter reduced process time by 92%, from 14 hours to 1 hour, as mid-batch shutdowns were eliminated. The High Flow Series Filter maintained the 20 gpm flow rate and differential pressure did not rise above 1 psid throughout the trial. Bourbon yield increased as there was minimal retained fluid within the polypropylene filter pleats as compared to the fluid retained in the 150 filter press pads.

The customer saw a cost of filtration improvement using the 3M High Flow Series System:

- A single 10" High Flow Series filter was less expensive than (150) competitive filter pads
- Labor savings improvement as batch process time dropped 92% from 14 hours to 1 hour
- Reduced fluid loss as High Flow media minimal fluid as compared to (150) filter pads

3M High Flow Series filters can be reused in certain food and beverage applications. Additional savings can be had by cleaning/sanitizing the High Flow Series filters between uses. Please see 3M Technical Briefs 70201602409, 70020220268, and 70020253400 for more information on storage, sanitization, and regeneration of 3M filters. 3M works directly with individual distilleries and bottlers to define ideal systems for barrel char removal, clarification, and final filtration. With cost-effective, efficient, and reliable solutions, there's a reason customers choose 3M filtration and separation systems.

Application Engineering

The cornerstone of 3M's philosophy is service to customers, not only in product quality and prompt delivery, but also in validation, application support, and the sharing of scientific information.

By using 3M products, customers have access to 3M Application Engineering support, a global team of market-focused scientists and engineers who excel in supporting collaborative efforts between customers and 3M.

Our Application Engineers can work with you from start to finish to suggest the most effective and economical filters to achieve the clearest results.

For more information, contact your 3M sales representative.

Intended Use: 3M High Flow Series Filter Cartridges are intended for use in the industrial filtration applications of aqueous fluids in accordance with the applicable product instructions and specifications. 3M High Flow Series Filter Cartridges products are also intended for use with non-aqueous fluids where materials of construction are compatible. Certain limited 3M High Flow Series Filter Cartridges products are also intended for use in Food and Beverage (F&B) applications. For details related to the specific use conditions or limitations for food contact applications please contact your 3M representative for more information. Since there are many factors that can affect a product's use, the customer and user remain responsible for determining whether the 3M product is suitable and appropriate for the user's specific application, including user conducting an appropriate risk assessment and evaluating the 3M product in user's application.

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