

## PE-UHMW (POLYETHYLENE) PE 1000 MATERIAL DATA SHEET

- Very good wear and abrasion resistance
- High impact strength, even at low temperatures (particularly PE-UHMW)
- Excellent chemical resistance
- Low density compared with other thermoplastics
- Low coefficient of friction
- Excellent release properties
- Very low water absorption
- Moderate mechanical strength, stiffness and creep resistance
- Very good electrical insulating and dielectric properties (except static dissipative grades)
- Physiologically inert (several grades are suitable for food contact)
- Good resistance to high energy radiation (gamma- and X-rays)

This material exhibits a very well-balanced property profile. It combines a very good wear and abrasion resistance with an outstanding impact strength, even at temperatures below -200°C.

PROPERTIES	Test methods	Units	VALUES
Color	-	-	Natural/green/black/colors
Density	ISO 1183-1	g/cm <sup>3</sup>	0.93
Average molar mass (average molecular weight)		10 <sup>6</sup> g/mol	9
Water absorption at saturation in water of 23°C	ISO 62	mg	< 0.01
<b>Thermal Properties</b>			
Melting temperature (DSC, 10°C/min)	ISO 11357-1/-3	°C	135
Thermal conductivity at 23°C	-	W/(K.m)	0.40
Average coefficient of linear thermal expansion between 23 and 100°C	-	m/(m.K)	200 x 10 <sup>-6</sup>
Vicat softening temperature	ISO 306 – VICAT B	°C	80
Max. allowable service temperature in air:			
- for short periods	-	°C	130
- continuously: for min. 20,000 h	-	°C	80
Flammability according to UL 94 (6 mm thickness)	-	-	HB
Min. service temperature	-	°C	-250
<b>Mechanical Properties at 23°C</b>			
Tension test			
- tensile stress at yield	ISO 527	MPa	20
- tensile modulus of elasticity	ISO 527	MPa	680
Flexural test			
- flexural strength	178	MPa	17
Charpy impact strength - notched	ISO 179	kJ/m <sup>2</sup>	No break
Shore hardness D (15 s)	ISO 2039-2	-	63
<b>Electrical Properties at 23 °C</b>			
Electric strength	IEC 60243-1	kV/mm	45
Volume resistivity	IEC 60093	Ohm.cm	> 10 <sup>14</sup>
Surface resistivity	IEC 60093	Ohm	> 10 <sup>14</sup>
Dielectric constant	IEC 60250	-	2.3
Dielectric dissipation factor tan δ: - at 100Hz	IEC 60250	-	0.0001
Comparative tracking index (CTI)	IEC 60112	-	600

Note: 1 g/cm<sup>3</sup> = 1,000 kg/m<sup>3</sup> ; 1 MPa = 1 N/mm<sup>2</sup> ; 1 kV/mm = 1 MV/m. NA: not applicable

The information contained in this technical data sheet cannot be construed as a promise or guarantee of specific properties of our products. Any determination of the suitability of a particular material and part design for any use contemplated by the user is the sole responsibility of the user. The information contained in this technical data sheet is based on present knowledge and may be subject to change without further notice.