

APPLICATION SHEET

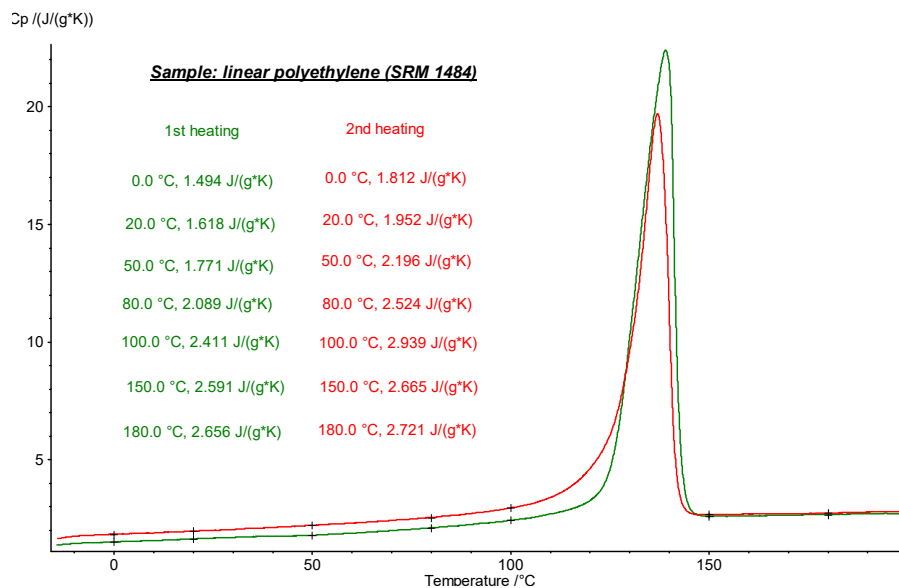
Polymers
DSC 3500 *Sirius*

Specific Heat of Polyethylene

Introduction

Polyethylene is a thermoplastic commodity heavily used in consumer products (over 60 M tons are produced worldwide every year). Polyethylene is created through polymerization of ethene. It can be produced through radical

polymerization, anionic polymerization, ion coordination polymerization or cationic polymerization. This is because ethene does not have any substituent groups which influence the stability of the propagation head of the polymer. Each of these methods results in a different type of polyethylene.



Test Conditions

Temperature range: -20 ... 200°C
Heating rate: 10 K/min
Atmosphere: Nitrogen (20 ml/min)
Sample mass: 6.59 mg
Crucible: Al, pierced lid

Test Results

The specific heat of the standard material 1484 (linear polyethylene) was measured during two heatings. The difference between the results in the 1st and 2nd heatings (in the solid region) is due to the change in crystallinity of the sample: the more crystalline the sample is, the lower is the heat capacity. Above the melting peak, the specific heat of both heatings is similar because there is no more influence of the crystallinity.