



## CELPURE<sup>®</sup> CASE STUDY: PRODUCT STABILITY IMPROVEMENT WITH DISTILLED SPIRITS

TECHNICAL BULLETIN AMC05

Introduction:

This case study highlights how Celpure<sup>®</sup> filter aids can increase product stability in spirits by reducing the amount of iron and other soluble metals contributed by the filter aid during filtration.

Type of Product:

Premium distilled spirits produced by a highly respected American distiller.

Problem:

Product stability is a major issue in the liquor industry. It has long been recognized that elevated levels of iron and other soluble metals contribute to post bottling haze formation. This distiller wanted to determine if product stability could be improved by reducing the iron contribution from the filter aid into the spirits.

Background:

The distiller sent several samples of spirits to Celite Corporation's Quality Control Laboratory in Lompoc, California. A comparison of the extractable iron from Celpure<sup>®</sup> 300 filter aid (300) and their current grade, Acid Washed Celite<sup>®</sup> 521 (521), was made using samples of product from the distiller. The testing demonstrated that 300 contributed 4% to 13% less iron than the 521 grade using the same amount of each. However, based upon past experience it was expected that the same volume of product could be filtered



using 30% less 300 versus 521. When the 300 was reduced by 30% the extractable iron also dropped by 30%.

#### Trial Goals:

- 1) Confirm that filter aid usage could be reduced by 30% using Celpure<sup>®</sup> 300 without any detrimental effects on process throughput, filtration capacity or product clarity.
- 2) Document better product stability as a result of using Celpure<sup>®</sup> 300.

#### Celpure<sup>®</sup> Trial:

This distiller has two separate, parallel filtration lines which are run at the same time. Each line has a horizontal plate filter that uses disposable paper septa on each plate. The filters are used to clarify carbon treated spirits which have a small amount of filter aid body feed added. For the trial, one 15-kg (33-lb) bag of 300 was used to precoat one of the filters in place of the 50-lb charge of Acid-Washed Celite<sup>®</sup> Hyflo<sup>®</sup> Super-Cel<sup>1</sup> (Hyflo) that was normally used. The other filter was precoated with the Hyflo as normal.

#### Trial Results:

The performance of each filter was recorded during the trial. The filter that was precoated with the 300 processed 11 batches or more than 122,000 gallons (462,000 liters) of spirits, over a 4-day trial period. During this period, the pumping times, which indicated relative flow rate, stayed below 2 hours for each batch. The differential pressure on the last batch was 18 psi which was below the 20 to 24 psi they normally expected at the end of the cycle. Both these parameters imply that additional batches could have been filtered. As desired, the turbidities stayed below 1 NTU, while the chill haze value and color of each batch stayed within their specifications. In all

<sup>1</sup>Several months before the trial, the distillery switched from Acid Washed Celite<sup>®</sup> 521 to Acid Washed Hyflo Super-Cel<sup>®</sup> to improve throughput.



aspects of performance, the filter with the 300 precoat, using 30% less filter aid, was comparable or better than the filter with the Hyflo precoat. Product samples from the trial batches were sent to their corporate headquarters for extensive stability testing. The results of their tests were positive confirming that the 300 grade resulted in better product stability.

#### Conclusions:

The trial demonstrated that 30% less Celpure<sup>®</sup> 300 could be used to precoat their filters without any detrimental effect on process throughput, filtration capacity or product clarity. The trial also demonstrated that the Celpure<sup>®</sup> 300 had a positive impact on product stability.

For more technical details or to evaluate Celpure in your spirits filtration process, contact the World Minerals filtration technology team.

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