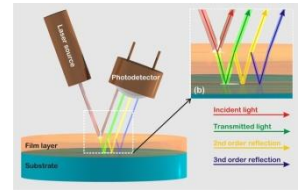


ThetaMetrisis APPLICATION NOTE #028

Thickness measurement of inner polymer coating of aluminum cans



Introduction:

Beverage/Food aluminum have a polymer coating on the inside and the outside of the can in order to provide protection of the contents from the metal, and provide protection of the metal from the environment (corrosion, heat resist, acidic condition resist, etc.). In this application note, the thickness of the polymer coating of an aluminum can was measured using a ThetaMetrisis FR-pOrtable VIS/NIR.

Means & Methods:

Reflectance measurements of the inner polymer coating on a beverage (beer) can performed using a FR-pOrtable, operating at the spectral range of 370-1000nm.

Results:

Typical experimental (black line) and fitted reflectance spectra (red line), as recorded on the FR-Monitor software, of the inner coatings of the can, are illustrated in **Figures 1** and **2**. Fitting was applied in the 650-850 nm spectral range, and the thickness of the coating in the inner side of the found to be 3.4um. Similar measurement was performed on the inner side of the press button tab, and the thickness of the coating was found to be 11.5um, figure 2.

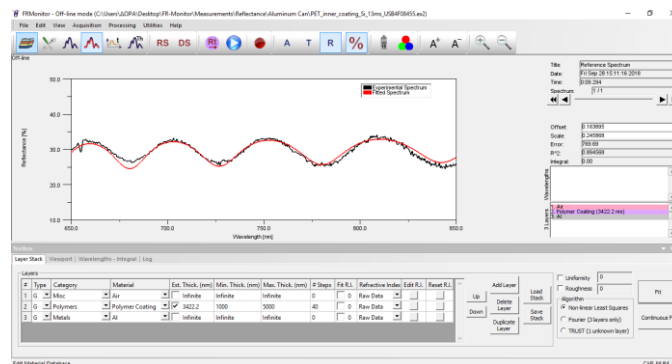


Figure 1. Specular Reflectance of the inner coating of an aluminum can as recorded by FR-Monitor. Thickness measured at **3.4 μm**.

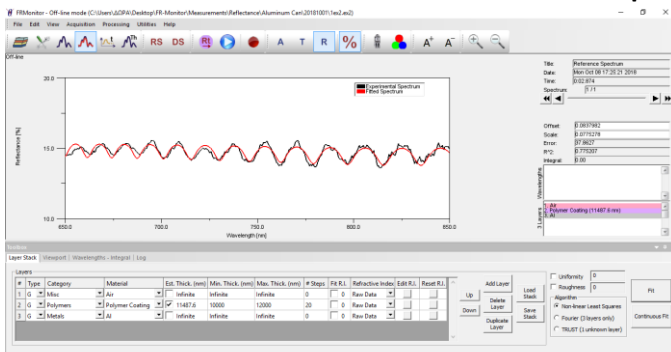


Figure 2. Specular Reflectance of the inner coating of the inside side of the press button tab of an aluminum can as recorded by FR-Monitor at left and measurement setup at right. Thickness measured at **11.4 μm**.

Conclusions:

The thickness of the inner protective polymer layer of a beverage aluminum can and its tab, was successfully measured using FR-Tools, showing a remarkable variation between the two different measurement areas.