Analysis of Hazardous Elements in Plastic Using an EDX Spectrometer

Due to its ability to quickly, easily, and non-destructively analyze solids, powders, and liquids, X-ray fluorescence spectrometers have been widely used for screening the five elements (Cd, Pb, Hg, Cr, and Br) regulated under the RoHS and ELV directives. This example measures hazardous elements in the insulating jacket material of a LAN cable. Specifically, it shows results from analyzing Pb and Cd.

A calibration curve was created and quantitative analysis performed using standard samples prepared by adding the five RoHS elements (Cd, Pb, Hg, Cr, and Br) to PE and PVC plastic.

Features of the EDX Series

EDX series models are equipped standard with a primary filter that is optimal for hazardous elements, which allows measuring the five RoHS elements easily and with high sensitivity. In addition, a background internal standard correction function is included to correct for the thickness, shape, and size of samples. Background internal standard correction corrects quantitation values based on the ratio between continuous X-rays from the X-ray tube or characteristic X-rays from the target and scattered rays.

Automatic Calibration Curve Selection Function

When analyzing X-ray fluorescence, different sample types (PE versus PVC, for example) cause the X-ray fluorescence intensity to vary. The automatic calibration curve selection function allows using the software to determine the presence of Cl, automatically select the optimal calibration curve for PE or PVC, and then quantitate the content.
Analysis of Plastic Samples Using an EDX Spectrometer

When samples are irradiated with X-rays, they emit fluorescent X-rays that are characteristic of the elements contained in the sample. EDX spectrometers enable measuring samples rapidly for controlling the content of various additives or for analyzing sample impurities or defects. More recently, due to their convenience, they have become widely used for screening five elements regulated by the RoHS directive and four elements regulated by the ELV directive.

Features of EDX-720 Energy Dispersive X-Ray Fluorescence Spectrometers

- Allows directly and non-destructively measuring various forms of metals, plastics, powders, liquids, and other materials.
- Measurements require only specifying the target area by viewing the CCD camera image (optional).
- Rapidly measures the five RoHS elements and four ELV elements. A specialized primary filter is also included standard.
- Also can be used for general material analysis, defect analysis, or coating thickness analysis.

Features of EDX-GP/LE Energy Dispersive X-Ray Fluorescence Spectrometers

- Includes screening analysis software with simplified operations.
- Also can be used for halogen-free analysis by using a specialized filter to increase sensitivity.
- Features a large sample compartment.
- Equipped standard with sample observation function (CCD camera).

Sensitivity is higher than previous models!