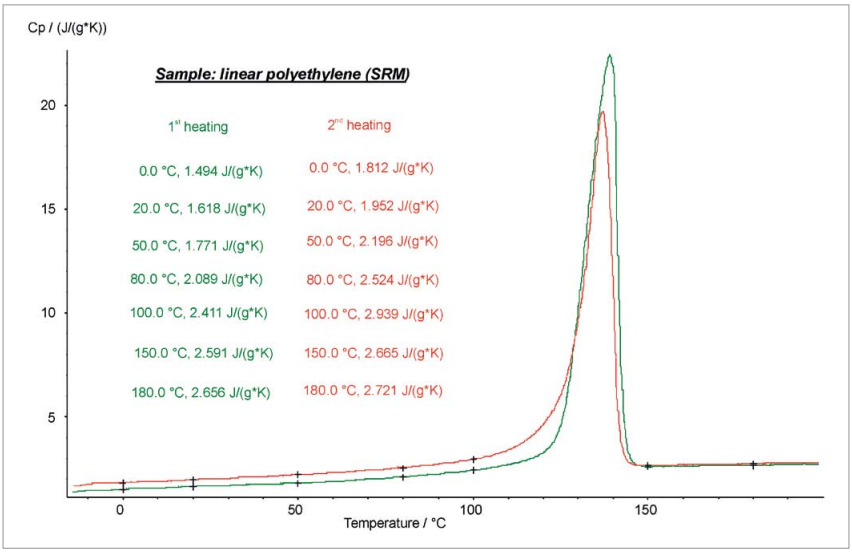
APPLICATION**SHEET**

POLYMERS – POLYMER MANUFACTURING

SPECIFIC HEAT OF POLYETHYLENE

Polyethylene is a thermoplastic commodity heavily used in consumer products (over 60M 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.



Instrument

DSC 204 ***F1*** *Phoenix®*

Test Conditions

Temperature range	-20 ... 200°C
Heating/cooling rates	10 K/min
Atmosphere	Nitrogen at 20 ml/min
Sample mass	6.59 mg
Crucible	Al, pierced lid

Results

The specific heat of the standard reference material 1484 (linear polyethylene) was measured during two heatings. The difference between the results in the first and second heatings (in the solid region) is due to the change of 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.

NGB · AS · 029-2006 · EN · 06/13 · Technical specifications are subject to change.

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