CELSTRAN® PA66-GF40-02P11/15

CELSTRAN® Long Fibre

Material code according to ISO 1043-1: PA66

Heat stabilized Nylon 66 reinforced by 40 weight percent long glass fibers. 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.

Can be used for substituting die cast metal with the advantage of Weight reduction, no corrosion problems, no post treatment.

Product information

Resin Identification	PA66-LGF40		ISO 1043
Part Marking Code	>PA66-LGF40<		ISO 11469

Rheological properties

	dry/cond.		
Viscosity number	3880 / *	in³/lb	ISO 307, 1628

Typical mechanical properties

	dry/cond.		
Tensile modulus	1.99E6 / 1.45E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	27600 / 23200	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.6 / 2	%	ISO 527-1/-2
Flexural modulus	1.83E6 / 1.45E6	psi	ISO 178
Flexural strength	37700 / 36300	psi	ISO 178
Flexural strain at failure	2.2 / 3.2	%	ISO 178
Charpy impact strength, 23 °C	19 / 21.4	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30 °C	19.5 / -	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	10.9 / 8.56	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	10.9 / -	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23 °C	11.4 / 8.8	ftlb/in²	ISO 180/1A
Izod notched impact strength, -30 °C	16.6 / -	ftlb/in²	ISO 180/1A

Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	502 / *	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	491 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	464 / *	°F	ISO 75-1/-2

Physical/Other properties

	dry/cond.		
Density	0.0527 / -	lb/in³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	563	°F

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Min. melt temperature	545	°F
Max. melt temperature	581	°F
Max. screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	212	°F
Min. mold temperature	158	°F
Max. mold temperature	248	°F
Hold pressure range	7250 - 14500	psi
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Back pressure	435	psi

Extrusion

Drying Temperature	176 - 212	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.05	%
Melt Temperature Optimum	554	°F
Melt Temperature Range	536 - 572	°F

Characteristics

Processing	Injection Molding, Extrusion, Sheet Extrusion, Other Extrusion, Transfer Molding
Special characteristics	Heat stabilized or stable to heat

Additional information

Injection molding

Preprocessing

It is recommended to dry in a dehumidifying dryer: 4 hours at 80 °C.

Processing

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 continous plastification performance and thus a homogeneous melt.
- Apply higher temperature settings than for short fiber compounds

Melt temperature (in the screw anteroom) 300-315 °C
Mold surface temperature 90-120 °C

Processing Notes

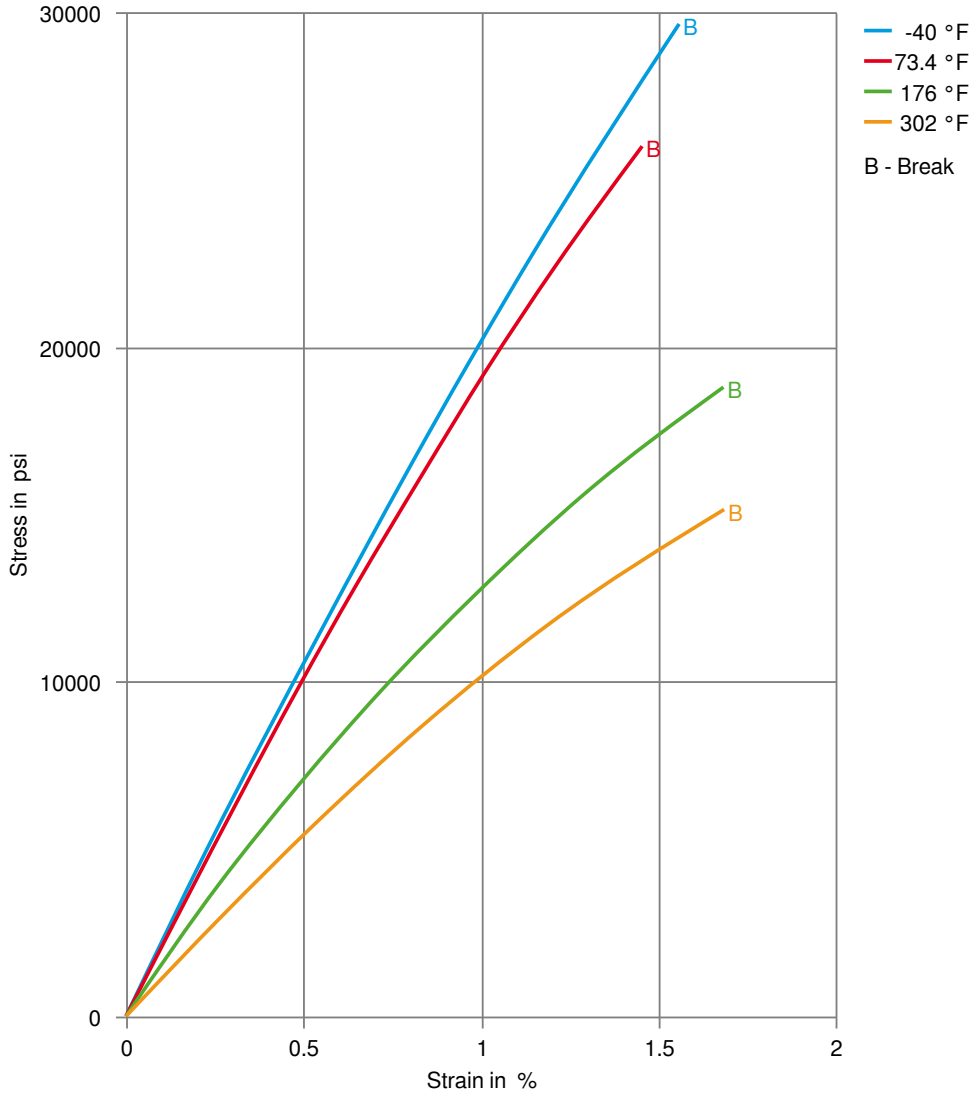
Pre-Drying

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CELSTRAN PA 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 =< -30 °C. The time between drying and processing should be as short as possible.

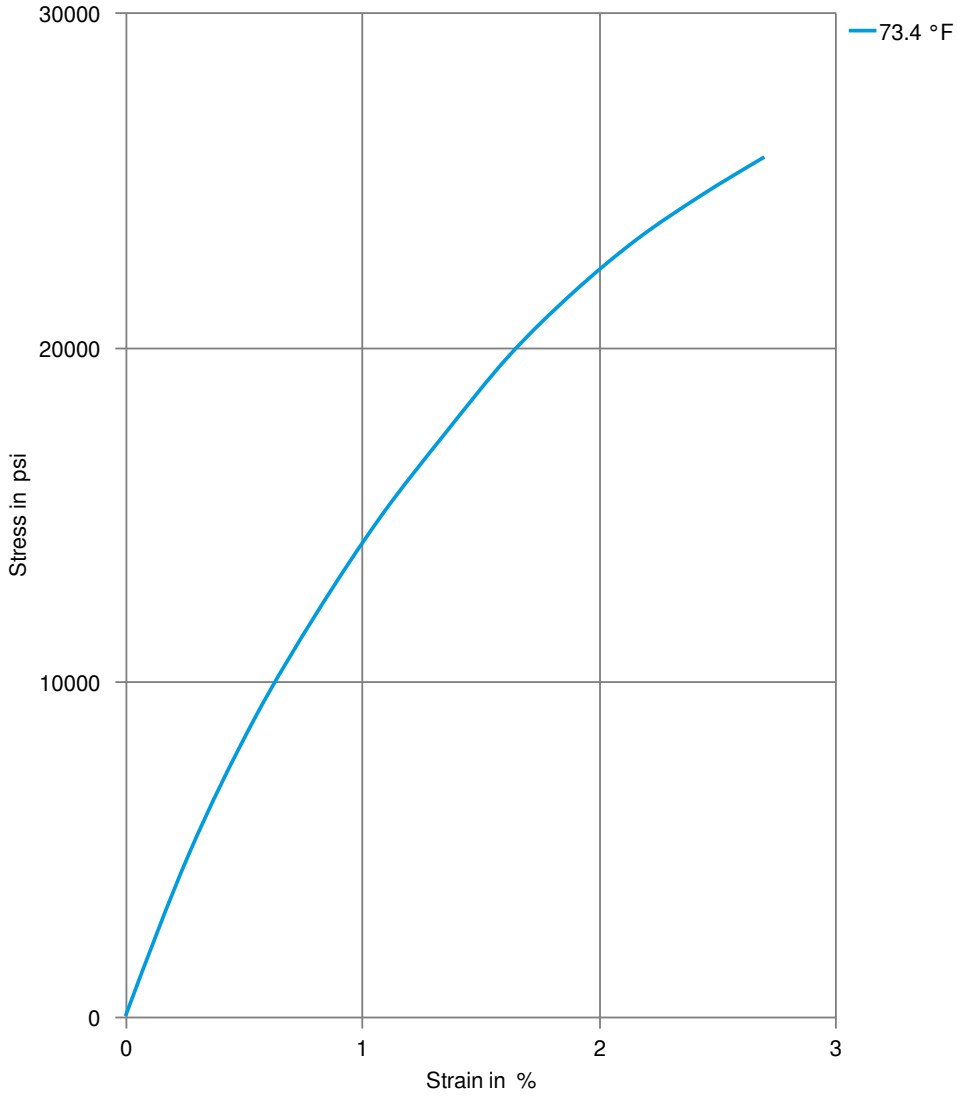
Stress-strain (dry)



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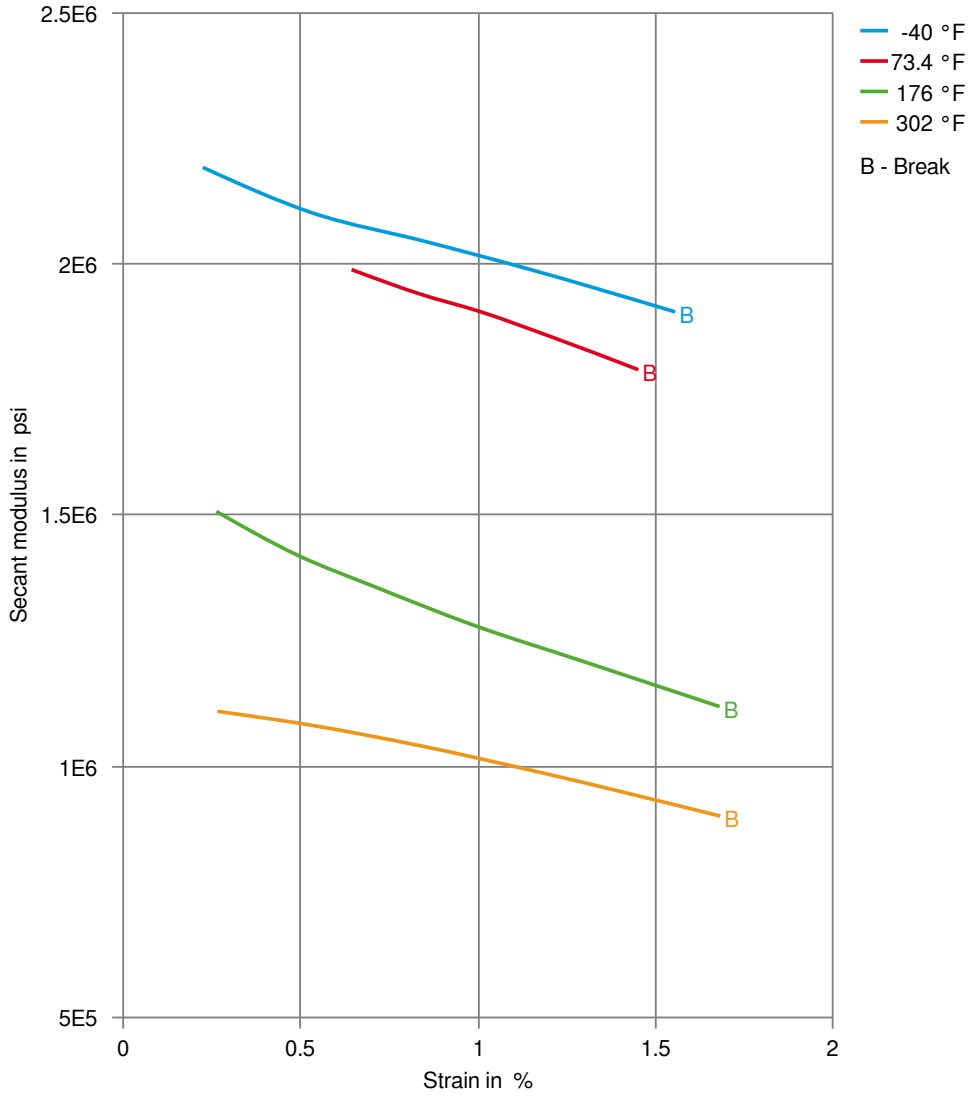
Stress-strain (cond.)



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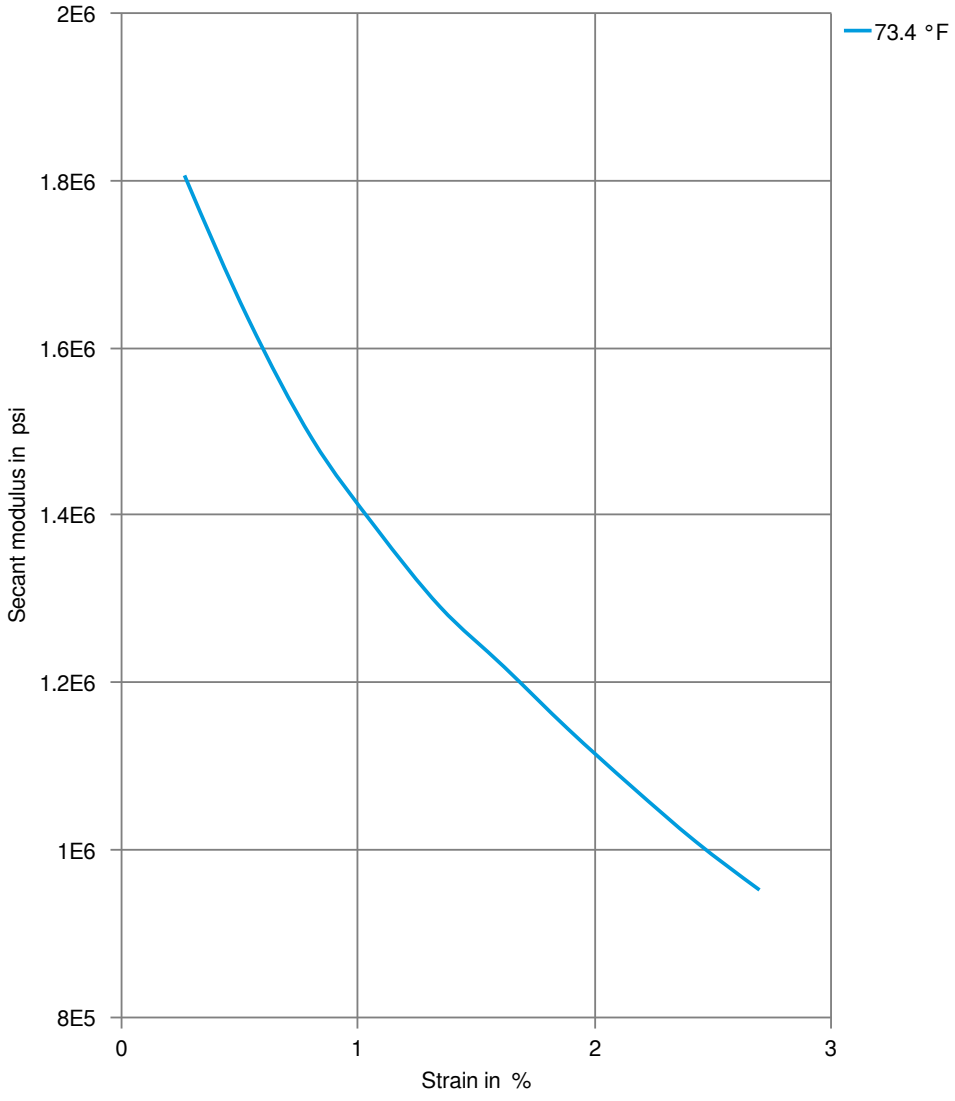
Secant modulus-strain (dry)



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Secant modulus-strain (cond.)



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