

APPLICATION SHEET

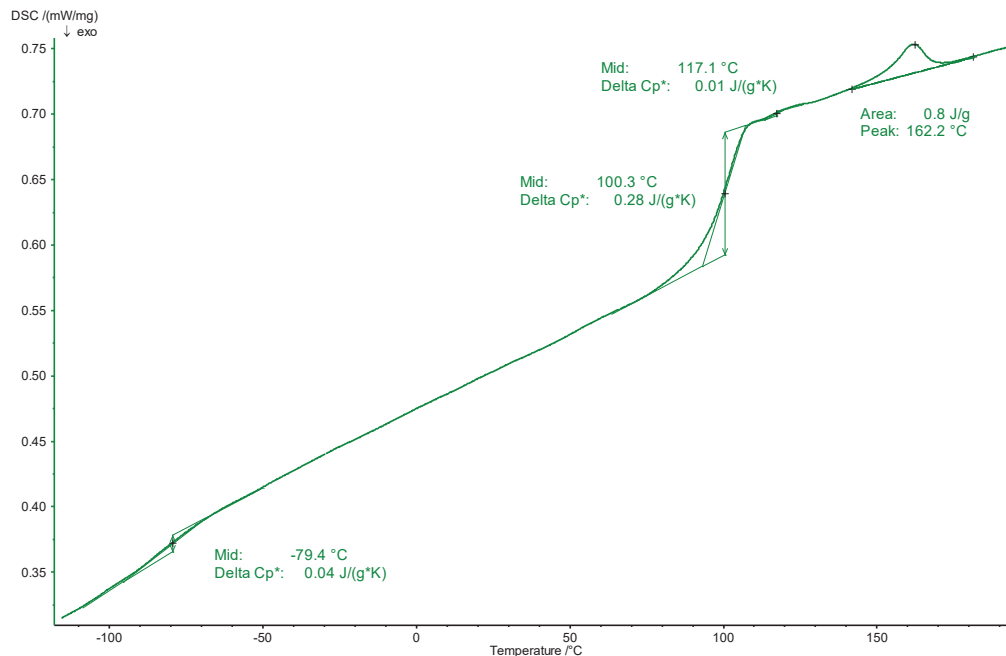
Polymers · Automotive
DSC 214 Polyma

Acrylonitrile Butadiene Styrene Copolymer

Introduction

Acrylonitrile butadiene styrene or ABS is a thermoplastic made by polymerizing styrene and acrylonitrile in the presence of polybutadiene. The result is a long chain

of polybutadiene criss-crossed with shorter chains of poly(styrene-co-acrylonitrile). ABS is used to make light, rigid, molded products such as piping, musical instruments, automotive body parts, wheel covers, toys (like LEGO bricks), etc.



Test Conditions

Temperature range: -150 ... 200°C (twice, second heating evaluated)
Heating/cooling rates: 20 K/min
Atmosphere: Nitrogen at 20 ml/min
Sample mass: 10.35 mg
Crucible: Al, pierced lid

Test Results

The three endothermic changes (steps) in the specific heat-flow rate curve correspond to the glass transitions of polybutadiene (at -79°C), polystyrene (at 100°C) and polyacrylonitrile (at 117°C). Additionally, a melting peak was determined at 162°C (peak temperature), indicating melting of a crystalline additive. According to the position of the melting peak, it probably results from polypropylene. Because of the crystallinity of this material, its presence in the ABS can lead to embrittlement-induced cracking.