

No Clouds in My Coffee, But There are in My Liquor

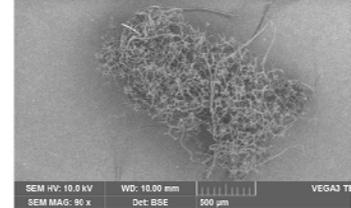
Background

A rapidly growing brand of “top shelf”, flavor extract-infused, alcohol product was intermittently observing a fine white sediment 2-3 months after bottling the product as shown in the picture to the right. The company was concerned about product safety, quality, aesthetics and brand impact despite rapidly-growing sales and only a few minor customer complaints (limited to aesthetics). The company contacted Eurofins to investigate and identify the root cause of the problem for corrective measures.



Scanning Electron Microscopy with Energy Dispersion X-Ray Analysis (SEM-EDXA)

(image to the right) was used to further identify the material and trace the contaminant back to the raw materials and/or processing steps.



In the course of investigation and analysis it was discovered that the company performing packaging used 4 different types of filters during the bottle filling and had used various filter types on various product batches but had not maintained records of the filter type used on each product batch.

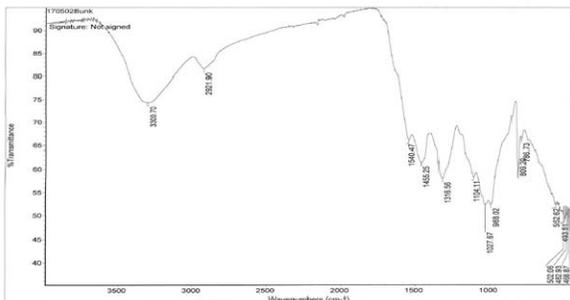


Problem

The impurity was only present in small quantities and only in some bottles. Bottle cleanliness, inspection and a remote audit of the manufacturing and bottling facility did not identify any obvious external sources of contamination so Eurofins scientists collaborated closely with the client to collect multiple bottles/production lots of affected product that exhibited the “white fluffies” from multiple production batches as well as samples of all raw materials used in the blending of the product.

Approach

Proprietary contaminant isolation techniques were used on the product samples as well as the raw materials to secure several milligrams of the fluffy matter. Fourier Transform Infrared (FTIR) spectral analysis using attenuated total reflectance was performed on multiple samples (spectrum shown below).



Solution

SEM images of the isolated contaminant and comparison with the filter materials of the four filters used during processing demonstrated similar characteristics with one of the four process filters. Furthermore, FTIR spectral analysis confirmed that the small filter particles were acting as nucleation sites that allowed pectins and other polysaccharides in the flavor extract-infused alcohol to form a fine precipitate after several months in a static environment. The client changed the filter type used during the bottling and processing steps to eliminate the offending “wound fiber” filter and also modified the formulation steps to eliminate the polysaccharide insolubility problem in the finished product. No further observations of “white fluffies” have occurred and product sales continue to grow rapidly.

Eurofins SF Analytical is renowned for successfully investigating the most challenging problems in food, beverages, and packaging; including product recall support, insurance and legal investigations. Please contact Mike Dziewatkoski, PhD at Michaeldziewatkoski@eurofinsus.com or call 262-754-5300 if you have a project inquiry or need to speak to a Eurofins Scientist about a problem you are experiencing.