



Differential Scanning Calorimeter

Thermal analysis of ABS



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 ABS.

Information

Using a DSC for analysing materials is a common technique. In this application, the Chip-DSC was used for measurements of ABS granules to identify different batch qualities.

ABS, the short form of acrylonitrile-butadiene-styrene, is a very common copolymer. In practice, it is used due to its advanced hardness, gloss, toughness and electrical insulation properties. It is well known for its use for LEGO™, 3D printing and many other applications because it is easy to machine.

In thermal analysis, it is often characterized by its glass transition at $\sim 100^\circ\text{C}$. The glass transition temperature is influenced by the amount of monomers used. The proof of T_g is therefore a good way to evaluate the quality of the raw materials.

Table 1. Experimental Conditions

Instrument	Chip-DSC 1
Heating rate	25 K/minute
Sample Mass	approx. 15 mg
Sample Pan	open aluminum pans
Gas	Static air

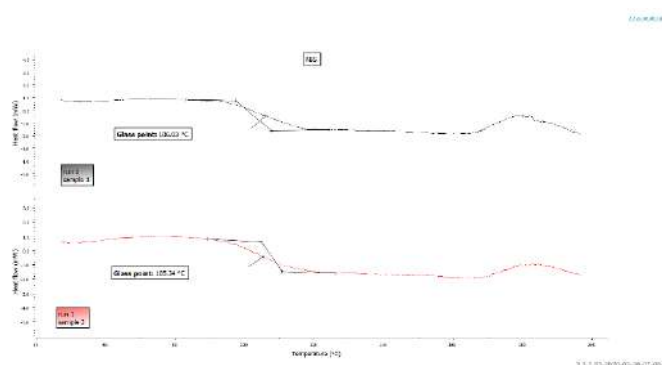


Fig 1: ABS; two samples; first heating