

# CELANEX® 2300 GV1/50

## CELANEX® PBT

Chemical abbreviation according to ISO 1043: PBT GF50. Moulding compound ISO 7792-1 PBT, MGAR, 08-160, GF50. Polybutylene terephthalate, 50 % glass fiber reinforced. Flammability UL 94 HB minimum thickness 0.82 mm. Recognition by Underwriters Laboratories, USA (UL)

### Product information

Resin Identification	PBT-GF50	ISO 1043
Part Marking Code	>PBT-GF50<	ISO 11469

### Rheological properties

Melt volume-flow rate	5 cm <sup>3</sup> /10min	ISO 1133
Temperature	250 °C	
Load	2.16 kg	
Moulding shrinkage range, parallel	0.3 - 0.4 %	ISO 294-4, 2577
Moulding shrinkage range, normal	0.7 - 0.9 %	ISO 294-4, 2577

### Typical mechanical properties

Tensile modulus	17000 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	165 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.6 %	ISO 527-1/-2
Flexural strength	240 MPa	ISO 178
Flexural strain at failure	2.5 %	ISO 178
Tensile creep modulus, 1h	12500 MPa	ISO 899-1
Tensile creep modulus, 1000h	9500 MPa	ISO 899-1
Charpy impact strength, 23°C	70 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	65 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	11.5 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	11.5 kJ/m <sup>2</sup>	ISO 179/1eA
Ball indentation hardness, H 961/30	235 MPa	ISO 2039-1
Poisson's ratio	0.33 <sup>[C]</sup>	

[C]: Calculated

### Thermal properties

Melting temperature, 10°C/min	225 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	215 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	228 °C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	185 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	225 °C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	15 E-6/K	ISO 11359-1/-2

### Flammability

Burning Behav. at 1.5mm nom. thickn.	HB class	IEC 60695-11-10
Thickness tested	1.6 mm	IEC 60695-11-10
Burning Behav. at thickness h	HB class	IEC 60695-11-10
Thickness tested	0.82 mm	IEC 60695-11-10
UL recognition	yes	UL 94
Oxygen index	20 %	ISO 4589-1/-2

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### Electrical properties

Relative permittivity, 100Hz	4.4	IEC 62631-2-1
Relative permittivity, 1MHz	4.1	IEC 62631-2-1
Dissipation factor, 100Hz	16 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	190 E-4	IEC 62631-2-1
Volume resistivity	>1E13 Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15 Ohm	IEC 62631-3-2
Electric strength	35 kV/mm	IEC 60243-1

### Physical/Other properties

Humidity absorption, 2mm	0.15 %	Sim. to ISO 62
Water absorption, 2mm	0.35 %	Sim. to ISO 62
Density	1710 kg/m <sup>3</sup>	ISO 1183

### Injection

Drying Recommended	yes
Drying Temperature	120 °C
Drying Time, Dehumidified Dryer	4 h
Processing Moisture Content	≤0.02 %
Melt Temperature Optimum	250 °C
Min. melt temperature	240 °C
Max. melt temperature	260 °C
Screw tangential speed	0.1 - 0.3 m/s
Mold Temperature Optimum	80 °C
Min. mould temperature	60 °C
Max. mould temperature	130 °C

### Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	Heat stabilised or stable to heat

### Additional information

Injection molding

### Preprocessing

To avoid hydrolytic degradation during processing, CELANEX resins have to be dried to a moisture level equal to or less than 0,02%. The drying should be done in a dry-air dryer (dew point < -30 °C) with a temperature of 120 to 140 °C and a drying time of 4 to 6 hours. In case of longer residence times in the dry-air dryer, the temperature should be reduced to 100 °C.

The time between drying and processing should be kept as short as possible. The processing machine feed hopper should be closed during the processing operation.

### Processing

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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.

## Processing Notes

### Pre-Drying

CELANEX should always be dried before processing. 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.

### Storage

For subsequent storage of the material in the dryer until processed ( $\leq 60\text{ h}$ ) it is necessary to lower the temperature to  $100^{\circ}\text{C}$ .

## Automotive

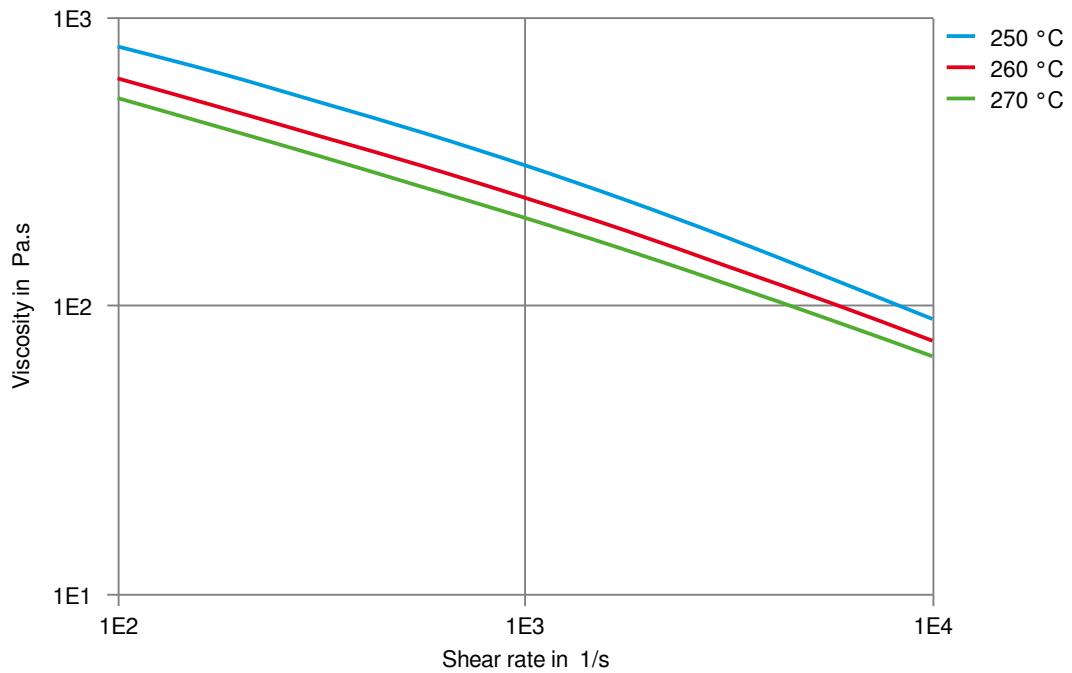
OEM  
VW Group

ADDITIONAL INFORMATION  
NATURAL, no spec, special part approval

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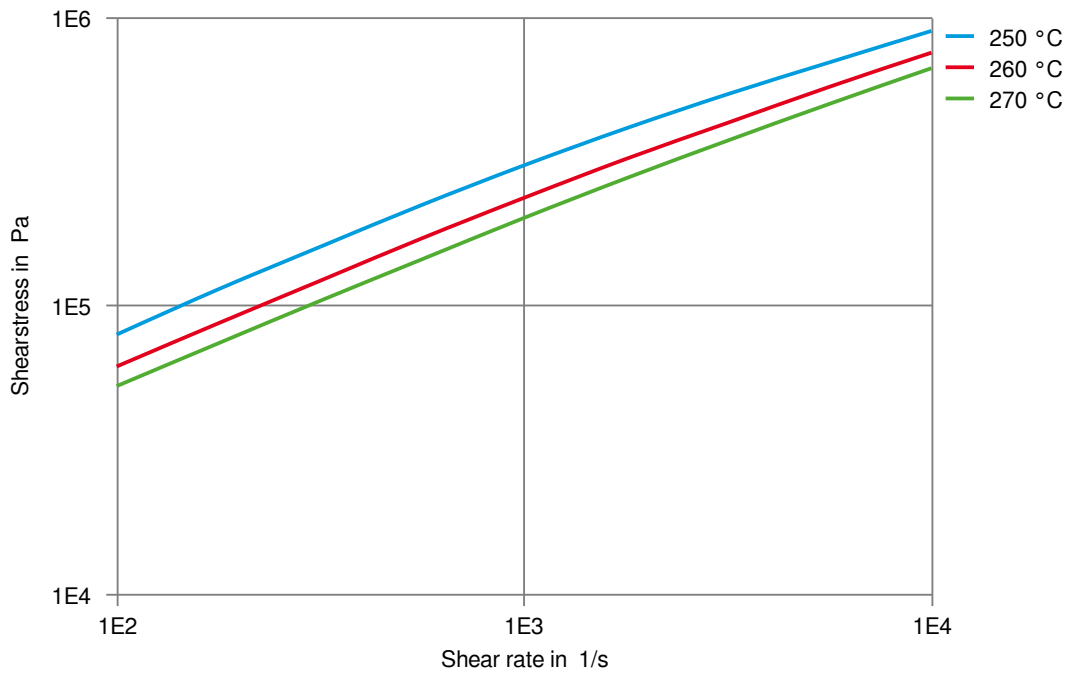
Viscosity-shear rate



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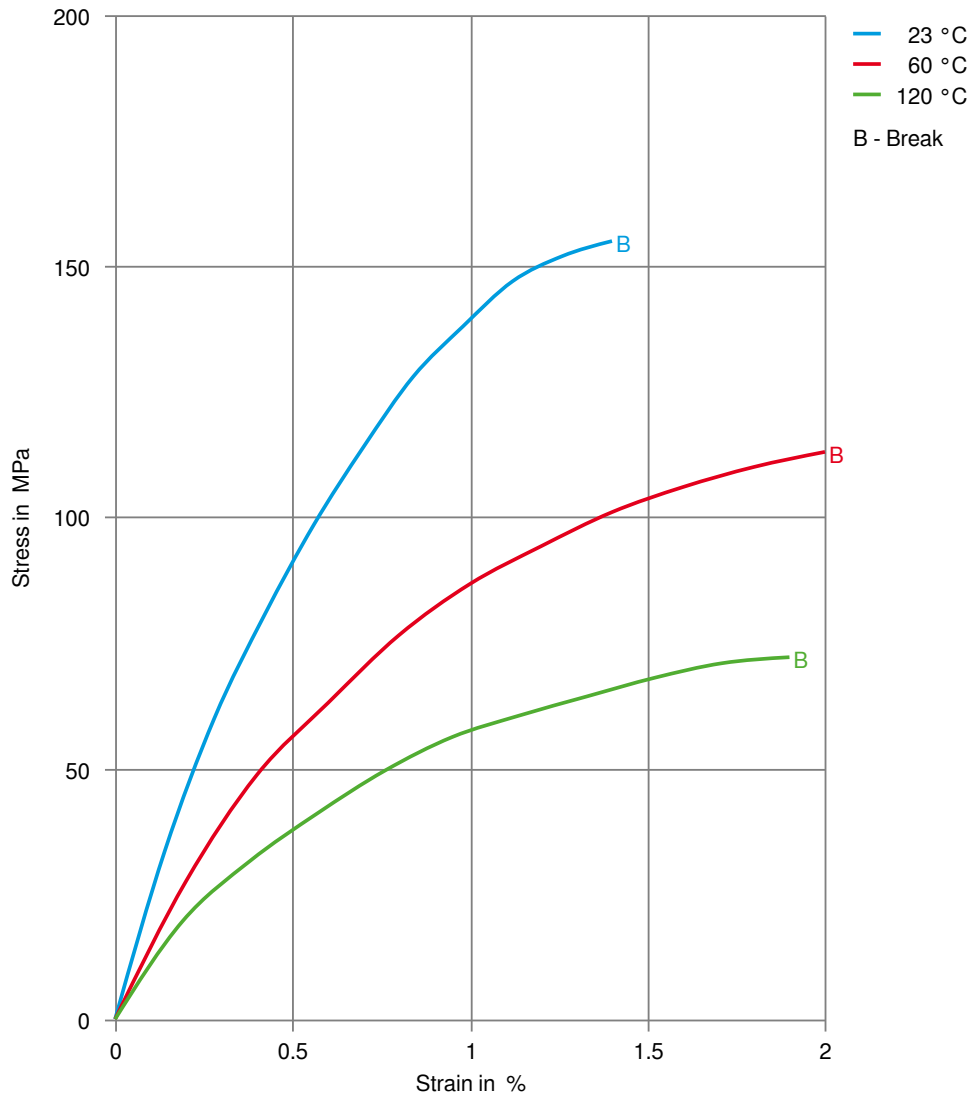
Shearstress-shear rate



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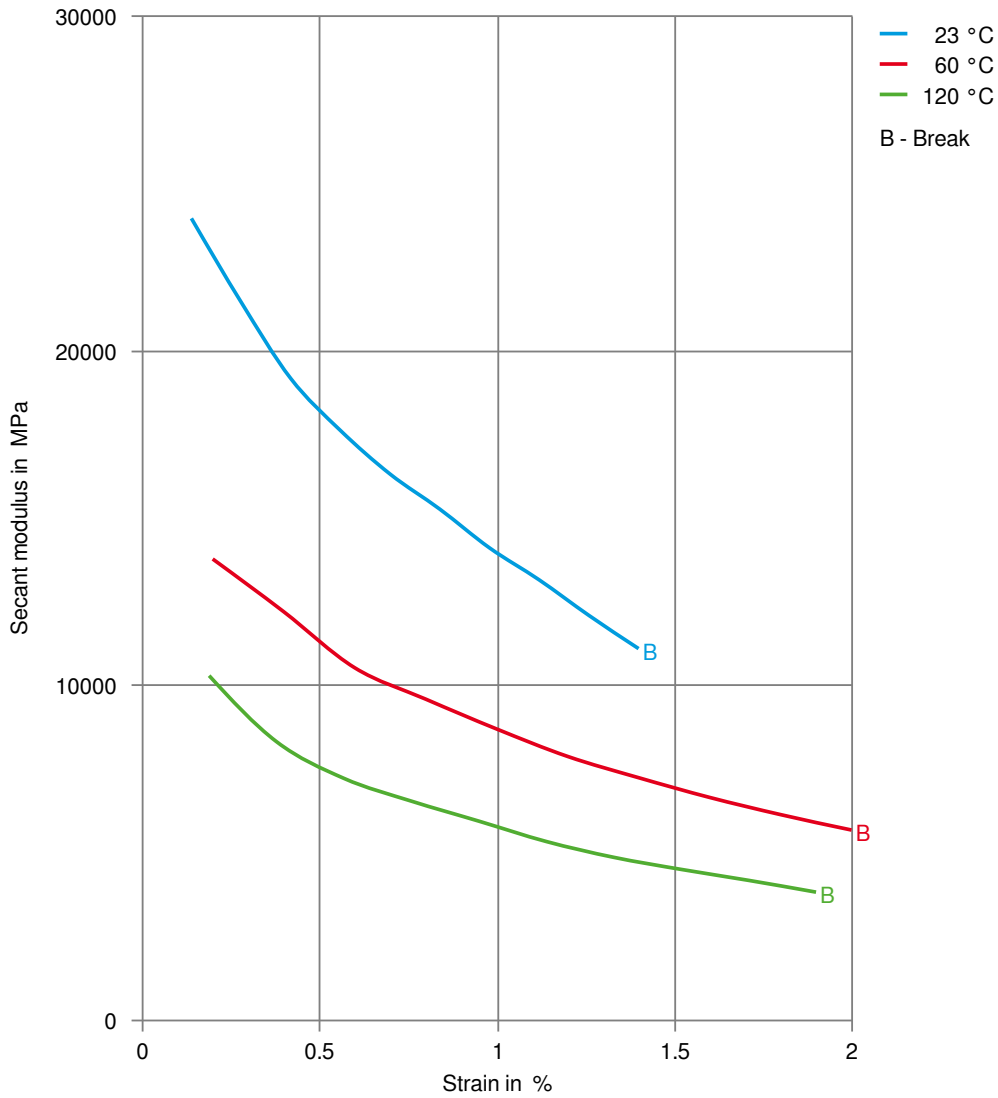
## Stress-strain



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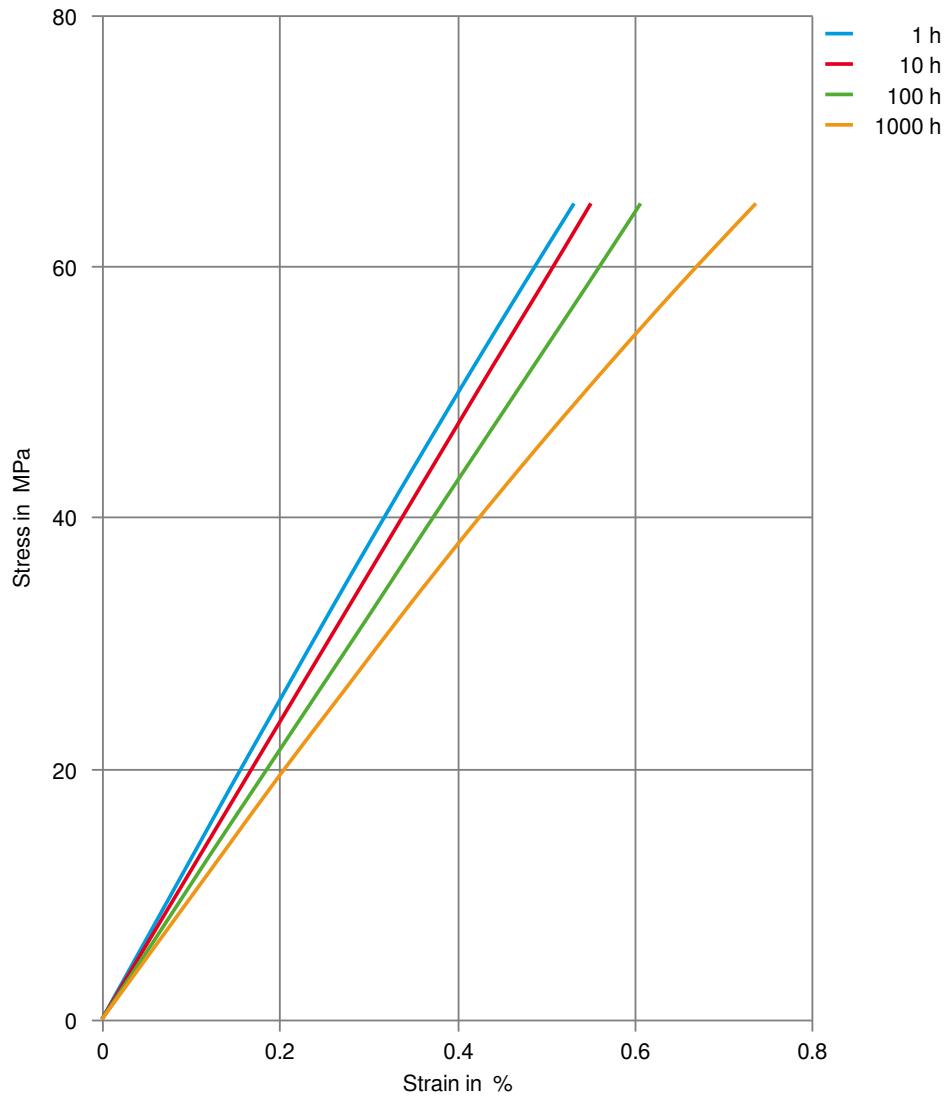
## Secant modulus-strain



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Stress-strain (isochronous) 23°C



# CELANEX® 2300 GV1/50

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Creep modulus-time 23°C

