

Materials and Failure Analysis Polymers

Sulzer Innotec

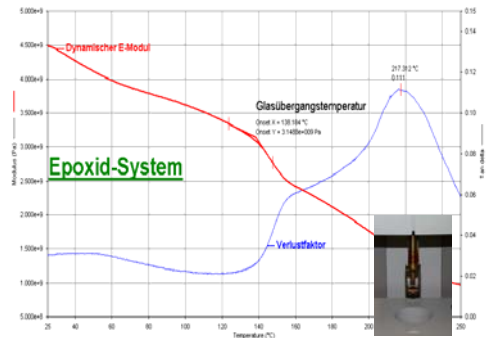
The depth of our experience in polymers (materials, processing and design), combined with our comprehensive testing facilities, enables us to provide solutions for a wide variety of problems. The services we offer range from failure analysis and quality assurance, to product consultancy and the development of tailored polymer blends.

Methods of analysis

- Thermal analysis
 - Differential Scanning Calorimetry (DSC): Glass transition temperature, Melting point, specific heat capacity
 - Thermogravimetry (TGA): Characterisation of elastomers, moisture and filler content
 - Dynamic-Mechanical-Analysis (DMA): Temperature dependent visco-elastic properties
 - Dilatometry: Coefficient of thermal expansion
- Mechanical testing
 - tensile, comprehensive and flexural tests
- Hardness according to Shore A/D
- Chemical resistance
- Microscopic characterisation
 - Optical microscopy: microtome sectioning, grinding and polishing:
 - Scanning electron microscopy



DSC-Analyse: Mettler DSC 822



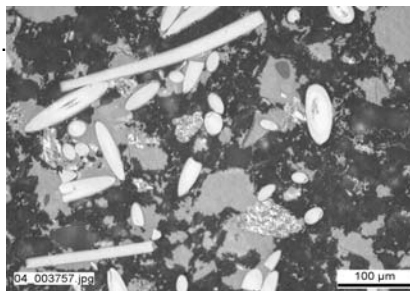
E-Modulus vs. Temperature in an epoxy compound using DMA

Anwendungsgebiete

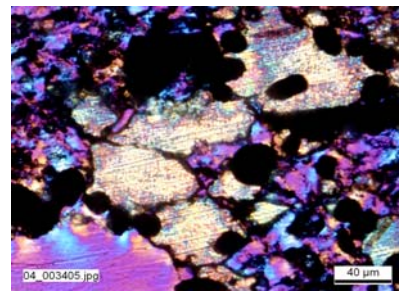
- Identification of polymers
- Composition of polymer blends, compounds and recycled materials
- Macrostructure and microstructure of polymers
- Aging of polymers in controlled temperature and/or chemical environments
- Failure analysis
- Expert reports
- Quality assurance

Special services

- Consultancy on material selection, processing and design
- Support in product development
- Development of polymer blends with specific properties to prototype stage



Microstructure of a multi component polymer blend. Sample section in reflected light microscopy



Microstructure of a multi component polymer blend. Thin section in polarised transmitted light microscopy

Delivery

The delivery time for initial results of polymer characterisation is normally 2-3 working days after receipt of samples

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