CELANEX® 3201

CELANEX® PBT

Celanex 3201 is a 15% glass reinforced general purpose thermoplastic polyester resin that offers a superior combination of mechanical, electrical, and thermal properties, together with outstanding processability, good chemical resistance, and toughness.

Product information

Resin Identification	PBT-GF15		ISO 1043
Part Marking Code	>PBT-GF15<		ISO 11469

Rheological properties

Melt mass-flow rate	19	g/10min	ISO 1133
Melt mass-flow rate, Temperature	482	°F	
Melt mass-flow rate, Load	4.76	lb	
Viscosity number	3040	in^3/lb	ISO 307, 1628
Molding shrinkage range, parallel	0.5 - 0.7	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	870000	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	14500	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.5	%	ISO 527-1/-2
Flexural modulus	812000	psi	ISO 178
Flexural strength	23200	psi	ISO 178
Charpy notched impact strength, 23°C	3.09	$ftlb/in^2$	ISO 179/1eA
Izod notched impact strength, 23°C	3.33	$ftlb/in^2$	ISO 180/1A
Izod notched impact strength, -30°C	3.33	$ftlb/in^2$	ISO 180/1A

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	383	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	424	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	428	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.19	E-4/°F	ISO 11359-1/-2

Flammability

Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.0335	in	IEC 60695-11-10

Physical/Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Water absorption, 2mm	0.5	%	Sim. to ISO 62
Water absorption, Immersion 24h	0.07	%	Sim. to ISO 62
Density	0.0509	lb/in^3	ISO 1183

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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

Characteristics

Processing	Injection Molding

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.

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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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