Celanese
The chemistry inside innovation™

CELANEX® 3226

CELANEX® PBT

Celanex 3226 is a non-exuding, 20% glass-filled, flame retarded polybutylene terephthalate (PBT) which has an excellent balance of mechanical properties and processability. It is well suited for electrical connectors and maintains its UL ratings with up to 50% regrind.

Product information

Resin Identification	PBT-GF20 FR(17)	ISO 1043
Part Marking Code	>PBT-GF20 FR(17)<	ISO 11469

Rheological properties

Melt volume-flow rate	9	cm^3/10min	ISO 1133
Temperature	250	°C	
Load	2.16	kg	
Moulding shrinkage range, parallel	0.3 - 0.5	%	ISO 294-4, 2577
Moulding shrinkage range, normal	0.8 - 1.1	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	7200	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	115	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.5	%	ISO 527-1/-2
Flexural modulus	7200	MPa	ISO 178
Flexural strength	170	MPa	ISO 178
Flexural strain at failure	3	%	ISO 178
Charpy impact strength, 23°C	35	kJ/m^2	ISO 179/1eU
Charpy impact strength, -30°C	35	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	7	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	6.5	kJ/m^2	ISO 179/1eA
Ball indentation hardness, H 961/30	208	MPa	ISO 2039-1
Poisson's ratio	0.35[C]		

[C]: Calculated

Thermal properties

Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	203	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	220	°C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	135	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	220	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	35	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	35	E-6/K	ISO 11359-1/-2

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	1.6	mm	IEC 60695-11-10
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.38	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Oxygen index	30	%	ISO 4589-1/-2

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Electrical properties

Relative permittivity, 1MHz	3.9		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	32	kV/mm	IEC 60243-1
Comparative tracking index	225		IEC 60112
Arc Resistance	87	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Water absorption, 2mm	0.4	%	Sim. to ISO 62
Density	1600	kg/m³	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

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent, Flame retardant
Special characteristics	Flame retardant, Heat stabilised or stable to heat

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)

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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
Li Auto	Q/LiA5310038	2021 (V2)