

# SERVICES FOR THE FOOD INDUSTRY

SAFE SUSTAINABLE SOLUTIONS



## **Compositional Analysis and Material Characterization (FT-IR, DSC, TGA)**

We identify the chemical nature of plastic and composite materials, assessing their thermal stability and composition. This type of analysis is essential for managing disputes, detecting production defects, validating suppliers, or supporting the development of new food-contact materials.

## **Analysis of Equipment and Machinery in Contact with Food**

We assess the MOCA compliance of gaskets, surfaces, pipes, and other components in direct contact with food. Activities may include on-site sampling, document review, and testing of critical materials, ensuring hygiene and safety requirements are met.

## **Contaminant Analysis in Food Products**

We test for the presence of risk compounds such as Styrene, Bisphenol A, Phthalates, and MOSH/MOAH fractions. These contaminants may originate from packaging, equipment, or processes.

## **Shelf Life of Food Products and Packaging**

We design real-time or accelerated shelf-life studies, evaluating chemical and sensory stability. We test packaging performance over time: barrier properties, accelerated aging, ink and seal resistance — essential for those changing suppliers, developing new packaging, or dealing with complaints.

## **NIAS (Non-Intentionally Added Substances) Screening**

We perform advanced analyses to identify non-intentionally added substances that may migrate into food. This service is particularly useful for qualifying new suppliers or materials, supporting a risk-based and traceable supply chain approach.

## **Technical Training for Quality, R&D, and Purchasing Teams**

We offer customized training courses on key topics related to food-contact materials, contaminants, sustainability, and supplier management. The goal is to enhance the technical and regulatory awareness of involved company departments.

## **Evaluation and Benchmarking of New Materials**

We analyze alternative materials (recycled, bio-based, monomaterials) in terms of food compliance, technical properties, and performance. This service helps companies select innovative and sustainable solutions, offering an objective comparison with currently used materials.



# Case Study: Composition Difference Between Two Multilayer Products for Food Jar Sealing Using FT-IR, DSC, and TGA Techniques



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The objective of this study was to evaluate the compositional differences between two multilayer caps, in order to identify the causes of a performance defect reported by the client in one of the two batches. This defect caused improper sealing of the jar on which the cap was mounted, resulting in leakage of the food contained inside.

The laboratory performed an analysis of the polymer layer composition using microscopy combined with ATR-IR spectroscopy, after manually separating the individual layers. Below are example results obtained for the transparent outer coating on the paper side:

Score	Library	Name
905	ATR-Polymer2	D_PET

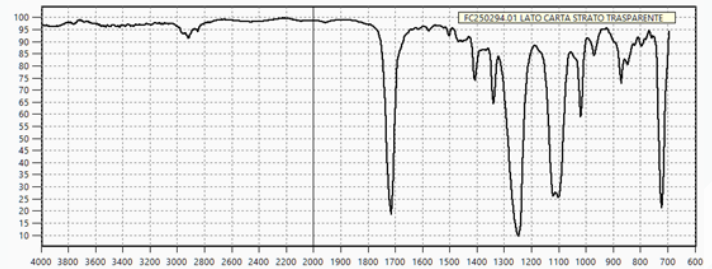
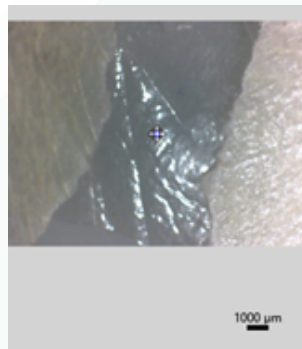
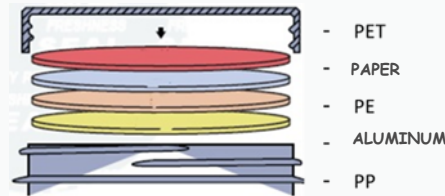


Figure 1 Image of the coating and ATR-IR spectrum of the sample from the first polymer layer of the paper coating.

Composition according to the analysis:



To confirm the results obtained, a differential scanning calorimetry (DSC) analysis was also performed, which highlighted melting peaks characteristic of PE, PP, and PET in both samples. Using the IR microscope, it was possible to measure the thickness of the edges of the two samples, aiming to identify compositional differences. The IR spectra of the defective sample revealed differences in the edge composition: by comparison with the library, the defective sample was found to be missing an adhesive resin. The compositional analysis of the two caps using FT-IR, DSC, and TGA techniques allowed us to highlight differences that could be responsible for the performance defects reported by the client.

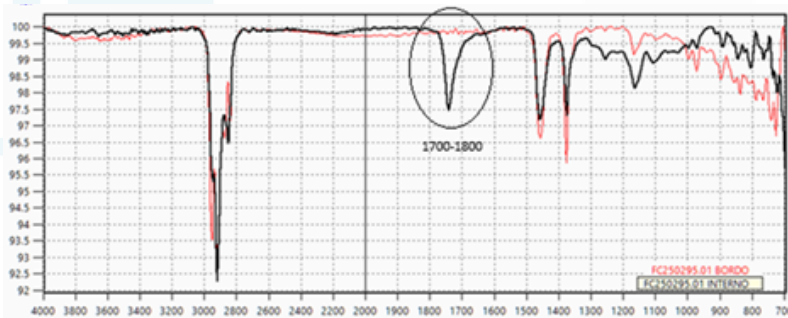


Figure 2 Overlaid ATR-IR spectra of the defective sample, performed on the outer edge and the inner part on the aluminum sealing side.

Laboratory Management