CELANEX® XFR 6852 GF30

CELANEX® PBT

Celanex XFR 6852 GF30 is a halogen- and antimony-free flame retardant (V-0 @ 0.4 mm) 26% glass reinforced PBT grade with good processability and no corrosive emissions during processing. It is suitable for parts requiring superior tracking resistance (CTI 600V), toughness, and flame retardancy at < 0.75 mm wall thickness and it is well suited for electrical connector applications, especially with low creepage distance. Further, is has an excellent GWIT rating of >=775°C at all thicknesses. The product is WEEE and RoHS compliant.

Product information

Resin Identification	PBT-GF26 FR(40+30)	ISO 1043
Part Marking Code	>PBT-GF26 FR(40+30)<	ISO 11469

Rheological properties

Melt volume-flow rate	14	cm^3/10min	ISO 1133
Temperature	482	°F	
Load	11	lb	
Molding shrinkage range, parallel	0.3 - 0.5	%	ISO 294-4, 2577
Molding shrinkage range, normal	0.8 - 1	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	1.45E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	14500	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.8	%	ISO 527-1/-2
Flexural modulus	1.52E6	psi	ISO 178
Flexural strength	24700	psi	ISO 178
Flexural strain at failure	2.2	%	ISO 178
Charpy impact strength, 23°C	19	$ftlb/in^2$	ISO 179/1eU
Charpy notched impact strength, 23°C	3.57	$ftlb/in^2$	ISO 179/1eA
Izod notched impact strength, 23°C	3.57	$ftlb/in^2$	ISO 180/1A

Thermal properties

Melting temperature, 10°C/min	437	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	410	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	405	°F	ISO 306
Ball pressure test	432	°F	IEC 60695-10-2
RTI, electrical, 0.75mm	284	°F	UL 746B
RTI, electrical, 1.5mm	284	°F	UL 746B
RTI, electrical, 3.0mm	284	°F	UL 746B
RTI, impact, 0.75mm	266	°F	UL 746B
RTI, impact, 1.5mm	266	°F	UL 746B
RTI, impact, 3.0mm	266	°F	UL 746B
RTI, strength, 0.75mm	284	°F	UL 746B
RTI, strength, 1.5mm	284	°F	UL 746B
RTI, strength, 3.0mm	284	°F	UL 746B

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Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	0.0591	in	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.0157	in	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. 5V at thickness h	5VA	class	IEC 60695-11-20
Thickness tested	0.0591	in	IEC 60695-11-20
UL recognition	yes		UL 94
Glow Wire Flammability Index, 0.4mm	1560	°F	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.0mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1760	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	1470	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	1430	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	1470	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	1430	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	1560	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	1560	°F	IEC 60695-2-13
Hot Wire Ignition, 0.75mm	PLC 1	s	UL 746A
Hot Wire Ignition, 1.5mm	PLC 0	s	UL 746A
Hot Wire Ignition, 3mm	PLC 0	s	UL 746A
FMVSS Class	SE/NBR		ISO 3795 (FMVSS 302)

Electrical properties

Comparative tracking index	600		IEC 60112
Comparative tracking index, 23 °C	0	PLC	UL 746A
High Amperage Arc Ignition Category, 1.5 mm	PLC 0	class	UL 746A

Physical/Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Density	0.0552	lb/in³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	248	°F
Drying Time, Dehumidified Dryer	4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	509	°F
Min. melt temperature	491	°F
Max. melt temperature	527	°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

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Characteristics

Processing	Injection Molding
Additives	Release agent, Flame retardant, Non-halogenated/Red phosphorus free flame retardant
Special characteristics	Flame retardant

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 <-40°F (-40°C) at 250-285°F (120-140°C) for 6-4 hours.

Processing

Melt Temperature. 250-265 °C
Mold Temperature *): 75-90 °C
Maximum Barrel Residence Time **): 5-10 min
Injection Speed: high
Peripheral screw speed: max.0,25 m/sec
Back Pressure: 10-30 bar
Injection Pressure: 600-1000 bar
Holding Pressure: 400-800 bar

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. For grades containing flame retardants, a maximum temperature of 265 °C should not be exceeded.

Ticona recommends only externally heated hot runner systems.

*) For moulded parts with especially high requirements to the surface quality or dimensional stability, a mold temperature of up to 110 °C can be advantageous.

**) If the cylinder temperatures are higher than the recommended maximum temperatures, the max. residence time in the barrel has to be reduced.

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 250-285°F (140 - 120°C) for 4 - 6 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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