

Polymer Testing

Expert material characterization services to help you understand the limits of plastic and rubber materials, improve product design and meet regulatory or client-specific requirements.



Key materials in industries spanning automotive, aerospace, biomedical, consumer goods and energy, amongst others, polymers are ubiquitous in almost every area of human activity. However, there is a vast array of these materials available, and polymers exhibit a wide range of material behaviours that is non-linear by nature.

Understanding the specific characteristics of each polymer is key to forecasting how the material's properties will vary with temperature, time, orientation and environmental conditioning such as humidity and chemical exposure. Having polymeric materials tested and their characterizations confirmed can be **a requisite both for end clients and national and international safety regulations**, and it's a vital step in product design in order to **optimize the correct functionality and lifespan of the product or component**.

Expert Polymer Testing, Tailored to your Needs

We tailor our polymer testing service to each client's needs depending on specific requirements and the material's intended application.

In testing the polymer to determine and characterize its properties, we tackle issues of non-linear and post-yield behaviour, dynamic situations such as drop, crash and impact, hyperelasticity, as with rubber and foams, and time-based behaviour like fatigue, creep, stress relaxation and viscoelasticity. Through our testing, **we can determine the polymer'**

s morphology, thermal properties, mechanical properties and accurately detect any additives.

Our comprehensive service covers:

- Design of the characterization plan or [failure analysis](#) plan
- Manufacturing the test pieces using injection and compression techniques
- [Validation of the plastics through simulation](#)
- Test performance
- Evaluation and interpretation of the test results

Physical and Chemical Characterization

From thermoplastics to thermosets, silicones, adhesives and resins, we test a vast array of polymeric materials and products under **ISO, ASTM, DIN, EN and UNE** standards, as well as client specifications like the **WW** and **PSA** standards.

Our teams of polymer testing experts work from our **global network of state-of-the-art materials laboratories** using **highly specialized equipment**. The type of physical and chemical characterization tests we perform include, but aren't limited to:

- Tensile, flexion and compression tests
- Impact tests (Charpy, falling dart, etc.)
- Accelerated aging conditions simulation (Xenotest, Ozone, UV, etc.)
- Chemical composition identification
- Compatibility with chemical products
- Rheological properties (Viscosity vs shear rate, melt index MFI, etc.)
- Thermal properties (Vicat temperature, DSC, thermal conductivity, etc.)
- Macro-hardness and micro-hardness measurement capability and hardness tests (Brinell, Rockwell, Knoop, Vickers)

Digital solutions for polymer characterization and data management

Our US-based lab, Applus+ DatapointLabs, offers a compressive one-stop testing service through TestCart - our extensive [online catalogue of material tests](#), each with a standard 5-day turnaround. Tests can be ordered individually or through 179 unique TestPaks: testing suites designed to create CAE-ready material models.



On top of this, we offer software solutions for material data management, like [Matereality](#), which help companies to build easily accessible, enduring data collections that accurately and intuitively represent the properties of their materials.