Materials Analysis Solves Manufacturing Mysteries

*Thermal forming company uses materials analysis to identify unknown contaminants.*

Plymouth, MN (PRWEB) October 02, 2014 -- Innovatech Labs recently partnered with Materials Evaluation and Engineering, Inc. to resolve a manufacturing quandary for a thermal forming company.

A Midwestern thermal forming company recently noticed that small black spots were visible on the surface of a polymer sheet due to the existence of a foreign material. The polymer sheet was submitted for materials analysis. The appearance was consistent with localized material that did not deform during the processing of the sheet. The foreign material was exposed by cutting the sheet material away in that area. It was revealed to be mostly transparent.

Energy Dispersive x-ray Spectroscopy (EDS) analysis found the base polymer to be rich in magnesium, silicon, titanium, aluminum, carbon, and oxygen. This is typical for a polymer with an inorganic filler. The embedded particle consisted primarily of carbon and oxygen.

Fourier Transform Infrared spectroscopy (FTIR analysis) was used next to identify the organic components of the embedded material. The exposed particle was analyzed using the attenuated total reflectance (ATR) accessory to the microscope attachment of the FTIR. An FTIR spectrum of the base polymer sheet was collected in the same manner for comparison. The process found that the spectra of the particle and the base material looked to be the same; however, visually the embedded particles were transparent and the sheet polymer was white.

The findings of the two analytical techniques concluded the particles were the same polymer as the sheet; however the particulates did not contain the inorganic filler which gave the sheet polymer its white color. Using the findings, the manufacturer was then able to go back to the process line and identify where in the process the unfilled polymer was getting introduced into the feed stock and prevent further issues with embedded particles.

About Innovatech Labs:

As an analytical laboratory specializing in materials testing and characterization, Innovatech Labs’ experienced analysts are available to discuss your specific materials analysis needs. Innovatech Labs offers a wide range of materials analysis techniques with expedited turnaround times of five business days or less. Our services include manufacturing support, product failure analysis, quality control, particle identification, and cleanliness testing. We’re experts at identifying and quantifying microscopic issues so that you can solve your big problems and get back to business.
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