Celanese
The chemistry inside innovation™

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	15	g/10min	ISO 1133
Melt mass-flow rate, Temperature	482	°F	
Melt mass-flow rate, Load	4.76	lb	
Molding shrinkage range, parallel	0.3 - 0.7	%	ISO 294-4, 2577
Molding shrinkage range, normal	0.7 - 1.1	%	ISO 294-4, 2577

Typical mechanical properties

Shore D hardness, 15s	85		ISO 48-4 / ISO 868
Tensile modulus	1.45E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	20200	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.8	%	ISO 527-1/-2
Flexural modulus	1.36E6	psi	ISO 178
Flexural strength	31900	psi	ISO 178
Charpy impact strength, 23°C	21.9	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	21.4	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	4.04	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.04	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	5.71	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	16.6	ftlb/in²	ISO 180/1U
Poisson's ratio	0.389[OT]		

[OT]: One time tested

Thermal properties

Melting temperature, 10°C/min	437	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	140	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	401	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	437	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	428	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.11[1]	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, -40-23°C	0.144	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.756[1]	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, -40-23°C	0.428	E-4/°F	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	0.0280	in	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	787	kV/in	IEC 60243-1
Comparative tracking index	425		IEC 60112

Physical/Other properties

Humidity absorption, 2mm	0.16	%	Sim. to ISO 62
Density	0.0552	lb/in^3	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	248	°F
Drying Time, Dehumidified Dryer	4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	482	°F
Min. melt temperature	464	°F
Max. melt temperature	500	°F
Max. screw tangential speed	0.1 - 0.3	m/s
Mold Temperature Optimum	176	°F
Min. mold temperature	140	°F
Max. mold temperature	266	°F
Ejection temperature	363	°F

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	

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Characteristics

Processing	Injection Molding
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

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.

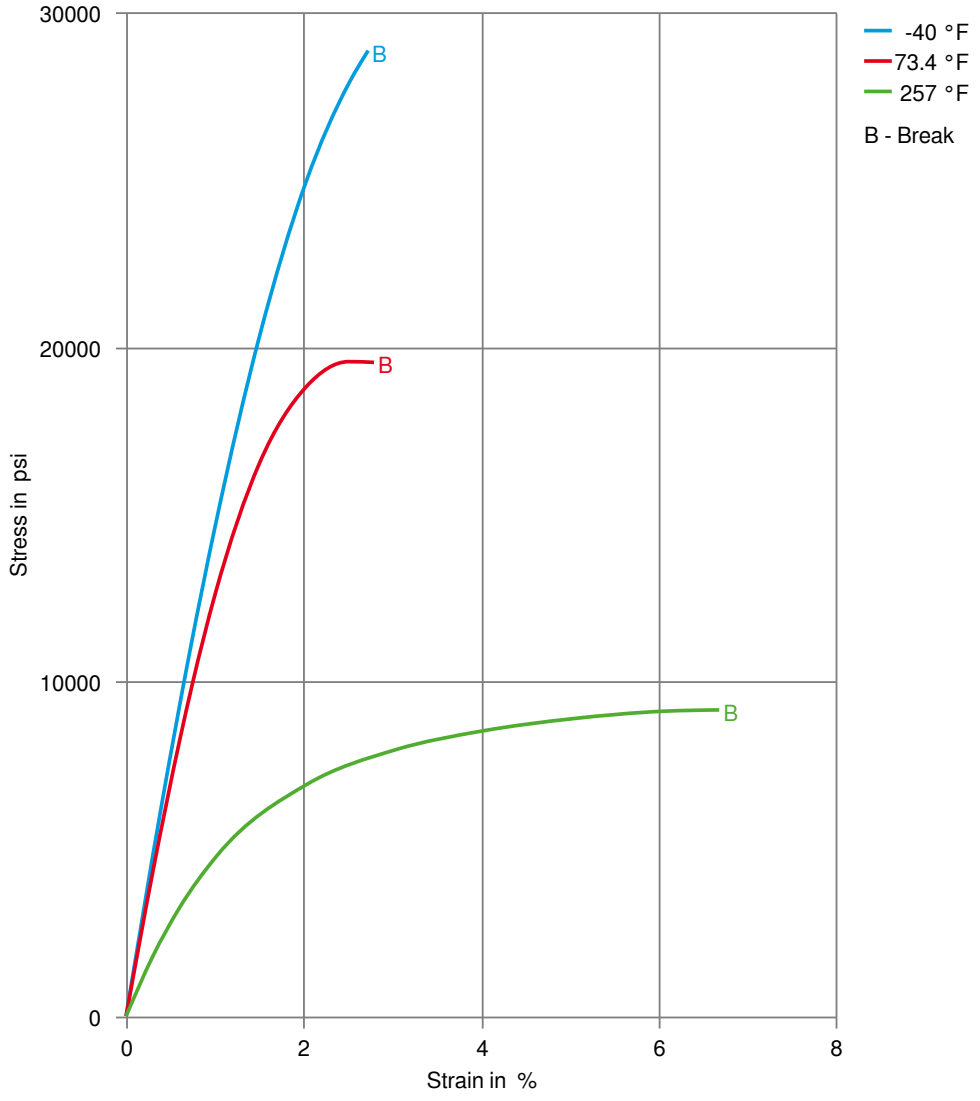
Storage

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

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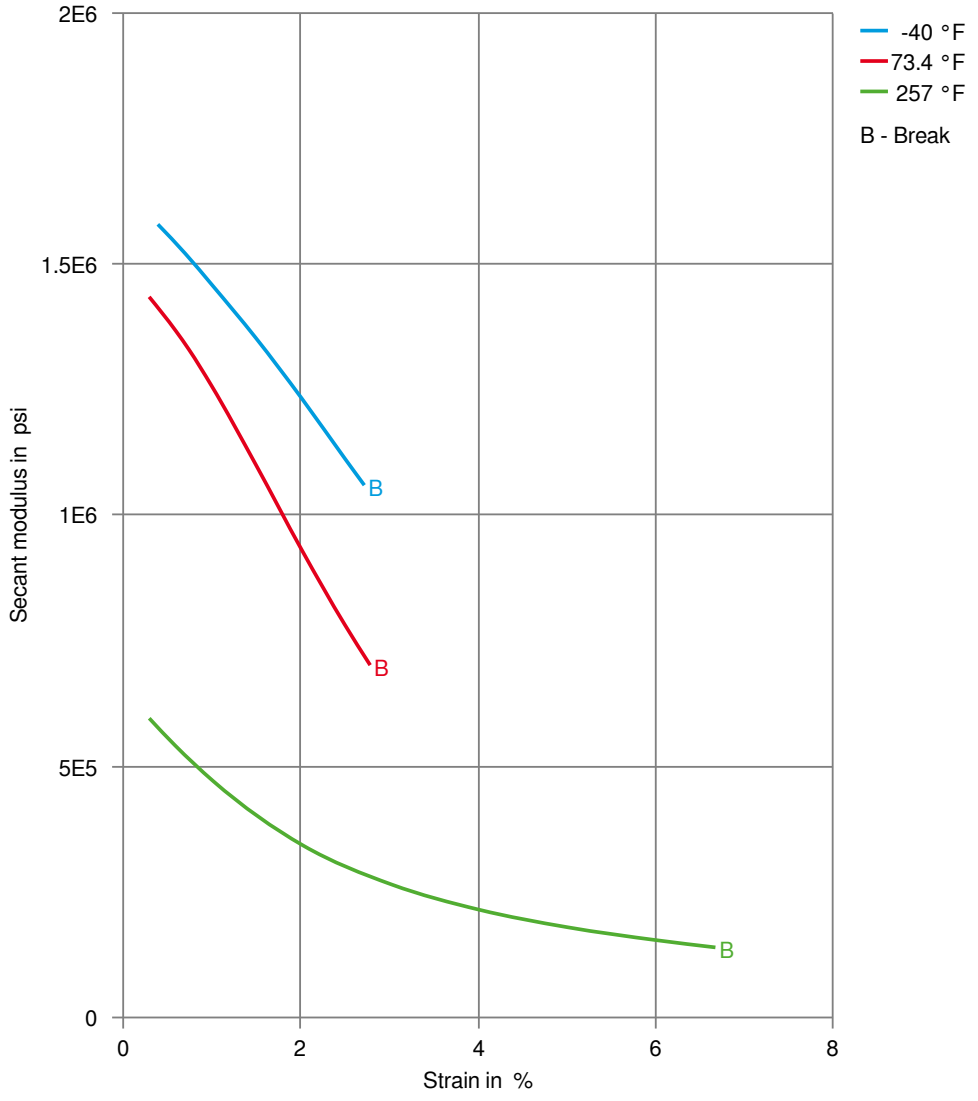
Stress-strain



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Secant modulus-strain



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