universidade de aveiro

CAPABILITY

Rheological Properties of Polymers

ANALYSIS OF THE RHEOLOGICAL BEHAVIOR OF POLYMERS

KEY WORDS

RHEOLOGY,

VISCOSITY,

FLOW

DESCRIPTION

The UA offers facilities and expertise for rheological characterization of materials. Rheological analysis provides essential information on the flow and deformation behavior of materials, enabling the optimization of formulations and processing conditions for polymers and composite systems and behavior during recycling. UA is equipped with rotational and oscillatory rheometers capable of performing steady-shear, dynamic, and viscoelastic measurements under controlled temperature and environmental conditions. These analyses allow the determination of key parameters such as viscosity, storage and loss moduli (G′ and G″), yield stress, non-Newtonian flow, thixotropy, and viscoelastic transitions across wide temperature and shear ranges. This analysis provides deep insight into the structure–property relationships.

Additionally, Melt Flow Index (MFI) equipment for assessing the melt viscosity and processability of both virgin and recycled thermoplastic materials, following international standards (e.g., ISO 1133). This combination of rheometric and MFI analyses provides a comprehensive understanding of both molecular mobility and processing characteristics. "

APPLICATIONS

- Processability assessment of virgin and recycled polymers
- Quality control in extrusion and injection molding processes
- Design of materials and composites with specific rheological properties
- Correlation between rheological properties and recyclability

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