

# CELANEX® 2300 GV1/30G

general purpose, 30% glass-fiber reinforced grade, lubricated and stabilized, with viscosity number specification  
 Chemical abbreviation according to ISO 1043-1: PBT Moulding compound ISO 7792- PBT, MGHR, 09-100N, GF30  
 Polybutylene terephthalate, 30 % glass fibre reinforced. Flammability UL 94 HB minimum thickness 1.2 mm. Recognition by Underwriters Laboratories, USA (UL)

## Product information

Part Marking Code > PBT-GF30 < ISO 11469

## Rheological properties

Melt volume-flow rate	7 cm <sup>3</sup> /10min	ISO 1133
Temperature	250 °C	
Load	2.16 kg	
Viscosity number	78 cm <sup>3</sup> /g	ISO 307, 1157, 1628
Moulding shrinkage range, parallel	0.3 - 0.4 %	ISO 294-4, 2577
Moulding shrinkage range, normal	1.0 - 1.2 %	ISO 294-4, 2577

## Typical mechanical properties

Tensile Modulus	10300 MPa	ISO 527-1/-2
Stress at break, 5mm/min	150 MPa	ISO 527-1/-2
Strain at break, 5mm/min	2.5 %	ISO 527-1/-2
Flexural Strength	210 MPa	ISO 178
Tensile creep modulus, 1h	9200 MPa	ISO 899-1
Tensile creep modulus, 1000h	6500 MPa	ISO 899-1
Charpy impact strength, 23°C	60 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	60 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	9.5 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	9 kJ/m <sup>2</sup>	ISO 179/1eA
Ball indentation hardness, H 358/30	215 MPa	ISO 2039-1

## Thermal properties

Melting temperature, 10°C/min	225 °C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	210 °C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	225 °C	ISO 75-1/-2
Temp. of deflection under load, 8 MPa	150 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	220 °C	ISO 306
Coeff. of linear therm. expansion, parallel	25 E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.166 W/(m K)	Internal
Spec. heat capacity of melt	1720 J/(kg K)	Internal

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## Flammability

Burning Behav. at 1.5mm nom. thickn.	HB class	UL 94
Thickness tested	1.5 mm	UL 94
Burning Behav. at thickness h	HB class	UL 94
Thickness tested	1.22 mm	UL 94
UL recognition	yes	UL 94
Oxygen index	20 %	ISO 4589-1/-2

## Electrical properties

Relative permittivity, 100Hz	4.4	IEC 62631-2-1
Relative permittivity, 1MHz	4.3	IEC 62631-2-1
Dissipation factor, 100Hz	20 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	33 kV/mm	IEC 60243-1
Comparative tracking index	PLC 1 PLC	UL 746A

## Other properties

Humidity absorption, 2mm	0.15 %	Sim. to ISO 62
Water absorption, 2mm	0.4 %	Sim. to ISO 62
Density	1550 kg/m <sup>3</sup>	ISO 1183
Density of melt	1320 kg/m <sup>3</sup>	Internal

## Injection

Drying Temperature	120 - 140 °C	
Drying Time, Dehumidified Dryer	2 - 4 h	
Processing Moisture Content	0.02 %	
Screw tangential speed	0.12 - 0.17 m/s	
Max. mould temperature	75 - 100 °C	
Injection speed	fast	
Ejection temperature	220 °C	Internal

## Characteristics

Additives	Release agent
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## Additional information

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

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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. Up to 25% clean and dry regrind may be used.

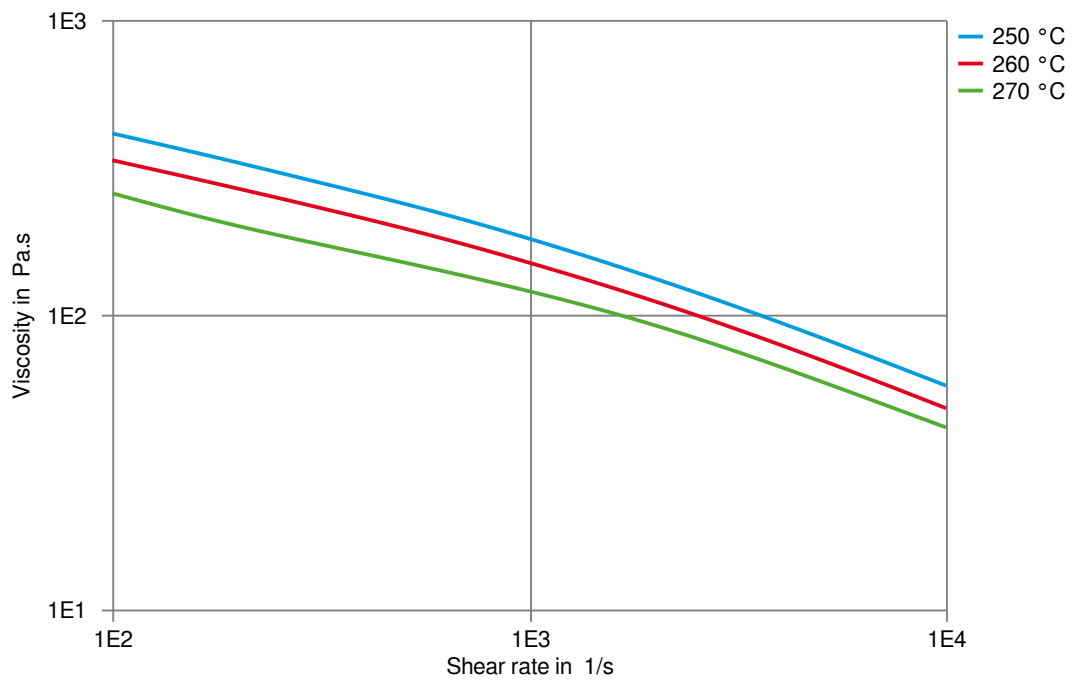
Celanese recommends only externally heated hot runner systems.

\*) 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.

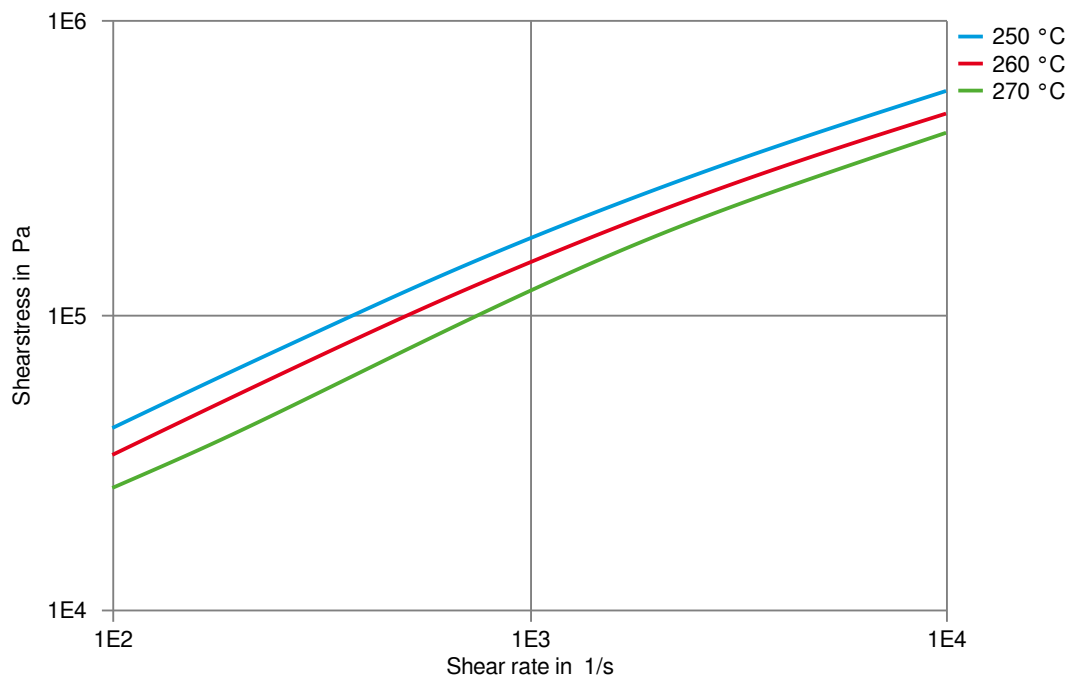
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## Viscosity-shear rate



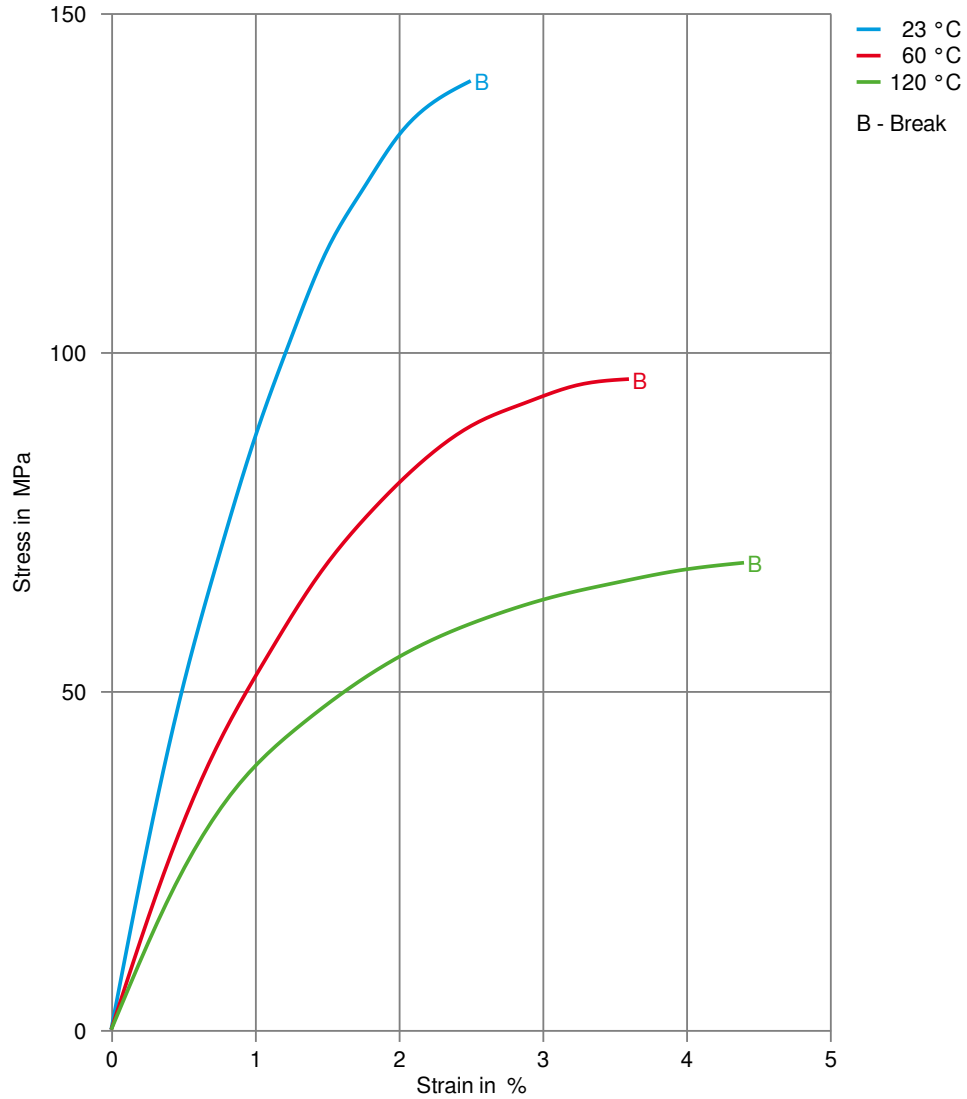
# CELANEX® 2300 GV1/30G

## Shearstress-shear rate



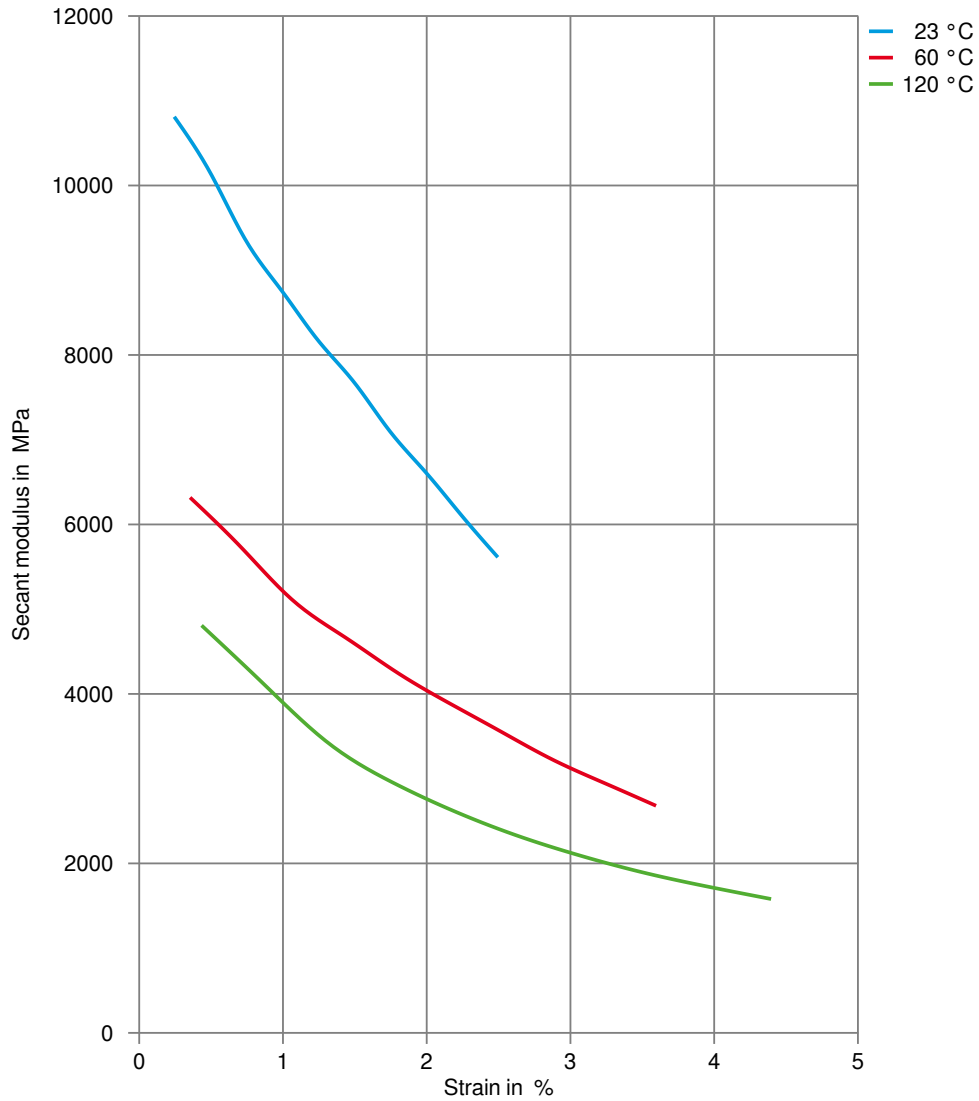
# CELANEX® 2300 GV1/30G

## Stress-strain



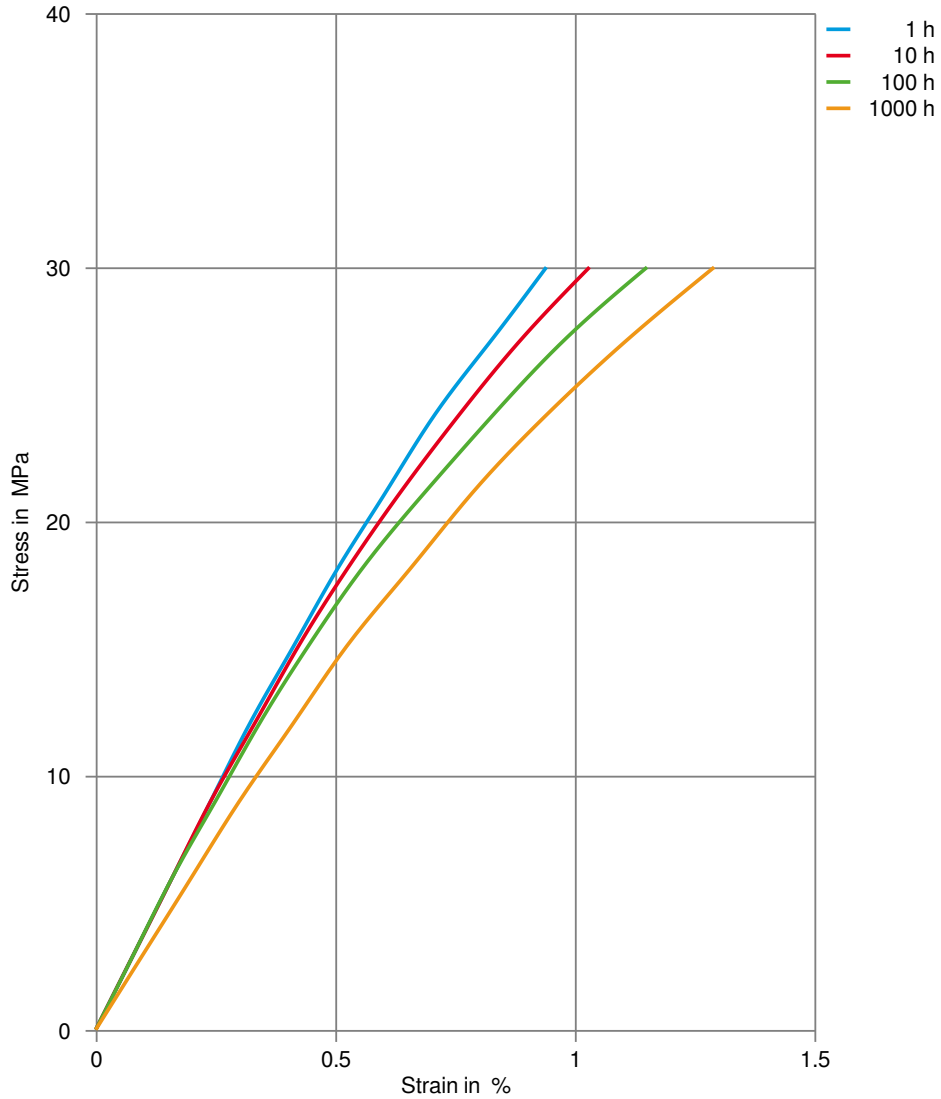
# CELANEX® 2300 GV1/30G

## Secant modulus-strain



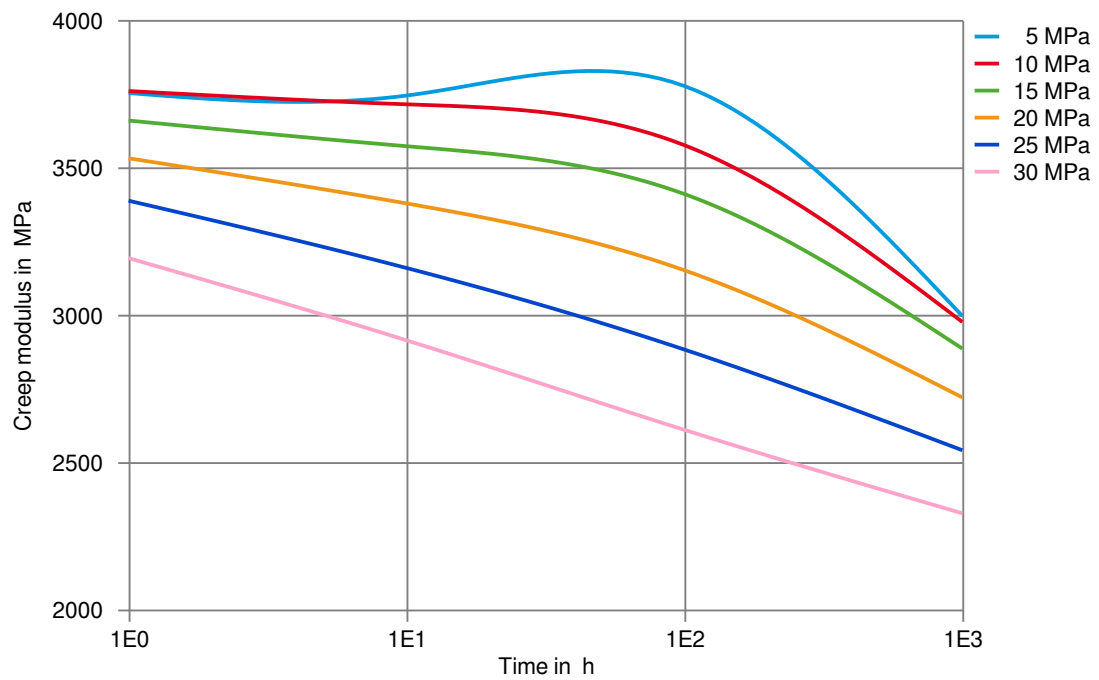
# CELANEX® 2300 GV1/30G

## Stress-strain (isochronous) 100°C



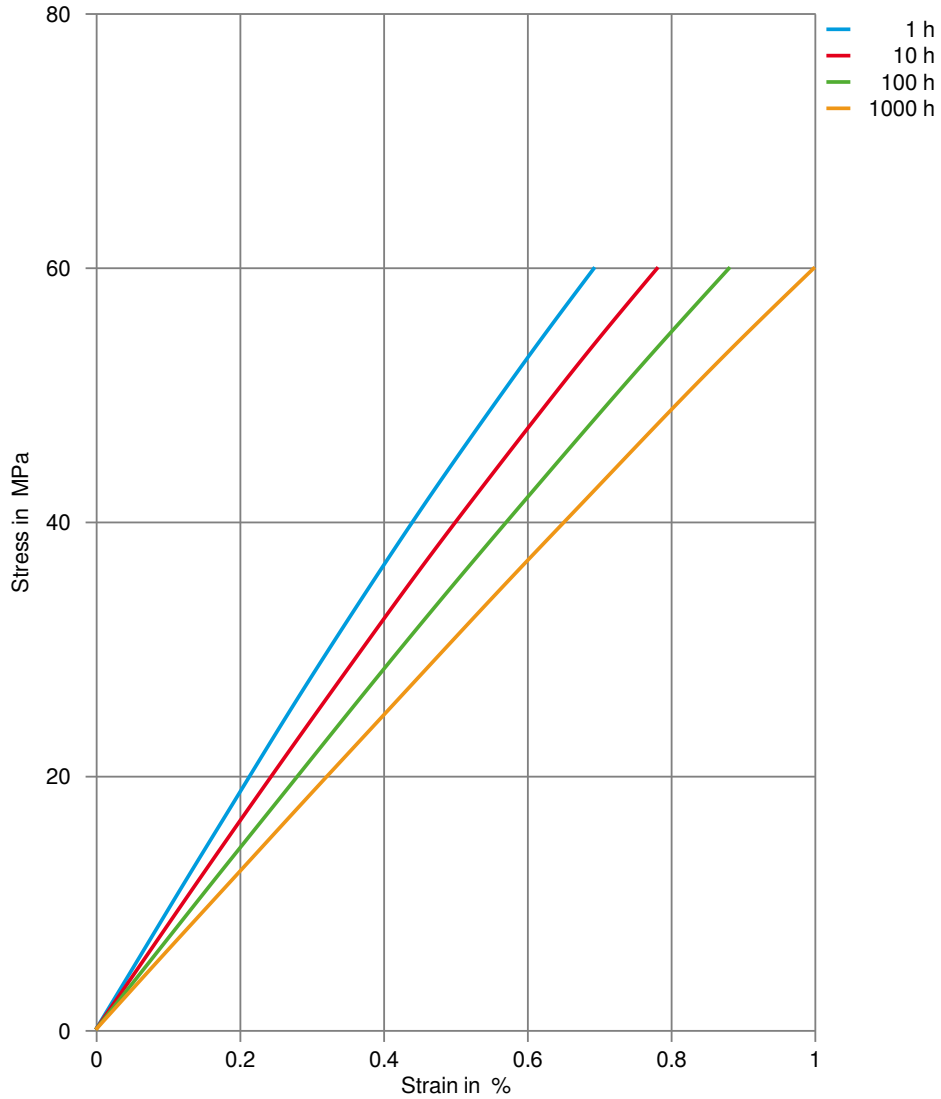
# CELANEX® 2300 GV1/30G

Creep modulus-time 100°C



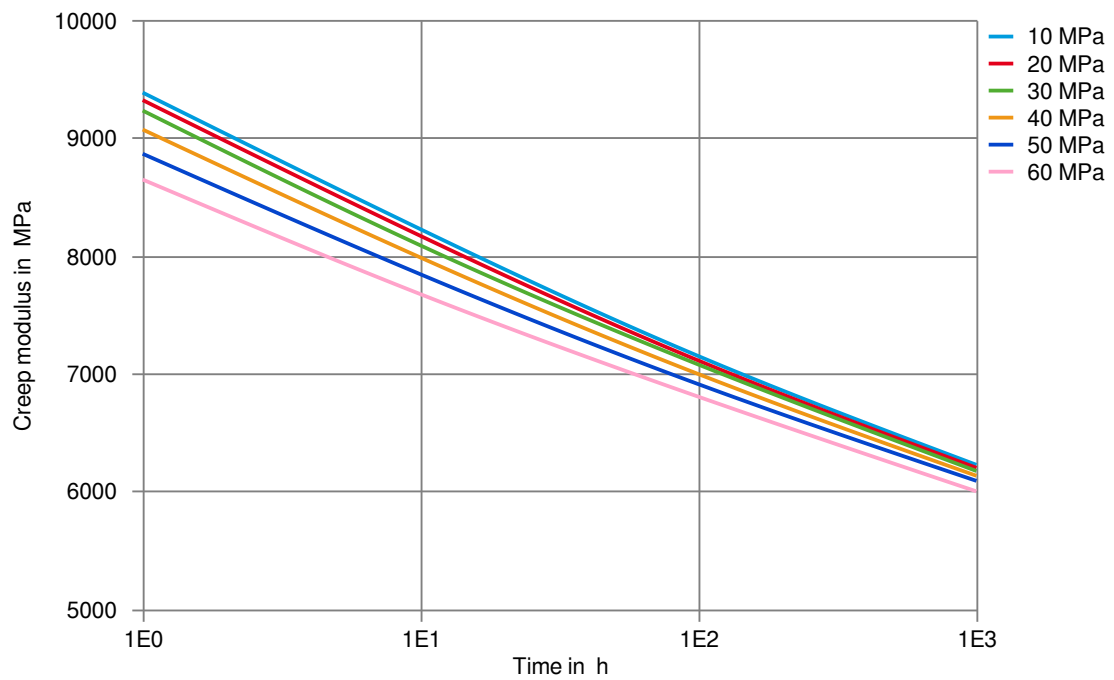
# CELANEX® 2300 GV1/30G

Stress-strain (isochronous) 23°C



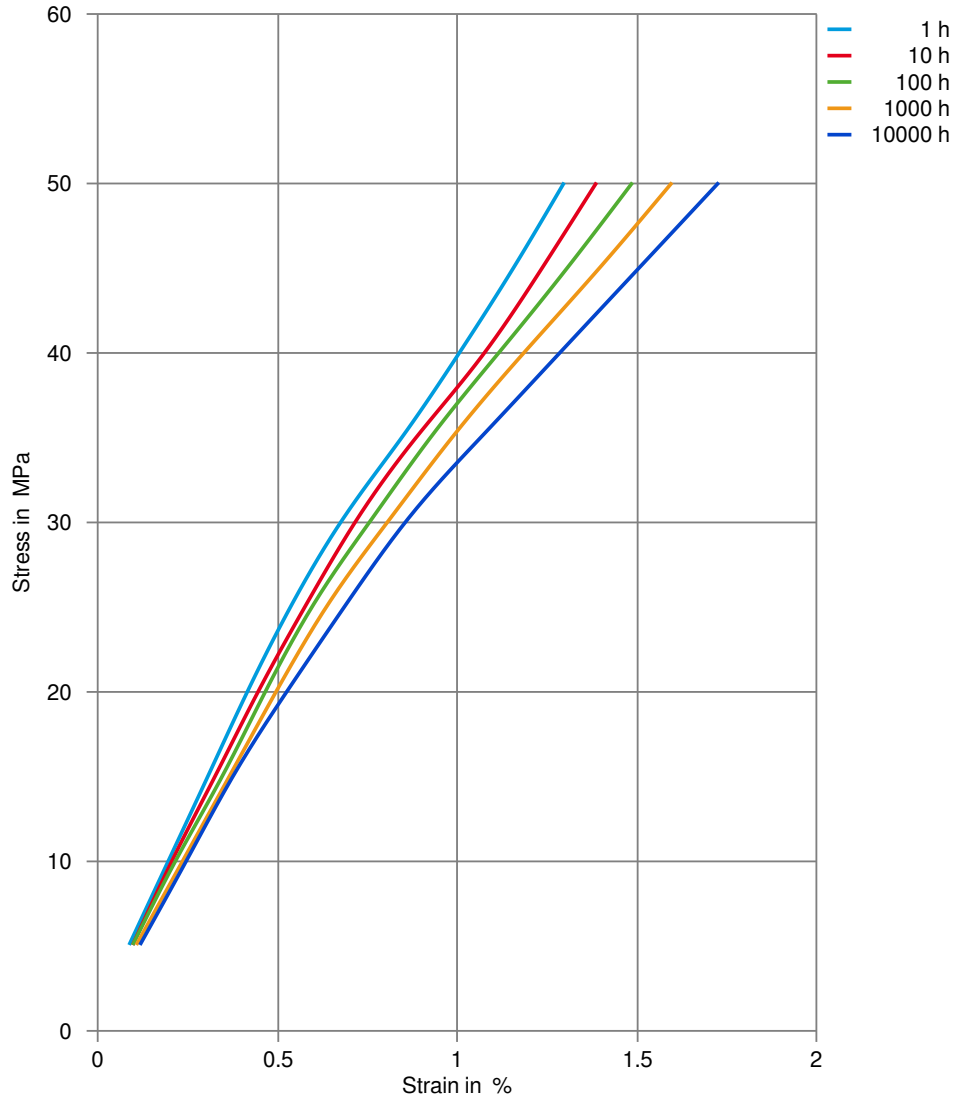
# CELANEX® 2300 GV1/30G

Creep modulus-time 23°C



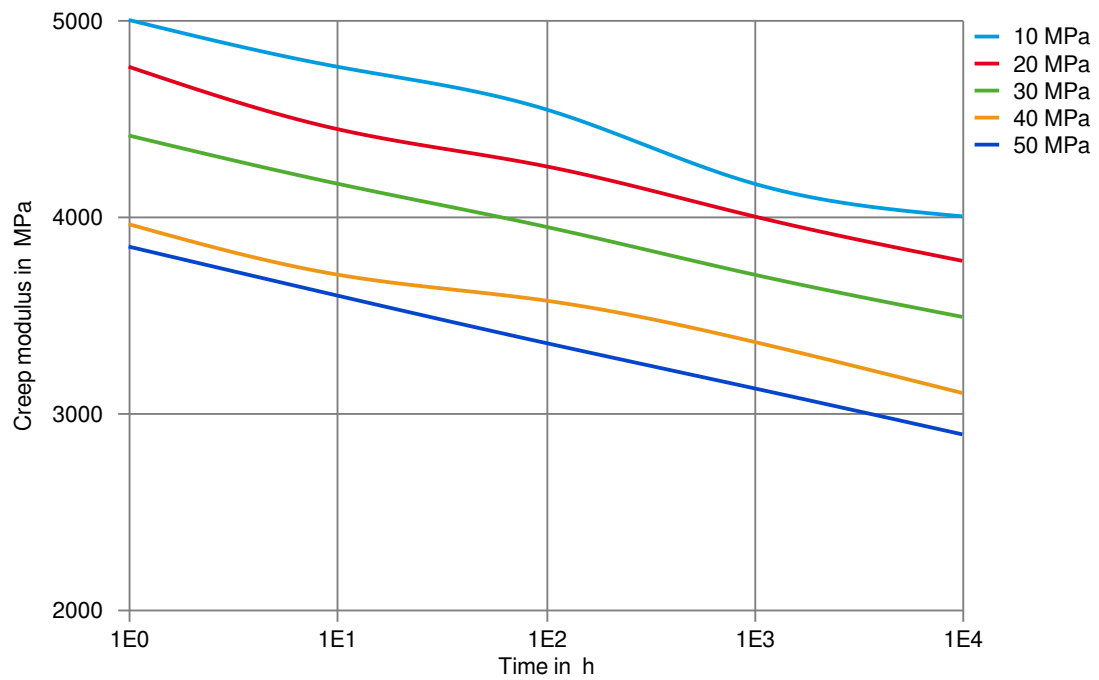
# CELANEX® 2300 GV1/30G

Stress-strain (isochronous) 60°C



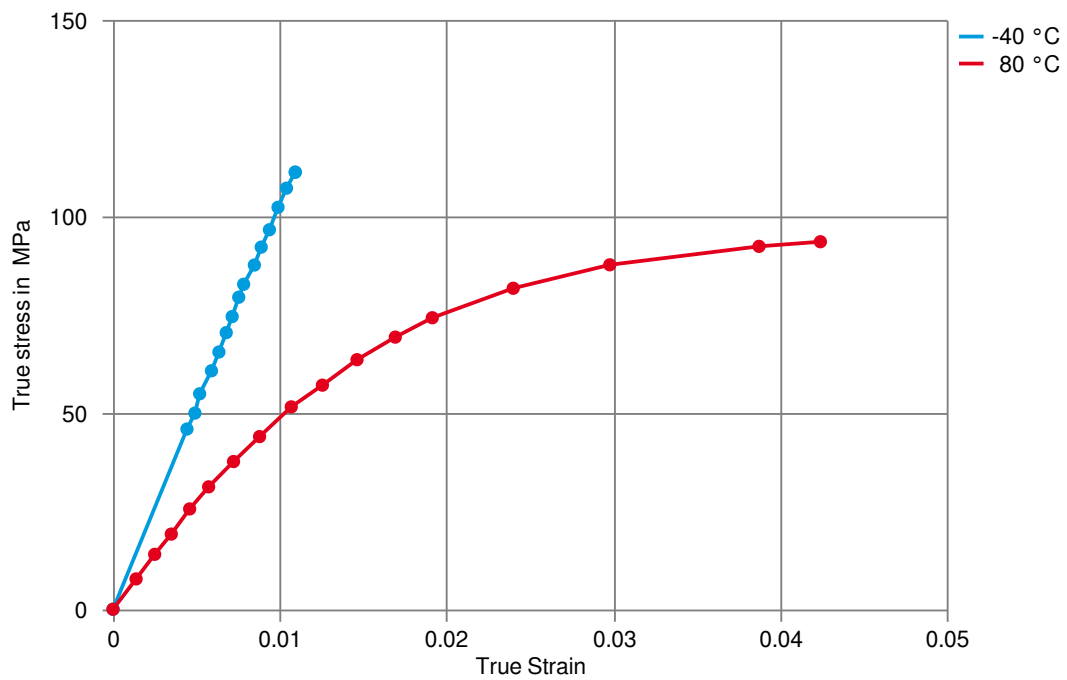
# CELANEX® 2300 GV1/30G

Creep modulus-time 60°C



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## True stress-strain



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## Processing Texts

### 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 ( $\leq 60$  h) it is necessary to lower the temperature to  $100^{\circ}\text{C}$ .

### 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  $265^{\circ}\text{C}$  should not be exceeded. Up to 25% clean and dry regrind may be used.

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  $110^{\circ}\text{C}$  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.

### 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  $< -30^{\circ}\text{C}$ ) with a temperature of 120 to  $140^{\circ}\text{C}$  and a drying time of 2 to 4 hours. In case of longer residence times in the dry-air dryer, the temperature should be reduced to  $100^{\circ}\text{C}$ . 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.