

CELANEX® 2300 GV3/20 - PBT

Description

Chemical abbreviation according to ISO 1043-1: PBT Moulding compound ISO 7792- PBT, MGHR, 08-040N, GB20 Polybutylene terephthalate, low warpage, 20 % glass beads. Flammability UL 94 HB minimum thickness 0.82 mm. Recognition by Underwriters Laboratories, USA (UL)

Physical properties	Value	Unit	Test Standard
Density	1450	kg/m ³	ISO 1183
Melt volume rate, MVR	20	cm ³ /10min	ISO 1133
MVR temperature	250	°C	ISO 1133
MVR load	2.16	kg	ISO 1133
Molding shrinkage, parallel	1.6 - 2.0	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 - 1.7	%	ISO 294-4, 2577
Water absorption, 23°C-sat	0.45	%	ISO 62
Humidity absorption, 23°C/50%RH	0.2	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	3500	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	50	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	4	%	ISO 527-2/1A
Tensile creep modulus, 1h	3500	MPa	ISO 899-1
Tensile creep modulus, 1000h	2400	MPa	ISO 899-1
Flexural strength, 23°C	86	MPa	ISO 178
Flexural stress at 3.5% strain	85	MPa	ISO 178
Charpy impact strength, 23°C	34	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	34	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	3.5	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	3.5	kJ/m ²	ISO 179/1eA
Ball indentation hardness, 30s	165	MPa	ISO 2039-1

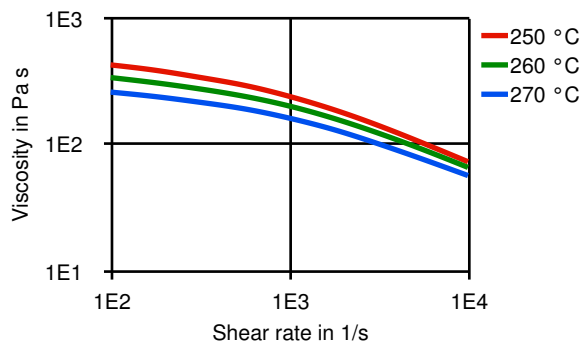
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
DTUL at 1.8 MPa	70	°C	ISO 75-1, -2
DTUL at 0.45 MPa	180	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	190	°C	ISO 306
Coeff. of linear therm expansion, parallel	1.1	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	21	%	ISO 4589-1/-2
Flammability @1.6mm nom. thickn.	HB	class	UL 94
thickness tested (1.6)	1.6	mm	UL 94
UL recognition (1.6)	UL	-	UL 94
Flammability at thickness h	HB	class	UL 94
thickness tested (h)	0.82	mm	UL 94
UL recognition (h)	UL	-	UL 94

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	4.4	-	IEC 60250
Relative permittivity, 1MHz	4.2	-	IEC 60250
Dissipation factor, 100Hz	85	E-4	IEC 60250
Dissipation factor, 1MHz	180	E-4	IEC 60250
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	>1E15	Ohm	IEC 60093
Electric strength	26	kV/mm	IEC 60243-1
Comparative tracking index	225	-	IEC 60112

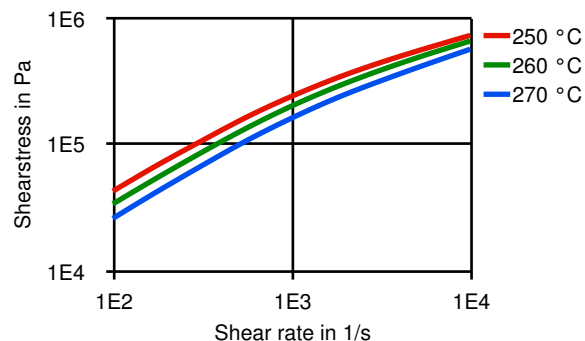
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Diagrams

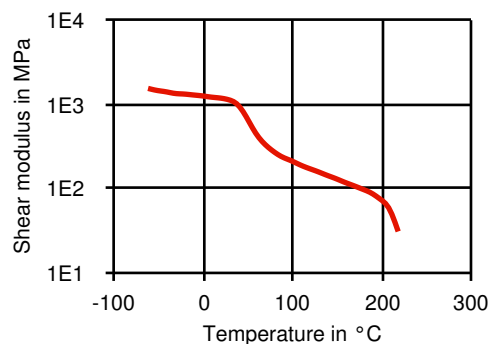
Viscosity-shear rate



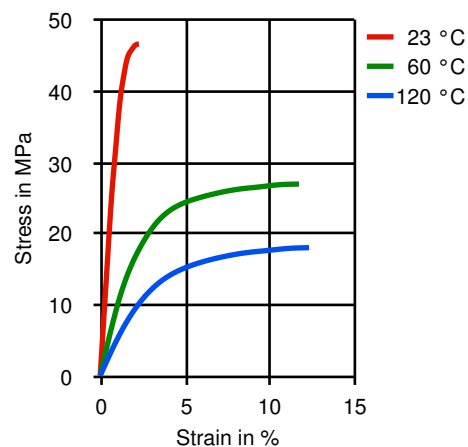
Shearstress-shear rate



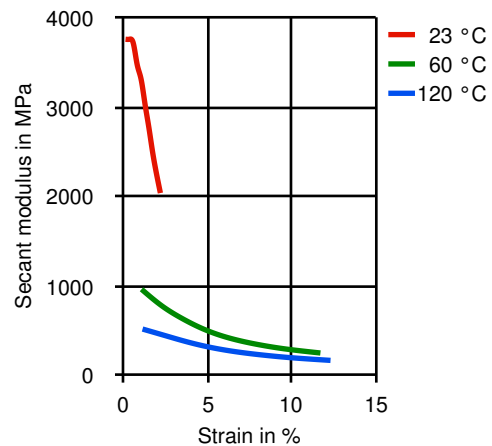
Dynamic Shear modulus-temperature



Stress-strain



Secant modulus-strain



Typical injection moulding processing conditions

Pre Drying	Value	Unit	Test Standard
Necessary low maximum residual moisture content	0.02	%	-
Drying time	2 - 4	h	-
Drying temperature	120 - 140	°C	-

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Temperature	Value	Unit	Test Standard
Hopper temperature	20 - 50	°C	-
Feeding zone temperature	190 - 200	°C	-
Zone1 temperature	250 - 260	°C	-
Zone2 temperature	250 - 260	°C	-
Zone3 temperature	255 - 265	°C	-
Zone4 temperature	255 - 265	°C	-
Nozzle temperature	260 - 270	°C	-
Melt temperature	260 - 270	°C	-
Mold temperature	75 - 100	°C	-
Hot runner temperature	260 - 270	°C	-
Speed	Value	Unit	Test Standard
Injection speed	fast	-	-
Screw Speed	Value	Unit	Test Standard
Screw speed diameter, 25mm	90	RPM	-
Screw speed diameter, 40mm	75	RPM	-
Screw speed diameter, 55mm	60	RPM	-

Other text information

Pre-drying

CELANEX should in principle be predried. Because of the necessary low maximum residual moisture content the use of dry air dryers is recommended. The dew point should be $\leq -30^{\circ}\text{C}$. The time between drying and processing should be as short as possible.

Longer pre-drying times/storage

For subsequent storage of the material in the dryer until processed (≤ 60 h) it is necessary to lower the temperature to 100°C .

Injection molding

Melt Temperature 260-270 °C
 Mold Temperature *) 75-85 °C
 Maximum Barrel Residence Time **) 5-10 min
 Injection Speed fast
 Peripheral screw speed max. 0,3 m/sec
 Back Pressure 10-30 bar
 Injection Pressure 600-1000 bar
 Holding Pressure 400-800 bar
 Nozzle Design open design preferred

Injection speed, injection pressure and holding pressure have to be optimized to the individual article geometry. To avoid material degradation during processing low back pressure and minimum screw speed have to be used. Overheating of the material has to be avoided. For grades containing flame retardants, a maximum temperature of 265°C should not be exceeded.

Celanese recommends only externally heated hot runner systems.

*) For moulded parts with especially high requirements to the surface quality or dimensional stability, a mold temperature of up to 110°C can be advantageous.

**) If the cylinder temperatures are higher than the recommended maximum temperatures, the max. residence time in the barrel has to be reduced.

Characteristics

Product Categories	Delivery Form
Glass reinforced	Pellets
Processing	Additives
Injection molding	Release agent