POLY HI SOLIDUR DEUTSCHLAND
A MENASHA SUBSIDIARY

Technical Data

TIVAR® Materials

Material designation			TIVAR® H.O.T.
ISO designation			PE-UHMW
Material description			Ultra High Molecular Weight Polyethylene, retained properties in extended temperature range, includes oxidation inhibiting additves
Colour(s)			white
Material properties	**Standard**	**Unit**	
Average molecular weight (average molecular mass)		(g/mol)	approx. $9 * 10^6$
Density	ISO 1183	(kg/m³)	930
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	(%)	≥ 350
Tensile modulus	ISO 527	(MPa)	700
Impact strength (Charpy) at 23° C	ISO 179	(kJ/m²)	no break
Notched impact strength (Charpy) at 23° C	ISO 11542-2	(kJ/m²)	≥ 100
Ball indentation hardness	ISO 2039-1	(N/mm²)	30 - 35
Shore-Hardness D, 15 s value	ISO 868	(-)	60 - 65
Coefficient of friction	-	(-)	0,12
Abrasion (Sand-Slurry)	-	(%)	80
Themal properties	**Standard**	**Unit**	
Melting point DSC, 10 K/min	ISO 3146	(°C)	135 - 138
Vicat softening point	ISO 306	(°C)	80
Coefficient of linear themal expansion between 23 and 80° C	ISO 11359	(K^{-1})	approx. $2 * 10^{-4}$
Themal conductivity	ISO 52612	(W/[m * K])	approx. 0,4
Use temperature (max.)	-	(°C)	100
Use temperature (briefly)	-	(°C)	135
Use temperature (min.)	-	(°C)	-200
Electrical properties	**Standard**	**Unit**	
Relative permitivity at 100 Hz	IEC 60250	(-)	2,1
Dissipation factor at 100 Hz	IEC 60250	(-)	$3,9 * 10^{-4}$
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			yes
FDA Regulation 21CFR177.1520			yes
FDA Regulation 21CFR178.2010			yes
FDA Regulation 21CFR178.3297			yes
3A-Dairy Sanitary Standard			yes

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.

The information contained in this technical data sheet can not 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.

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