

CELANEX® 3309HR

CELANEX® PBT

Celanex 3309HR is a non-lubricated, 30% fiberglass reinforced Polybutylene Terephthalate which has excellent hydrolysis resistance, mechanical properties and processability.

Product information

Resin Identification	PBT-GF30	ISO 1043
Part Marking Code	>PBT-GF30<	ISO 11469

Rheological properties

Melt mass-flow rate	17 g/10min	ISO 1133
Melt mass-flow rate, Temperature	250 °C	
Melt mass-flow rate, Load	2.16 kg	
Moulding shrinkage range, parallel	0.3 - 0.7 %	ISO 294-4, 2577
Moulding shrinkage range, normal	0.7 - 1.1 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	9200 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	139 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.7 %	ISO 527-1/-2
Flexural modulus	8700 MPa	ISO 178
Flexural strength	210 MPa	ISO 178
Charpy impact strength, 23°C	46 kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	45 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	8.5 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	8.5 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	12 kJ/m ²	ISO 180/1A
Izod impact strength, 23°C	35 kJ/m ²	ISO 180/1U
Poisson's ratio	0.389 ^[OT]	
Shore D hardness, 15s	85	ISO 48-4 / ISO 868

[OT]: One time tested

Thermal properties

Melting temperature, 10°C/min	225 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	205 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	225 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	220 °C	ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C	26 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	20 ^[1] E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	77 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	136 ^[1] E-6/K	ISO 11359-1/-2

[1]: 23°C to 120°C

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Flammability

Burning Behav. at thickness h	HB class	IEC 60695-11-10
Thickness tested	0.71 mm	IEC 60695-11-10

Electrical properties

Relative permittivity, 100Hz	4.5	IEC 62631-2-1
Relative permittivity, 1MHz	4.1	IEC 62631-2-1
Dissipation factor, 100Hz	22 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	160 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	31 kV/mm	IEC 60243-1
Comparative tracking index	425	IEC 60112

Physical/Other properties

Humidity absorption, 2mm	0.16 %	Sim. to ISO 62
Density	1530 kg/m ³	ISO 1183

Injection

Drying Recommended	yes
Drying Temperature	120 °C
Drying Time, Dehumidified Dryer	4 h
Processing Moisture Content	≤0.02 %
Melt Temperature Optimum	250 °C
Min. melt temperature	240 °C
Max. melt temperature	260 °C
Screw tangential speed	0.1 - 0.3 m/s
Mold Temperature Optimum	80 °C
Min. mould temperature	60 °C
Max. mould temperature	130 °C
Ejection temperature	184 °C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Special characteristics	Hydrolysis resistant

Additional information

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%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-30 °F (-34 °C) at 250 °F (121 °C) for 4 hours.

Processing

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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.

Processing Notes

Pre-Drying

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 <-40°F (-40°C) at 250°F (121°C) for 4 hours.

Storage

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

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Continental	TST N 055 47.27	(TST N 055 47.27-000)
Ford	WSS-M4D929-A3	Natural
Ford	WSS-M4D929-A3	Black
Hyundai	MS941-03 Type F-5	
Li Auto	Q/LiA5310038	2021 (V2)
Nissan	PBTP(G30)-1NX-1	
Renault	No Spec, Special Part Approval, See Your CE Account Manager.	
VW Group	VW 50136	