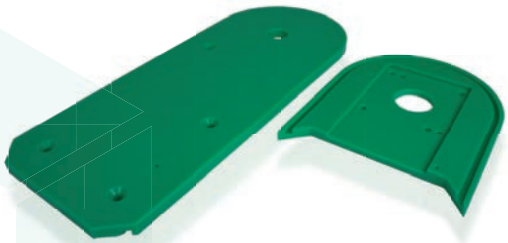
PE

PE-HD EXTRUDED (E)/PRESSED (P)

Semi-crystalline plastic, physiologically inert, associates a good combination of rigidity, toughness and resilience. It has good chemical resistance and can be easily welded. PE-HD is a versatile polyethylene used primarily in the food industry, as well as in the chemical, mechanical and electrical industries. This material can be obtained by extrusion (E) or by pressing (P). The use of pressed polyethylene is suggested in machined parts and in all applications in need of a better dimensional stability. They are easily distinguishable by their surface, in the case of PE-HD / E, it presents the different faces (1 matte and 1 glossy). In the case of PE-HD / P, the faces are the same with rectified appearance.



MAIN CHARACTERISTICS

- Good chemical resistance, wear and abrasion resistance
- Good resistance to impact even at low temperatures
- Low water absorption
- Mechanical resistance and moderate deformation
- Very good dielectric properties and good electrical insulation (except for the static dissipative qualities)
- Easy machining
- Physiologically inert, it enables food contact
- Good resistance to high energy radiation (gamma rays and X-rays)
- It is not self-extinguishing

APPLICATIONS

- Cutting boards for working tables of food industry
- Elements for water drainage
- Parts of pumps in contact with aggressive products
- All types of mechanical, chemical and electrical applications

CHEMICAL RESISTANCE

ELECTRICAL INSULATION

WEAR RESISTANCE

SLIDING PROPERTIES

IMPACT RESISTANCE

TEMPERATURE RANGE

*continuously (20.000H)

PE

TECHNICAL DATASHEET

PROPERTIES	TEST METHODS	UNITS	PE-HD
COLOR		-	WHITE/BLACK GREEN/OTHERS
DENSITY	ISO 1183-1	g/cm³	0.96
MOLECULAR WEIGHT	-	10^6 g/mol	0.5
WATER ABSORPTION AT SATURATION IN WATER OF 23°C[1]	-	%	<0.1
THERMAL PROPERTIES[2]			
MELTING TEMPERATURE (DSC, 10°C/MIN)	ISO 11357-1/-3	°C	135
THERMAL CONDUCTIVITY AT 23°C	-	W/(K.m)	0.40
COEFFICIENT OF LINEAR THERMAL EXPANSION			
BETWEEN 23-100°C	-	M/(m.K)	150 x 10^{-6}
MAXIMUM ALLOWABLE SERVICE TEMPERATURE IN AIR			
FOR SHORT PERIODS[3]	-	°C	120
CONTINUOUSLY: FOR 20.000H[4]		°C	80
MINIMUM SERVICE TEMPERATURE[5]	-	°C	-100
TEMPERATURE OF DEFLECTION UNDER LOAD			
METHOD A: 1.8 MPa	ISO 75-1/-2	°C	44
VICAT SOFTENING TEMPERATURE - VST/B50	ISO 306	°C	80
FLAMMABILITY[6]	-		
"OXYGEN INDEX"	ISO 4589-1/-2	%	<20
ACCORDING TO UL94 (6MM DE ESPESSURA)	-	-	HB
MECHANICAL PROPERTIES AT 23°C[7]			
TENSION TEST[8]			
TENSILE STRESS AT YIELD[9]	ISO 527-1/-2	MPa	28
TENSILE STRAIN AT BREAK	ISO 527-1/-2	%	>50
TENSILE MODULUS OF ELASTICITY[10]	ISO 527-1/-2	MPa	1300
COMPRESSION TEST[11]			
COMPRESSIVE STRESS AT 1/2/5% NOMINAL STRAIN[10]	ISO 604	MPa	12/18.5/26.5
CHARPY IMPACT STRENGTH - UNNOTCHED[12]	ISO 179-1/1eU	KJ/m²	NO BREAK
CHARPY IMPACT STRENGTH - NOTCHED	ISO 179-1/1eA	KJ/m²	105P
CHARPY IMPACT STRENGTH - NOTCHED (DOUBLE 14° NOTCH)[13]	ISO 11542-2	KJ/m²	25
BALL INDENTATION HARDNESS[14]	ISO 2039-1	N/mm²	48
SHORE HARDNESS D (15 S)[14]	ISO 868	-	62
ELECTRICAL PROPERTIES AT 23°C			
ELECTRIC STRENGTH[15]	IEC 60243-1	kV/mm	45
VOLUME RESISTIVITY	IEC 60093	Ohm.cm	> 10^{14}
SURFACE RESISTIVITY	IEC 60093	Ohm	> 10^{12}
RELATIVE PERMITTIVITY ε_r : A 100HZ	IEC 60250	-	2.4
RELATIVE PERMITTIVITY ε_r: A 1MHZ	IEC 60250	-	2.4
DIELECTRIC DISSIPATION FACTOR TAN δ : A 100HZ	IEC 60250	-	0.0002
DIELECTRIC DISSIPATION FACTOR TAN δ : A 1MHZ	IEC 60250	-	0.0002
COMPARATIVE TRACKING INDEX (CTI)	IEC 60112	-	600

NOTE: 1 g/cm³ = 1000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 KV/mm = 1 MV/m

(1) Measured in 1 mm test pieces. **(2)** The figures given on these properties are for the most part derived from data from suppliers of raw materials. **(3)** Only for periods of short exposure (few hours) in applications where only little or no weight is applied to the material. **(4)** Temperature which it resists for a minimum period of 20,000 hours. After this time, there is a decrease of about 50% in tensile strength compared to the original value. The given temperature values are based on the thermal oxidation degradation which occurs which causes a reduction of the properties. In the meantime, the maximum permissible service temperature depends in many cases essentially on the deduction and magnitude of the mechanical stresses to which the material is subject. **(5)** As the impact strength decreases with decreasing temperature, the minimum permissible service temperature is determined by the extent of impact to which the material is subjected. The values given are based on unfavorable impact conditions and can not therefore be considered absolute limits. **(6)** These assessments are derived from the technical specifications of the manufacturers of the raw materials and do not allow the determination of the behavior of the materials under fire conditions. **(7)** Most of the figures given by the mechanical properties of the extruded materials are mean values of 30 mm-thick plate tests. **(8)** Testing of test pieces: Type 1B. **(9)** Speed test: 50 mm / min. **(10)** Speed test: 1 mm / min. **(11)** Testing of test pieces: cylinders ø 8x16 mm. **(12)** Pendulum used: 15J. **(13)** Pendulum used: 25J. **(14)** Measured on 10 mm thick test pieces. **(15)** Electrode configuration: ø 25 / 75mm coaxial cylinders; in transformer oil in accordance with IEC 60296; Test samples 1 mm thick.