



Differential Scanning Calorimeter

Thermal analysis of PE



Chip-DSC 1

Introduction

Thermal analysis is a very useful tool for the analysis of various compounds. Differential Scanning Calorimetry (DSC) gives information about phase changes and chemical reactions.

The Chip-DSC is a powerful tool to identify and evaluate polymers like PE.

Information

Using a DSC for analysing materials is a common technique. In this application, the Chip-DSC was used for measurements of PE granules.

Polyethylene (PE) is the most commonly used polymer because it is easy to manufacture and offers many options. Due to its low weight, its good electrical insulation properties and its excellent chemical resistance, there are thousands of applications, especially in packaging, foils, bottles, etc. PE can be characterized by its crystallinity. PE could also be defined by its density (PE-LD, PE-LLD or PE-HD). The DSC measurement correlates with its mechanical properties. The higher the density and crystallinity, the higher the peak maximum and the enthalpy. The Onset of T_M is at $\sim 100^\circ\text{C}$ for PELD and $\sim 130^\circ\text{C}$ for PEHD.

Table 1. Experimental Conditions

Instrument	Chip-DSC 1
Heating rate	50 K/minute
Sample Mass	approx. 3 mg
Sample Pan	open aluminum pans
Gas	Static air

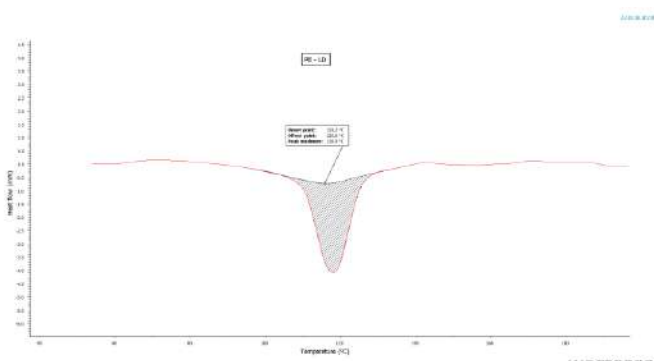


Fig 1: PE granule, 3rd run