

CELANEX® 3100-2 | PBT | Glass Reinforced

Description

Celanex 3100 is a general purpose, 7.5% glass reinforced polybutylene terephthalate with a good balance of mechanical properties and processability. Celanex 3100 is a high flow material.

Physical properties	Value	Unit	Test Standard
Density	1350	kg/m ³	ISO 1183
Melt volume rate (MVR)	18	cm ³ /10min	ISO 1133
MVR test temperature	250	°C	ISO 1133
MVR test load	2.16	kg	ISO 1133
Mold shrinkage - parallel	.6-1.0	%	ISO 294-4
Mold shrinkage - normal	1.0-1.4	%	ISO 294-4
Humidity absorption (23°C/50%RH)	0.2	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile stress at break (5mm/min)	78	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	8	%	ISO 527-2/1A
Flexural modulus (23°C)	3550	MPa	ISO 178
Flexural strength (23°C)	105	MPa	ISO 178
Charpy impact strength @ 23°C	NB	kJ/m ²	ISO 179/1eU
Charpy impact strength @ -30°C	190	kJ/m ²	ISO 179/1eU
Charpy notched impact strength @ 23°C	6	kJ/m ²	ISO 179/1eA
Charpy notched impact strength @ -30°C	5.5	kJ/m ²	ISO 179/1eA
Unnotched impact str (Izod) @ 23°C	23	kJ/m ²	ISO 180/1U
Notched impact strength (Izod) @ 23°C	3.8	kJ/m ²	ISO 180/1A

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	225	°C	ISO 11357-1,-2,-3
Glass transition temperature (10°C/min)	60	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	143	°C	ISO 75-1/-2
DTUL @ 0.45 MPa	206	°C	ISO 75-1/-2
Vicat softening temperature B50 (50°C/h 50N)	185	°C	ISO 306
Coeff.of linear therm. expansion (parallel)	1.3	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	22	%	ISO 4589
Flammability at thickness h	HB	class	UL94
thickness tested (h)	0.71	mm	UL94

Electrical properties	Value	Unit	Test Standard
Relative permittivity - 100 Hz	4	-	IEC 60250
Relative permittivity - 1 MHz	3.6	-	IEC 60250
Dissipation factor - 100 Hz	13	E-4	IEC 60250
Dissipation factor - 1 MHz	200	E-4	IEC 60250
Volume resistivity	>1E11	Ohm*m	IEC 60093
Surface resistivity	>1E15	Ohm	IEC 60093
Electric strength	23	kV/mm	IEC 60243-1

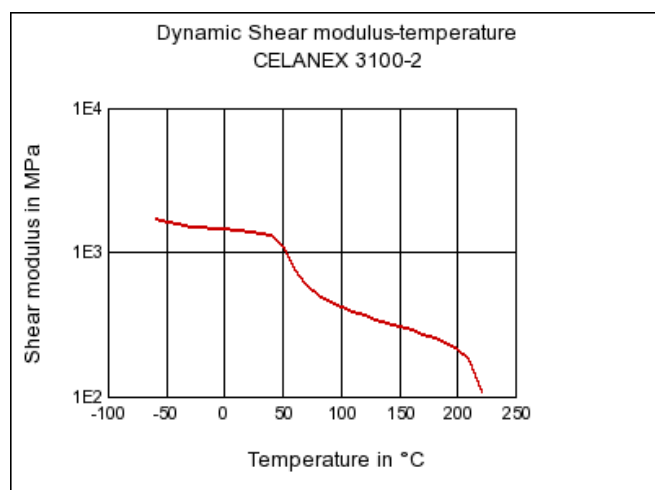
Test specimen production	Value	Unit	Test Standard
Processing conditions acc. ISO	7792-2	-	Internal
Injection molding melt temperature	260	°C	ISO 294

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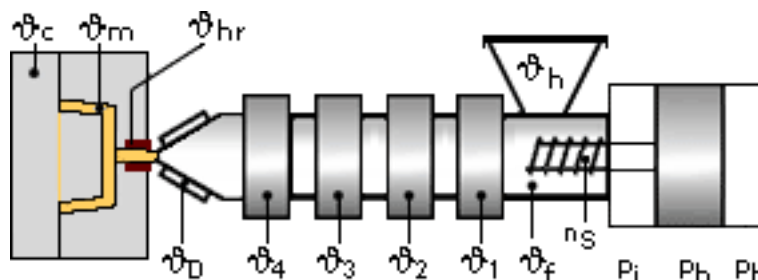
Test specimen production	Value	Unit	Test Standard
Injection molding mold temperature	82	°C	ISO 294
Injection molding flow front velocity	300	mm/s	ISO 294
Injection molding hold pressure	48	MPa	ISO 294

Rheological Calculation properties	Value	Unit	Test Standard
Density of melt	1110	kg/m ³	Internal
Thermal conductivity of melt	0.131	W/(m K)	Internal
Specific heat capacity of melt	1970	J/(kg K)	Internal
Ejection temperature	219	°C	Internal

Dynamic Shear modulus-temperature



Typical injection moulding processing conditions



Pre Drying:

Necessary low maximum residual moisture content: 0.02%

To avoid hydrolytic degradation during processing, CELANEX resins have to be dried to a moisture level equal to or less than 0.02%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <math><-40^{\circ}\text{F}</math> (-40°C) at 250°F (121°C) for 4 hours.

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For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.

Drying time: 4 h

Drying temperature: 120 - 130 °C

Temperature:

	ϑ _{Manifold}	ϑ _{Mold}	ϑ _{Melt}	ϑ _{Nozzle}	ϑ _{Zone4}	ϑ _{Zone3}	ϑ _{Zone2}	ϑ _{Zone1}	ϑ _{Feed}	ϑ _{Hopper}
min (°C)	250	65	235	250	240	235	235	230	230	20
max (°C)	260	93	260	260	260	250	250	240	240	50

Speed:

Injection speed: medium-fast

Injection Molding

Rear Temperature	450-470(230-240)	deg F (deg C)
Center Temperature	460-480(235-250)	deg F (deg C)
Front Temperature	470-500(240-260)	deg F (deg C)
Nozzle Temperature	480-500(250-260)	deg F (deg C)
Melt Temperature	460-500(235-260)	deg F (deg C)
Mold Temperature	150-200(65-93)	deg F (deg C)
Back Pressure	0-50	psi
Screw Speed	Medium	
Injection Speed	Fast	

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, in particular for flame retardant grades. Up to 25% clean and dry regrind may be used.

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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.

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