

CELSTRAN® PP-GF40-04 Natural - PP

Description

Material code according to ISO 1043-1: PP Polypropylene Homopolymer reinforced with 40 weight percent long glass fibers. Natural. The fibers are chemically coupled to the polypropylene matrix. The pellets are cylindrical and normally as well as the embedded fibers 11 mm long. (-0414 = heat stabilized) natural 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

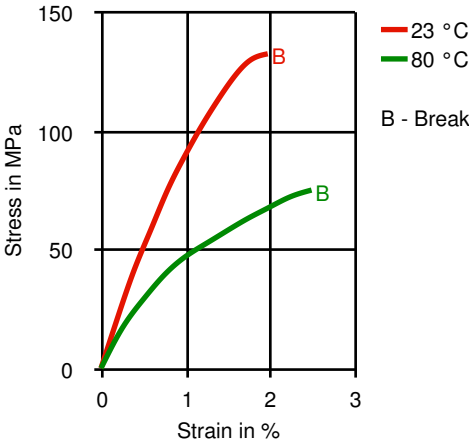
Physical properties	Value	Unit	Test Standard
Density	1210	kg/m ³	ISO 1183
Mechanical properties	Value	Unit	Test Standard
Tensile modulus	9300	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	137	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	2.2	%	ISO 527-2/1A
Flexural modulus, 23°C	9300	MPa	ISO 178
Flexural modulus, 80°C	7000	MPa	ISO 178
Flexural strength, 23°C	220	MPa	ISO 178
Flexural strength, 80°C	125	MPa	ISO 178
Charpy impact strength, 23°C	70	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	50	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	30	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	35	kJ/m ²	ISO 179/1eA
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	162	°C	ISO 11357-1/-3
DTUL at 1.8 MPa	158	°C	ISO 75-1, -2
DTUL at 8.0 MPa	130	°C	ISO 75-1, -2



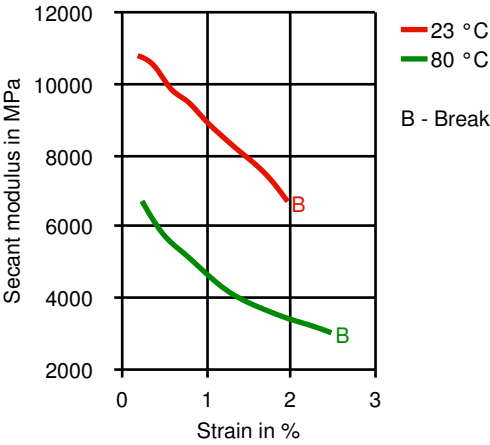
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Diagrams

Stress-strain



Secant modulus-strain



Typical injection moulding processing conditions

	Value	Unit	Test Standard
Pre Drying			
Necessary low maximum residual moisture content	0.2	%	-
Drying time	2	h	-
Drying temperature	90 - 100	°C	-
Temperature			
	Value	Unit	Test Standard
Feeding zone temperature	20 - 50	°C	-
Zone1 temperature	210 - 230	°C	-
Zone2 temperature	220 - 240	°C	-
Zone3 temperature	230 - 250	°C	-
Zone4 temperature	230 - 250	°C	-
Nozzle temperature	230 - 250	°C	-
Melt temperature	230 - 250	°C	-
Mold temperature	30 - 70	°C	-
Hot runner temperature	230 - 270	°C	-
Pressure			
	Value	Unit	Test Standard
Back pressure max.	30	bar	-
Speed			
	Value	Unit	Test Standard
Injection speed	slow	-	-
Screw Speed			
	Value	Unit	Test Standard
Screw speed diameter, 40mm	50	RPM	-
Screw speed diameter, 55mm	35	RPM	-
Screw speed diameter, 75mm	25	RPM	-

Other text information

Pre-drying

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

Longer pre-drying times/storage

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

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.



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

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

Characteristics

Product Categories

Glass reinforced

Delivery Form

Pellets

General Disclaimer

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products. The products mentioned herein are not intended for use in medical or dental implants.

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