



Technical Data

TIVAR® Materials

Material designation	TIVAR® SuperPlus		
ISO designation	PE-UHMW		
Material description	Ultra High Molecular Weight Polyethylene, partially cross-linked, wear optimised		
Colour(s)	silver-grey		
Material properties	Standard	Unit	
Average molecular weight (average molecular mass)		(g/mol)	approx. $9 \cdot 10^6$
Density	ISO 1183	(kg/m ³)	965
Water absorption at 23° C until saturation	ISO 62	(%)	< 0,01
Mechanical properties	Standard	Unit	
Tensile stress at yield (tensile strength)	ISO 527	(MPa)	≥ 17
Elongation at break	ISO 527	(%)	≥ 250
Tensile modulus	ISO 527	(MPa)	700
Impact strength (Charpy) at 23° C	ISO 179	(kJ/m ²)	no break
Notched impact strength (Charpy) at 23° C	ISO 11542-2	(kJ/m ²)	≥ 100
Ball indentation hardness	ISO 2039-1	(N/mm ²)	40
Shore-Hardness D, 15 s value	ISO 868	(-)	65
Coefficient of friction	-	(-)	approx. 0,17
Abrasion (Sand-Slurry)	-	(%)	90
Thermal properties	Standard	Unit	
Melting point DSC, 10 K/min	ISO 3146	(°C)	135 - 138
Vicat softening point	ISO 306	(°C)	80
Coefficient of linear thermal expansion between 23 and 80° C	ISO 11359	(K ⁻¹)	approx. $1,8 \cdot 10^{-4}$
Thermal conductivity	ISO 52612	(W/[m * K])	approx. 0,4
Use temperature (max.)	-	(°C)	80
Use temperature (briefly)	-	(°C)	90
Use temperature (min.)	-	(°C)	-200
Electrical properties	Standard	Unit	
Relative permittivity at 100 Hz	IEC 60250	(-)	2,1
Dissipation factor at 100 Hz	IEC 60250	(-)	$3,9 \cdot 10^{-4}$
Volume resistivity	IEC 60093	(Ohm * m)	> 10^{12}
Surface resistivity	IEC 60093	(Ohm)	> 10^{12}
Dielectric strength	IEC 60243	(kV/mm)	45
Physiological properties	Standard	Unit	
Food conformances according to EU Directive 2002/72/EC			no
FDA Regulation 21CFR177.1520			no
FDA Regulation 21CFR178.2010			no
FDA Regulation 21CFR178.3297			no

Notice to users:

The technical data shown in this data sheet refers to a 40 mm thick sheet. Due to the production process the data may vary depending on the material thickness.

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