Ultradur® (PBT)

B 6550LN

BASF
The Chemical Company

Ultradur® (PBT)

Ultradur® is BASF's trade name for its line of partially crystalline saturated polyesters. This line is based on polybutylene terephthalate and is employed in applications demanding a high performance level such as load bearing parts in different industrial sectors. Ultradur® is outstanding for its high rigidity and strength, very good dimensional stability, low water absorption and high resistance to many chemicals. Moreover, Ultradur® exhibits exceptional resistance to weathering and excellent heat aging behavior.

Ultradur® B 6550LN

High-viscosity grades for the extrusion of loose buffer tubes for optical fibers and boards, semi-finished products for machining, profiles and pipes.

Typical values at 23 °C for uncolored products	Unit	Test method	B 6550LN
Product Features			
Symbol	–		PBT
Density	kg/m³	ISO 1183	1,300
Reinforcing filler: Glass fiber (GF), Glass beads, (GB), Mineral (M)	%	–	
Flame retardant (F), Impact modifier (P)	–	–	
Viscosity number, solution 0.005 g/ml phenol/1.2-dicholoro benzene (1:1)	cm³/g	ISO 1628	160
Colors: natural (n), colored (c), black (bk), special colors (sp)	–	–	n
Water absorption, saturation in water at 23 °C	%	similar to ISO 62	0.4
Moisture absorption, saturation in standard conditioning atmosphere 23 °C/50 % r. h.	%	similar to ISO 62	0.25
Processing methods			
Injection molding (M), extrusion (E), film extrusion (F), coating (H)	–	–	H, M
Melting temperature, DSC	°C	ISO 11357-1/-3	223
Melt volume rate MVR 250 / 2.16	cm³/10 min	ISO 1133	9.5
Melt volume rate MVR 275 / 2.16	cm³/10 min	ISO 1133	
Melt temperature range, injection-molding	°C	–	260-270
Mold temperature range	°C	–	40-80
Melt temperature range, pipe extrusion	°C	–	250-270
Melt temperature range, semi-finished extrusion	°C	–	250-270
Melt temperature range, cast-film extrusion	°C	–	
Melt temperature range, coating	°C	–	
Molding shrinkage, free, longitud./transvers. (plate with film gate 150 · 150 · 3 mm³)	%	–	1.9/2.2
Melt temperature/mold temperature (for shrinkage test)	°C	–	260/60
Molding shrinkage, free, longitud./transvers.	%	ISO 2577, 294-4	
Fire behavior			
Flammability according to UL-Standard at d = 1.6 mm thickness	class	IEC 60695-11-10	HB
Flammability according to UL-Standard at d = 0.8 mm thickness	class	IEC 60695-11-10	HB
Flammability of materials in cars at d ≥ 1 mm thickness[1]	–	FMVSS 302	+
Mechanical properties			
Tensile modulus of elasticity	MPa	ISO 527-1/-2	2,600
Tensile stress at yield (v = 50 mm/min), stress at break* (v = 5 mm/min)	MPa	ISO 527-1/-2	56
Strain at yield (v = 50 mm/min)	%	ISO 527-1/-2	3.5
Strain at break (v = 50 mm/min), strain at break* (v = 5 mm/min)	%	ISO 527-1/-2	> 50
Tensile creep modulus, 1000 h, elongation ≤ 0.5 %, +23 °C	MPa	ISO 899-1	
Flexural strength	MPa	ISO 178	
Charpy impact strength (23 °C)[2]	kJ/m²	ISO 179/1eU	NB
Charpy notched impact strength (23 °C)[2]	kJ/m²	ISO 179/1eA	5.2
Ball intendation hardness H 358 N/30 sec, H 961 N/30 sec*	MPa	ISO 2039-1	
Thermal properties			
Heat deflection temp. under 1.8 MPa (HDT/A)	°C	ISO 75-1/-2	55
Heat deflection temp. under 0.45 MPa (HDT/B)	°C	ISO 75-1/-2	135
Max. service temperature (short cycle operation)[3]	°C	–	
Temperature index, at 50 % loss of tensile strength after 20,000 h/5,000 h	°C	IEC 60216-1	
Thermal coefficient of linear expansion, longitud. (23-80) °C	10^{-6}/K	ISO 11359-1/-2	90-150
Thermal conductivity	W (m · K)	DIN 52 612-1	
Specific heat capacity	J (g · K)		
Electrical properties			
Dielectric constant at 100 Hz/1 MHz	–	IEC 60250	3.4/3.2
Dissipation factor at 100 Hz/1 MHz	10^{-4}	IEC 60250	19/219
Volume resistivity	Ω · m	IEC 60093	10^{14}
Surface resistivity	Ω	IEC 60093	10^{13}
Comparative tracking index CTI, test solution A	–	IEC 60112	475

[1] + = passed
[2] NB = no break
[3] Typical values for parts required to withstand repeated exposure to this temperature for several hours over years of use, assuming appropriate shaping and processing for the material

For your notes

Selected Product Literature for Ultradur®:

- Ultradur® – Product Brochure
- Ultradur® LUX – PBT for Laser Welding
- Ultradur® HR – PBT for Hot-damp Environments
- Ultramid®, Ultradur® and Ultraform® – Resistance to Chemicals
- Engineering Plastics for Medical Solutions – Ultraform® PRO (POM) and Ultradur® PRO (PBT)
- From the Idea to Production – The Aqua® Plastics Portfolio for the Sanitary and Water Industries
- Ultramid® und Ultradur® – Engineering Plastics for Photovoltaic Mounting Systems
- Engineering Plastics for the E/E Industry – Standards and Ratings
- Engineering Plastics for the E/E Industry – Products, Applications, Typical Values
- Engineering Plastics for Automotive Electrics – Products, Applications, Typical Values

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. (July 2013)

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