



Investigation Possibilities

With its wide spectrum of analytical methods, the Institute of Polymer Technology offers a holistic approach to plastic product observation. Only the knowledge of the interaction between material, construction and processing enables the creation of a successful product.

That is why we offer a wide range of analysis options to designers, processors, testers and users in order to gain their necessary knowledge. Experienced staff will be pleased to assist you with your versatile questions regarding plastics technology.

Analytical Examination

With the available analytical testing equipment, the physical and chemical behaviour of the materials can be described comprehensively.

Mikroskopische Examination

Microscopic examination methods are used in pure research work, in quality assurance as well as in damage analysis.

It can explain connections between the structure of a polymer material and its mechanical properties and show the influence of processing parameters on the material or damage that led to failure.

The detection and identification of different polymers and other impurities is of particular interest in investigations on recycled materials.

What we can offer to you

Within the scope of short-term industrial orders, from specialist seminars to long-term cooperation, we support and advise you holistically with regard to materials, construction and processing.

This helps you with...

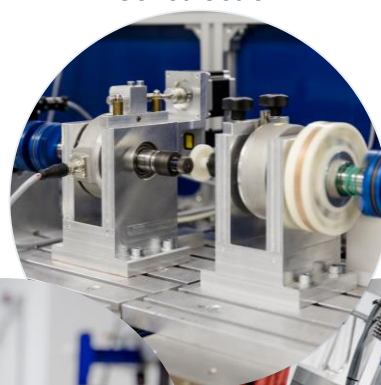
- ... Quality assurance measures
- ... your research and development
- ... Process optimization
- ... and much more!

Contact us and we will find a suitable solution for you!

Mechanical Examination

Mechanical testing provides the basis for comprehensive sample characterization and reliable component design. In addition to a wide selection of conventional mechanical testing devices, the Institute of Polymer Technology also has its own test setups, which enable characterization based on individual requirements. Static testing is equipped with computer-aided universal testing machines, test systems for characterizing impact and shock behavior, and systems for determining long-term properties under various ambient conditions. Dynamic testing comprises several servo-hydraulic testing machines and a clamping plate for testing larger components. With the help of spatially resolved deformation measuring systems, load analyses on more complex components and structures are also possible and can show local effects accordingly. The test machines can also be adapted to special load tasks due to their largely free programmability of load profiles and evaluation methods. In the field of fatigue testing, for example, the hysteresis measurement method can be used to make quick and differentiated statements about the fatigue and damage behaviour of materials and components.

Construction



Material

Process

Analytical Examination

Thermal analysis

Differential Scanning Calorimetry (DSC), TMDSC, OIT, Flash-DSC combined with laser unit
3D-Calvet calorimeter
Thermisch-mechanical-/ thermo-Gravimetric-/ dynamic-mechanical- analysis (tension, bending, torsion, shear)
pVT-analysis
Thermal/ temperature conductivity

Rheology

Melt flow index (Melt flow rate/ Melt volume rate)
Rotational viscometer combined with IR spectroscopy
High pressure capillary rheometer
Counter-pressure viscometer
Ubbelohde solution viscosity

Chemical-physical analysis

Fourier transform infrared spectrometer with microscope
UV/VIS spectroscopy
Abbe refractometer
Optical particle size measuring system
Surface tension
Karl Fischer Titration
Incineration
Density measurement
Gloss and color measurement
Electrical testing
Low/High impedance measurement
Dielectric measurement

Microscopic Examination

Sample preparation
Slide and rotary microtome
Sawing and grinding technology
Transmission and reflection light microscopy
Bright-, darkfield, phase contrast, polarization
Differential interference contrast, fluorescence
Stereomicroscopy
Scanning electron microscopy (REM- EDX)
Computed tomography (μ CT)
Confocal laser scanning microscopy

Mechanical Examination

Quasistatic testing
Universal testing machines
Tensile, compression and bending tests
Torsion machines
Heat deflection temperature
Optical deformation measuring devices
Static long-term behavior
Creep tensile testers
Abrupt stress
Pendulum impact testers
Cyclic load/fatigue behavior/component testing
Servo-hydraulic longitudinal cylinders
Hardness measurement: Vickers, Knoop, Shore, Barcol
Determination of the environmental stress crack formation
Pin pressing method/ bending strip method
Non-destructive testing of plastics and components
Ultrasonic immersion testing station
CNC coordinates measuring machine



Fig. 1: Flash-DSC combined with laser unit



Fig. 2: Rheology



Fig. 3: Microscopic Examination



Fig. 4: Mechanical Examination