

Technical Data Sheet

UHMWPE

blue



I. Physical Properties¹⁾

	Test method	Unit	Value
1. Specific gravity (ρ)	ISO 1183	g/cm ³	0,93
2. Water absorption ⁹⁾	ISO 62	%	0,5
3. Humidity absorption ⁹⁾			0,01
4a. Maximum permissible service temp. ⁹⁾	UL746B	°C	90
4b. Lower permissible service temp. ⁹⁾			-150

II. Mechanical Properties

	Test method	Unit	Value
1. Tensile strength at yield (σ_S)	ISO 527	MPa	20
2. Elongation at yield (ϵ_S)		%	20
3. Tensile strength at break (σ_R)		MPa	≥ 40
4. Elongation at break (ϵ_R)		%	≥ 50
5. Impact strength (a_n) ⁹⁾	ISO 179	kJ/m ²	n.b.
6. Notch impact strength (a_k) ⁹⁾			n.b.
7. Ball indentation (H_k)/Rockwell hardness ⁹⁾	ISO 2039	MPa	38
8. Shore-D	ISO 868		67
9. Flexural strength ($\sigma_{B,3,5\%}$) ⁹⁾	ISO 178	MPa	27
10. Modulus of elasticity (E_t)	ISO 527		760

III. Thermal Properties⁹⁾

	Test method	Unit	Value
1. Vicat-softening point. VST/B/50	ISO 306	°C	80
VST/A/50			-
2. Heat deflection temperature. HDT/B	ISO 75		65
HDT/A			42
3. Coef. of linear thermal expansion (α)	ISO 11359	K ⁻¹ *10 ⁻⁴	2
4. Thermal conductivity at 20 °C (λ)	ISO 22007-4	W/(m*K)	0,41
5. Glass transition temperature. (T_g)	ISO 3146	°C	-
6. Melting temperature (T_m)			133

IV. Electrical Properties

	Test method	Unit	Value
1. Volume resistivity (ρ_D) ⁸⁾	IEC 60093	Ω*cm	> 10 ¹³
2. Surface resistivity (R_o) ⁸⁾		Ω	≥ 10 ¹³
3. Dielectric constant at 1MHz (ϵ_r) ⁹⁾	IEC 60250	-	3
4. Dielectric loss factor at 1 MHz ($\tan\delta$) ⁹⁾		-	0,001
5. Dielectric strength ⁹⁾	IEC 60243-1	kV/mm	45
6. Tracking resistance ⁹⁾	IEC 60112	V	CTI 600

V. Additional Data

	Test method	Unit	Value
1. Bondability	-	-	-
2. Physiological indifference ⁵⁾ according	EEC FDA ⁹⁾	-	+
3. Flammability ⁹⁾	UL 94	-	HB ⁷⁾
4. Limiting Oxygen Index (LOI) ⁹⁾	ASTM D2863	%	18
4. UV stabilisation ⁶⁾	-	-	-

1) The physical data contained in this table are typical values and reflect the current state of our knowledge. The data are arithmetic average values which are tested by test specimens made out of rods (ø 40-60 mm). These has to be understood as guidelines, and shall not be used for specification purposes for finished parts. Missing data are completed by data of the raw materials. 2) Pretreatment necessary
5) Physiological indifferences are valid for nature coloured materials on the raw material side. There are also approvals for our semi-finished products available or in preparation. Please check this separately with us. 6) valid for nature coloured raw materials. An additional UV protection can be taken over by special pigments e.g. carbon black. 7) Test results without UL registration 8) Data are only valid for natural colours 9) Data taken from raw material *Self-assessment without test certificate. The technical data of electrical properties can be influenced by the dyes used in black semi-finished products.

* Own classification without official test report n.b.= no break + = yes o = limited - = no/no data available