

## CELSTRAN® PP-GF40-04 | PP | Glass Reinforced

### Description

Material code according to ISO 1043-1: PP

Heat stabilized polypropylene reinforced with 40 weight percent long glass fibers. The fibers are chemically coupled to the polypropylene matrix. The pellets are cylindrical and normally as well as the embedded fibers 10 mm long.

Parts molded of CELSTRAN have outstanding mechanical properties such as high strength and stiffness combined with high heat deflection. The notched impact strength is increased at elevated and low temperatures due to the fiber skeleton built in the parts. The long fiber reinforcement reduces creep significantly.

The very isotropic shrinkage in the molded parts minimizes the warpage. Complex parts can be manufactured with high reproducibility by injection molding.

Application field: Functional/structural parts for automotive

Physical properties	Value	Unit	Test Standard
Density	1220	kg/m <sup>3</sup>	ISO 1183

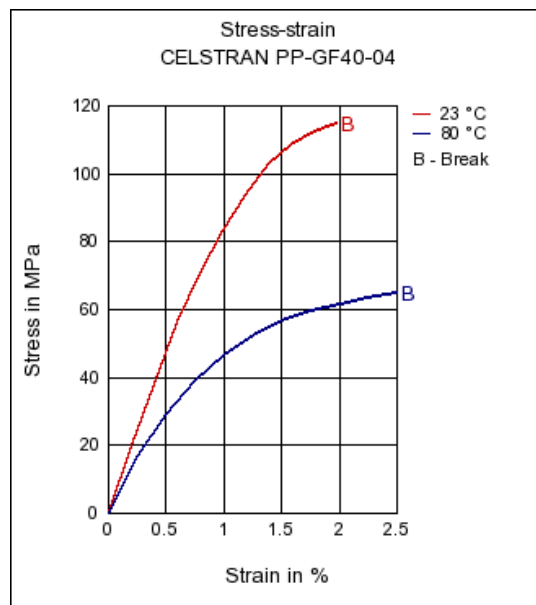
Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	9100	MPa	ISO 527-2/1A
Tensile stress at break (5mm/min)	110	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	2	%	ISO 527-2/1A
Flexural modulus (23°C)	9500	MPa	ISO 178
Flexural strength (23°C)	190	MPa	ISO 178
Charpy impact strength @ 23°C	59	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength @ -30°C	55	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength @ 23°C	16	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength @ -30°C	13	kJ/m <sup>2</sup>	ISO 179/1eA

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	162	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	152	°C	ISO 75-1/-2
DTUL @ 8.0 MPa	128	°C	ISO 75-1/-2

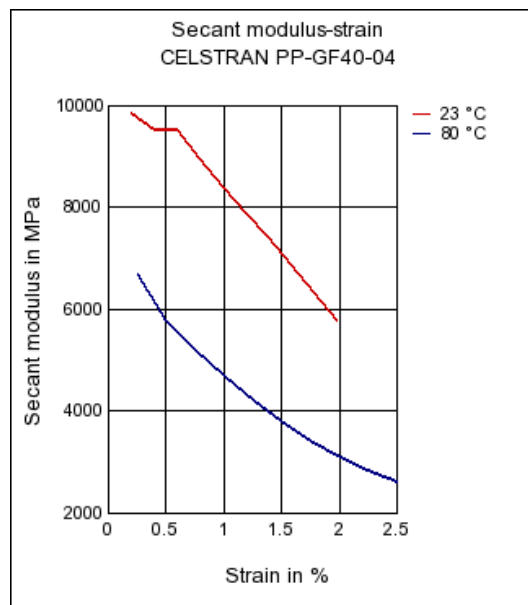
Test specimen production	Value	Unit	Test Standard
Injection molding melt temperature	270	°C	ISO 294
Injection molding mold temperature	70	°C	ISO 294
Injection molding flow front velocity	80	mm/s	ISO 294
Injection molding hold pressure	83	MPa	ISO 294

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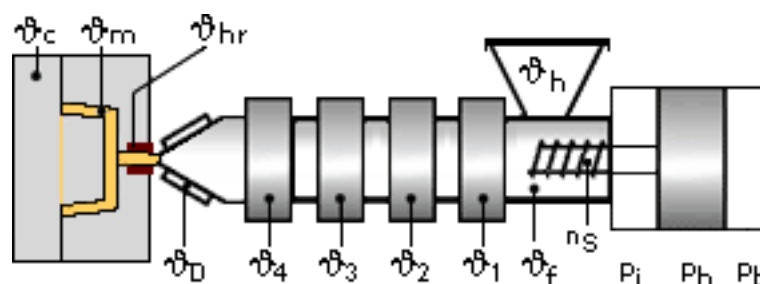
### Stress-strain



### Secant modulus-strain



### Typical injection moulding processing conditions



Maximum residual moisture content: 0.2000%

#### Processing Temperatures:

	$\vartheta_{\text{Cavity}}$	$\vartheta_{\text{Melt}}$	$\vartheta_{\text{Hot Runner}}$	$\vartheta_{\text{Die}}$	$\vartheta_4$	$\vartheta_3$	$\vartheta_2$	$\vartheta_1$	$\vartheta_{\text{Feeding}}$	$\vartheta_{\text{Hopper}}$
min (°C)	40	260	260	260	280	270	260	250	20	N/A
max (°C)	70	290	290	290	290	280	270	260	50	N/A

#### Processing Pressures:

	Injection Pressure	Holding Pressure	Back Pressure
min (bar)	600	400	0
max (bar)	1200	800	30

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### Injection speed: langsam

#### Screw speed:

Screw diameter (mm)	40	55	75
Screw speed (rpm)	50	35	25

#### Pre-drying conditions:

It is normally not necessary to dry CELSTRAN PP. However, should there be surface moisture (condensate) on the molding compound as a result of incorrect storage, drying is required. A circulating air drying cabinet can be used for this purpose if the gran

The product can then be stored in standard conditions until processed.

#### Drying time: 4 h

#### Drying temperature: 90 - 100 °C

#### Special information:

Celstran TPU:

Melt temperature < 275 °C (527 °F)!

## Injection Molding

During the processing of CELSTRAN it is important to watch and control melt shear, for excessive shear reduces fiber length and mechanical performance as well.

Processing recommendation:

- Conventional 3 zone screw, screw diameter minimum 40 mm
- Design flow channels for low melt shear
- Back pressure and screw rotation to realize a continuous plastification performance and thus a homogeneous melt.
- Apply higher temperature settings than for short fiber compounds

Melt temperature (in the screw anteroom) 260-290 °C  
Mold surface temperature 40-70 °C