

APPLICATION SHEET

POLYMERS – POLYMER MANUFACTURING

POLYETHYLENE LDPE LLDPE HDPE

Polyethylene (PE) is a thermoplastic material which is heavily used for consumer products as foils (wrapping, packaging), containers (bottles, tanks), pipes, tubes or other engineered

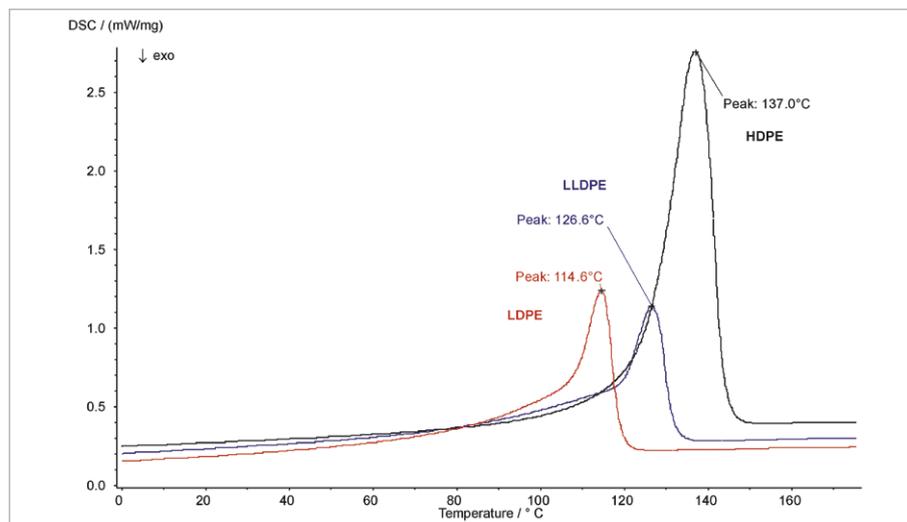
products. PE is odorless, flavorless, physiologically indifferent and can therefore be used in the food industry.

PE is classified in the categories:

UHMWPE	(ultrahigh molecular weight PE)
HDPE	(high density PE)
LDPE	(low density PE)
LLDPE	(linear low density PE)

The mechanical and thermal properties of PE significantly depend on the crystal structure, molecular weight

and branching. The temperatures of the melting region and glass transition point vary strongly with the PE type.



Instrument

DSC 204 **F1** Phoenix®

Test Conditions

Temperature range	-150°C ... -180°C
Heating rate	10 K/min
Atmosphere	Nitrogen at 20 ml/min
Sample mass	8 mg
Crucible	Aluminum
Sensor	type E

Results

As polymer materials show a melting range for the characterization, the melting peak is employed. The plot above shows the different melting points of the different PE varieties. The lowest melting peak shows LDPE (here 115°C), followed by LLDPE (here 127°C) and HDPE (here 137°C).