Ultradur® B 4406 G4

(PBT-GF20)

□▪BASF

The Chemical Company

Product description

Injection molding grade with 20 % glass fibers for parts requiring enhanced fire resistance (eg relay housings, plug-and-socket connectors, switches, lighting components).

Abbreviated designation according to ISO 1043-1: PBT FR(17)
CLASSIFICATION ACCORDING TO ISO 7792-1:
Moulding Compound ISO 7792-PBT, MFGHLNR, 09-080, GF20

Physical form and storage

Standard packaging includes the 25-kg-bag and the 1000 kg octabin (octagonal container). Other forms of packaging are possible subject to agreement. All containers are tightly sealed and should be opened only immediately prior to processing. Further precautions for preliminary treatment and drying are described in the processing section of the brochure. The bulk density is about 0,7 to 0,8g/cm³.
Under normal conditions Ultradur can be stored for unlimited periods. Even at elevated temperatures, e.g. 40°C in air, and under the action of sunlight and weather no decomposition reactions occur.
Ultradur should generally have a moisture content of less than 0,04% when beeing processed.
In order to ensure reliable production, therefore, pre-drying should generally be the rule and the machine should be loaded via a closed conveyor system. Appropriate equipment is commercially available. Pre-drying is also for the addition of batches, e.g. in the case of inhouse pigmentation. In order to prevent the formation of condensed water, containers stored in unheated rooms must only be opened when they have attained the temperature prevailing in the processing area. This can possibly take a very long time. Measturements have shown that the interior of a 25-kg bag originally at 5°C had reached the temperature of 20°C in the processing area only after 48 hours.

Product safety

Ultradur melts are stable at temperatures up to 280°C and do not give rise to hazards due to molecular degradation or the evolution of gases and vapors. Like all thermoplastic polymers, however, Ultradur decomposes on exposure to excessive thermal stresses, e.g. when it is overheated or as a result of cleaning by burning off. In such cases gaseous decomposition products are formed. Decomposition accelerates above 350°C small quantities of aldehydes and saturated and unsaturated hydrocarbons are also formed. When Ultradur is properly processed and there is adequate suction at the die no risks to health are to be expected.
Further safety information see safety data sheet of individual product.
Safety data sheet could be ask for at the Ultra-Infopoint under tel: 0621/60-78780 or fax:0621/60-78730.

Note

The information submitted in this publication is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed. In order to check the availability of products please contact us or our sales agency.

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Typical values at 23°C [1]	**Test method**	**Unit**	**Values**
Properties			
Abbreviated term	ISO 1043	-	PBT-GF20
Density	ISO 1183	g/cm^3	1.55
Reinforcing filler content: glass fibres (GF); glass beads (GB); mineral (M)		%	GF20
Viscosity number (solution 0.05 g/ml phenol/1,2 dichlorobenzene 1:1)	ISO 307	ml/g	116
Colours: natural (n), coloured (c), black (bk), special colours (sp)	-	-	n,c,sp,bk
Water absorption, equilibrium in water at 23°C	ISO 62	%	0.40
Moisture absorption, equilibrium 23°C/50% r.h.	ISO 62	%	0.20
Processing			
Melting temperature, DSC	ISO 3146	°C	220 - 225
Melt volume rate MVR 250/2,16	ISO 1133	cm^3/10 min	8
Melt temperature, injection moulding/extrusion	-	°C	250 - 275
Mould temperature, injection moulding	-	°C	60 - 100
Moulding shrinkage, free, longitudinal / transverse (260°/80°) [6]	-	%	0.30 / 1.20
Flammability			
UL94 rating at 1.6 mm thickness	UL 94	class	V-0
UL94 rating at 0.8 mm thickness	UL 94	class	V-0
Automotive materials (thickness d ≥ 1mm)	FMVSS 302	-	+
Electrical insulation materials	BH	class	BH2-18 mm/min
Mechanical properties			
Tensile modulus	ISO 527-2	MPa	8200
Yield stress (v = 50 mm/min), Stress at break (v = 5 mm/min)*	ISO 527-2	MPa	125*
Yield strain (v = 50 mm/min)	ISO 527-2	%	
Nominal strain at break, Strain at break*	ISO 527-2	%	2.6*
Tensile creep modulus, 1000 h, strain ≤ 0.5%, +23°C	ISO 899-1	MPa	
Flexural strength	ISO 178	MPa	
Charpy unnotched impact strength +23°C	ISO 179/1eU	kJ/m^2	48
Charpy notched impact strength +23°C	ISO 179/1eA	kJ/m^2	9.0
Impact-failure energy E$_{50}$, moulding +23°C	ISO 6603-1	J	<5.0
Ball indentation hardness H 358/30, H 961/30*	ISO 2039-1	MPa	190*
Thermal properties			
Deflection temperature 1.8 MPa (HDT A)	ISO 75-2	°C	200
Deflection temperature 0.45 MPa (HDT B)	ISO 75-2	°C	223
Max. service temperature (short cycle operation) [2]	-	°C	210
Temperature index at 50% loss of tensile strength after 20000 h / 5000 h	IEC 216-1	°C	120 / 130
Thermal coefficient of linear expansion, longitudinal / transverse (23–80)°C	DIN 53752	10^{-4}/K	0.5 /
Thermal conductivity	DIN 52 612	W(m · K)	
Specific heat capacity	-	J(g · K)	1500.00
Electrical properties			
Dielectric constant at 100 Hz / 1 MHz	IEC 60250	-	3.8 / 3.6
Dissipation factor at 100 Hz / 1 MHz	IEC 60250	10^{-4}	70 / 170
Volume resistivity	IEC 60093	Ω · m	10^{16}
CTI, solution A	IEC 60112	-	200
CTI M, solution B	IEC 60112	-	150

Footnotes:
1) for uncoloured product, unless defined otherwise in the product name
2) Empirical values determined on articles repeatedly subjected to the temperature concerned for several hours at a time over a period of several years.
   The proviso is that the articles were properly designed and processed according to our recommendations.
6) Plaque 150 mm x 150 mm x 3 mm, moulded with film gate; longitudinal = in flow direction; transverse = perpendicular to flow direction.