High density polyethylene for Injection moulding

Description. is especially developed for the high demanding dustbin market. It is an excellent UV stabilized HDPE copolymer grade. It shows an ideal combination of processability, consistency and product properties. It provides optimized high stiffness/cold impact-balance, surface quality and weatherability properties.

Typical applications. is especially recommended for the manufacture of injection molded dustbins (waste containers on wheels and household containers). The grade is also very suited for high demanding production of crates & boxes (pallet boxes, pallets, boxes applied at very low temperatures) and pails & container applications (industrial, shipping).

Processing conditions. Typical moulding conditions for are:
Melt temperature: 232 - 260 °C (450 - 500 °F)
Mould temperature: 20 - 40 °C (70 - 104 °F)
Injection pressure: 93 - 103 MPa (13500 - 15000 PSI)

The product mentioned herein is in particular not tested and therefore not validated for use in pharmaceutical/ medical applications.

Typical data.

Properties		Units SI	Values	Test methods
Polymer properties				
Melt flow rate (MFR)				ISO 1133
at 190 °C and 2.16 kg		g/10 min	**4.0**	
at 190 °C and 5 kg		g/10 min	**10.5**	
Melt volume rate (MVR)				ISO 1133
at 190 °C and 2.16 kg		ml/10 min	**5.3**	
at 190 °C and 5 kg		ml/10 min	**14**	
Density	1)	kg/m³	**953**	ISO 1183
Mechanical properties	1) 2)			
Tensile test	3) 4)			ISO 527-2
stress at yield		MPa	**26**	
stress at break		MPa	**31**	
strain at break		%	**> 200**	
tensile modulus		MPa	**1100**	
Creep modulus	5) 6)			ISO 899
after 1 hour		MPa	**500**	
after 1000 hours		MPa	**225**	
Izod impact notched				ISO 180/A
at 23 °C		kJ/m²	**5**	
at -30 °C		kJ/m²	**5**	
Hardness Shore D		-	**61**	ISO 868
ESCR	7)	h	**65**	method
Thermal properties				
Heat deflection temperature	1) 2)			ISO 75-2
at 0.45 MPa (HDT/B)		°C	**81**	
Vicat softening temperature	1) 2)			ISO 306
at 10 N (VST/A)		°C	**124**	

1) Compression moulding of test specimen according to ISO 1872-2
2) Conditioning of test specimen: temp. 23 °C, relative humidity 50 %, 24 hours
3) Speed of testing: 50 mm/min
4) Test specimen according to ISO 527-2 type 1BA, thickness 2 mm
5) Test specimen according to ISO 3167, thickness 4 mm
6) Determined at 23 °C, 3 MPa
7) Determined in Rhodacal-DS10 at 60 °C, 2 MPa, thickness 3 mm

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DSC test			DIN 53765
melting point	°C	**132**	
enthalpy change	J/g	**203**	

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General information. The product range for injection moulding is produced in a slurry- or gasphase process using a Ziegler/Natta catalyst. As a result, the primary characteristic of the grades is a narrow molecular weight distribution enabling the production of articles with high flow-path to wall-thickness ratios without the risk of warpage.
Additional characteristics are a high purity of the polymer, high stability during processing and a good natural colour. These properties are directly linked with the unique production process of these materials.

Quality. Europe is fully certified in accordance with the internationally accepted quality standard ISO 9001-2000. It is Europe's policy to supply materials that meet customers specifications and needs and to keep up its reputation as a pre-eminent, reliable supplier of e.g. polyethylenes.

Storage and handling. Polyethylenes resins (in pelletised or powder form) should be stored in such a way that it prevents exposure to direct sunlight and/or heat, as this may lead to quality deterioration. The storage location should also be dry, dust free and the ambient temperature should not exceed 50 °C. Not complying with these precautionary measures can lead to a degradation of the product which can result in colour changes, bad smell and inadequate product performance. It is also advisable to process polyethylene resins (in pelletised or powder form) within 6 months after delivery, this because also excessive aging of polyethylene can lead to a deterioration in quality.

Environment and recycling. The environmental aspects of any packaging material do not only imply waste issues but have to be considered in relation with the use of natural resources, the preservations of foodstuffs, etc. Europe considers polyethylene to be an environmentally efficient packaging material. Its low specific energy consumption and insignificant emissions to air and water designate polyethylene as the ecological alternative in comparison with the traditional packaging materials. Recycling of packaging materials is supported by Europe whenever ecological and social benefits are achieved and where a social infrastructure for selective collecting and sorting of packaging is fostered. Whenever 'thermal' recycling of packaging (i.e. incineration with energy recovery) is carried out, polyethylene -with its fairly simple molecular structure and low amount of additives- is considered to be a trouble-free fuel.