

## Product Data Sheet

HEX 4460 PE80+  
 High Density Polyethylene

### Product Description

HEX 4460 PE80+ is a high molecular weight, high-density polyethylene (HDPE) with high melt viscosity for extrusion. This grade, which is produced by 1-hexene co-monomer, is classified as PE 80+ and provides excellent stress crack resistance properties (ESCR) combined with very good long-term hydrostatic strength and good process-ability.

### General Information

Status	Commercial: Active	
Application	Drinking Water Pipe, Drainage Pipe, Plumbing	
Form(s)	Pellet	
Attribute	Outstanding ESCR Good Creep Strength Good Chemical Resistance	Good Resistance to SCG & RCP Good Process-ability Very Good Low Temp. Impact Resistance
Additives	Antioxidant: Yes Processing Aid: No	Antiblock: No Slip Agent: No

Typical Properties	Typical Value <sup>1</sup>	Unit	Test Method
<b>Physical</b>			
High Load Melt Flow Index (190°C/ 21.6 kg)	6.0	g/10 min	ISO 1133
Melt Flow Index (190°C/ 5.0 kg)	0.33	g/10 min	ISO 1133
Density <sup>2</sup>	0.944	g/cm <sup>3</sup>	ISO 1183
<b>Mechanical <sup>3</sup></b>			
Tensile Strength at Yield	25	MPa	ISO 527-1, -2
Elongation at Yield	11	%	ISO 527-1, -2
Elongation at Break	> 1000	%	ISO 527-1, -2
Tensile Strength at Break	40	MPa	ISO 527-1, -2
Tensile Modulus of Elasticity	700	MPa	ISO 527-1, -2
Flexural Modulus - 1% Secant	> 1000	MPa	ASTM D790
ESCR F <sub>10</sub> (10% Igepal, Method B)	> 1000	hrs	ASTM D1693
FNCT (3.5 MPa, 2% Arkopal N100, 80°C)	> 120	hrs	ISO 16770

### Conformance Testing <sup>4</sup>

Minimum Required Strength (MRS)	> 8.0	MPa	ISO 9080
Hydrostatic Pressure Test (9.0 MPa @ 20°C)	> 100	hrs	ISO 1167
Hydrostatic Pressure Test (4.6 MPa @ 80°C)	> 165	hrs	ISO 1167
Hydrostatic Pressure Test (4.0 MPa @ 80°C)	> 1000	hrs	ISO 1167
Resistance to Slow Crack Growth (4.0 MPa @ 80°C)	> 500	hrs	ISO 13479
Resistance to Rapid Crack Propagation (6 bar @ 0°C)	> 10.0	mm	ISO 13477

### Impact

Tensile Impact Strength (Notched, Type 1, Method A, -30°C)	167	kJ/m <sup>2</sup>	ISO 8256
Izod Impact Strength (Notched, Method A, 23°C)	26	kJ/m <sup>2</sup>	ISO 180

### Thermal

Melting Temperature	129	°C	ISO 3146
Oxidation Induction Time (200°C)	> 30	min	ISO 11357
Vicat Softening Temperature (Method A/ 10N)	126	°C	ISO 306
Deflection Temperature Under Load (0.45 MPa)	68	°C	ISO 75
Deflection Temperature Under Load (1.8 MPa)	50	°C	ISO 75

### Recommended Process Conditions <sup>5</sup>

Processing Method	Pipe Extrusion
Extruder Barrel Temperature: 200-230 °C	Melt Temperature: 205-240 °C

1. Typical values: these are not to be construed as specifications.
2. The density parameter was determined on compression-molded specimens, which were prepared in accordance with procedure C of ASTM D4703, Annex A1.
3. Properties are based on compression-molded specimens, which were prepared in accordance with procedure B of ASTM D4703, Annex A1, using 100% HEX 4460 PE80+ resin.
4. Values were obtained on 110mm, SDR11 pipe made with 100% HEX 4460 PE80+.
5. Please note that, these processing conditions are recommended by manufacturer only for 100% HEX 4460 PE80+ resin (not in the case of blending with any other compatible material), therefore because of the many particular factors which are outside our current knowledge and control and may affect the use of product, no warranty is given for the foregoing data. Moreover, the specific recommendations for resin type and processing conditions can only be made when the end use, required properties and fabrication equipment are known.