

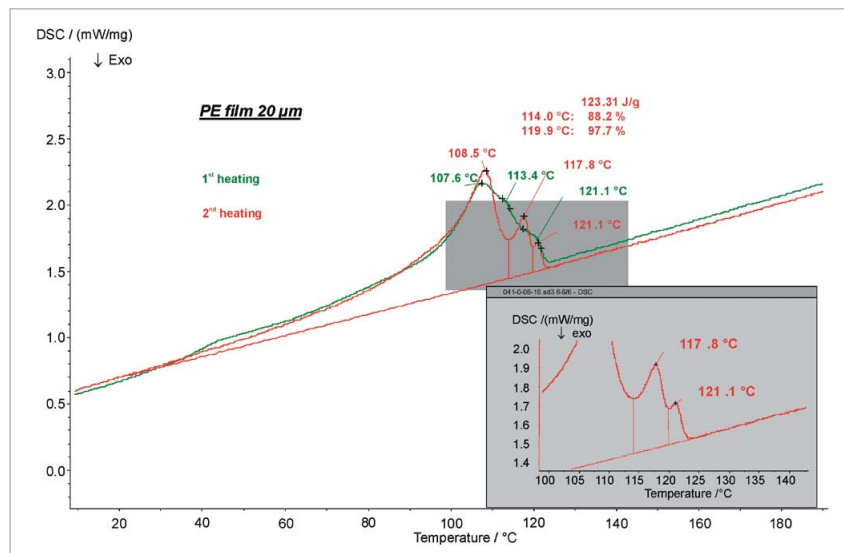
APPLICATION SHEET

POLYMERS – POLYMER MANUFACTURING

POLYETHYLENE FILM (LD/LLD-PE)

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. It is often used for packaging of food and pharmaceuticals or other materials.



Instrument

DSC 204 **F1** Phoenix®

Test Conditions

Temperature range	0 ... 200 ... 0 ... 200 °C
Heating/cooling rates	10 K/min
Atmosphere	Nitrogen at 20 ml/min
Sample mass	1.00 mg
Crucible	Al

Results

In the first heating, the endothermic peak at 107.6 °C (peak temperature) with two shoulders at 113.4 °C and 121.1 °C (Onsets) already indicates the three-step melting of the sample. During the second heating after a controlled cooling at 10 K/min (red curve), three clear peaks were detected at 108.5 °C, 117.8 °C and 121.1 °C. The individual phases of the LD/LLD-PE film could be separated with the DSC 204 **F1** Phoenix®.