

APPLICATIONS FOR ORGANIC MATERIALS

1) POLYMERS

POLYMERS

Assess thermal stability, OIT, pyrolysis, composition, curing properties

- Measure transition temperatures (T_g , melting, crystallization), heat capacity
- At atmospheric or high pressure.

Polymers and plastics testing



SETARAM solutions answer questions about the composition and the thermal stability of polymers. They allow you to control key parameters like transition temperatures of thermoplastics and curing properties of thermosets. They also provide heat transfer properties of polymers used or processed in high temperature systems.

Determine the thermal or oxidative stability and reactivity of your polymer and plastic samples. Measure their transition temperatures and heat capacities, whether at atmospheric pressure or high pressure.

From the most common applications to the most sophisticated research

If you work in the plastics industry, you may need to control simply and efficiently the characteristics of the materials you use or produce. If your activities focus on innovative polymer research, you may need to characterize the materials of tomorrow. We have solutions to help you in all these areas.

Thermal stability	In every situation where a polymer material may be exposed to high temperatures, it is beneficial to test its thermal stability. You can use TGA or STA to find the temperature and steps of decomposition or transition, under different atmospheres.
Oxidation Induction Time (OIT)	Your polymers may face the most common cause of chemical aging: oxidation. The stability against oxidation can be studied using DSC. A longer OIT means a better oxidation stability. Effect of antioxidants can be compared.
Transitions (Melting, Crystallization, T_g)	You need to have control over the properties of polymers. It is this is for instance important both for their processing and use. But these properties change with the polymer structure. We provide DSC solution to characterize the temperatures of structure change

Composition analysis	Composition analysis is especially key for quality control of a polymer based material. It includes thermoplastics and thermoset, rubbers, or elastomer based materials. You can apply our TGA solutions to plasticizers/oil, polymer, carbon black filler, white filler contents.
Thermophysical properties	Heat capacity and thermal expansion of polymer based materials are important process parameters. For some applications, they are equally important technical specifications. You can measure them thanks to our DSC, and TMA solutions.
High pressure	You can't base your investigations on standard tests when your polymers are used or processed at high pressure. We have solutions for measuring the main polymers properties at high pressure. It includes heat capacity, melting, crystallization, and glass transition.
Polymers in solution	Are you working with dissolved polymers for systems like surfactants or drug delivery? We have solutions for measuring their characteristic temperatures. It includes LCST (lower critical solubility temperature) or CMT (critical micelle temperature).
Thermosets curing	The curing reaction of thermosets needs to be controlled. For instance, it dictates the hardening of some glues, or the properties of pre-impregnated composites. With our DSC or calorimetry solutions you can measure their curing degree, and curing rates.

More details on Brochure

<https://setaramsolutions.com/app/uploads/sites/2/2022/04/EN-POLYMERS.pdf>