

OUR STRENGTHS

- ▷ Spectrophotometry
- ▷ Chromatography
- ▷ Thermal analysis

COMMUNICATIONS & SECURITY

CONTAMINATION

Contamination analysis





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Thanks to his Component Engineering Laboratory (CEL), Thales, jointly with the French Space National Research Center (CNES), has developed know-how skills and has over 15 years experience in the spatial field. Both teams share a common platform regrouping facilities over more than 700 m² and results from an active partnership.

The laboratory offers a full range of services regarding the component analysis, electrical tests and technological analysis.

Moreover, the laboratory has developed expert skills for the contamination analysis used to analyze all organic pollutants and contaminants and to provide a technical support to various projects in the spatial field.

Owing to contamination, dysfunctions often occur during the product manufacturing. Their root cause can be eliminated, especially in white rooms, with a good knowledge of the contamination composition and, more precisely, with a good knowledge of the contamination origin. These techniques are also of great importance for the risk prevention.

Due to the laboratory location within the CNES platform, degassing issues are of great concern.

Contamination type

Our laboratory can satisfy all requests for the analysis of organic or mineral pollutants and contaminants. They can be analyzed in solid, liquid or gaseous phases.

Analytic technic for the contaminant analysis

Deposited organic materials can be characterized by transmission, reflection, or contact (Attenuated Total Reflectance, ATR) Fourier Transform InfraRed spectrophotometry (FTIR) depending on the type of contaminant to be analyzed.

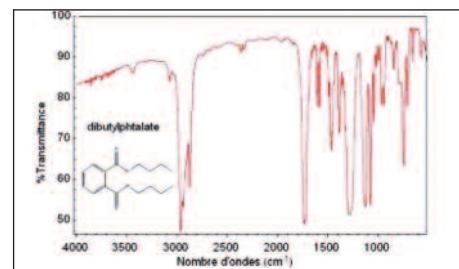
The chromatography process performed in gaseous phase, combined with the use of a mass detector, provides information about the nature of the molecules resulting from the pollutant degassing phase (thermal desorption).

Finally, the transmission can be observed at different contamination wavelengths using the UV-VIS-PIR spectrophotometer.

Analysis technic for mineral contaminants

In our laboratory, images of the contaminations can be observed using an electron microscope (low pressure) coupled to an Energy Dispersive X-ray (EDX) device. All types of materials can be observed, even on insulating substrate.

The chemical elements of the molecule can be identified by the EDX analysis.



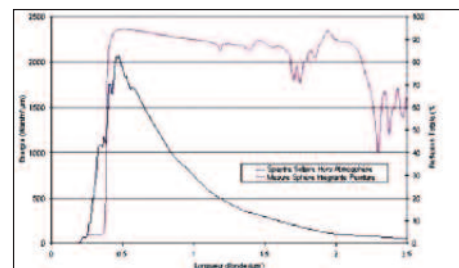
FTIR spectrum of dibutylphthalate

Analysis under spatial constraints and in vacuum environment

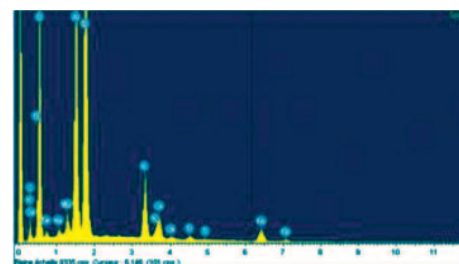
Knowing the properties of a polymer in a harsh environment is a good means of knowing its limits.

Material degassing analyses can be performed by kinetic or by mass loss process, as well as by thermogravimetric (TGA) or Differential Scanning Calorimetric (DSC) analysis.

Relative humidity values can be determined and the evolution between sorption and desorption can be followed-up thanks to the Dynamic Vapor Sorption (DVS) analysis.



UV-visible-PIR spectrum obtained



EDX spectrum of a contamination particle

Scanning Electron Microscope (SEM) image of a contamination particle.

