

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, it has an excellent GWIT rating of $\geq 775^{\circ}\text{C}$ 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	250 °C	
Load	5 kg	
Moulding shrinkage range, parallel	0.3 - 0.5 %	ISO 294-4, 2577
Moulding shrinkage range, normal	0.8 - 1 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	10000 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	100 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.8 %	ISO 527-1/-2
Flexural modulus	10500 MPa	ISO 178
Flexural strength	170 MPa	ISO 178
Flexural strain at failure	2.2 %	ISO 178
Charpy impact strength, 23°C	40 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	7.5 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	7.5 kJ/m ²	ISO 180/1A
Poisson's ratio	0.34 ^[C]	

[C]: Calculated

Thermal properties

Melting temperature, 10°C/min	225 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	210 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	207 °C	ISO 306
Ball pressure test	222 °C	IEC 60695-10-2
RTI, electrical, 0.75mm	140 °C	UL 746B
RTI, electrical, 1.5mm	140 °C	UL 746B
RTI, electrical, 3.0mm	140 °C	UL 746B
RTI, impact, 0.75mm	130 °C	UL 746B
RTI, impact, 1.5mm	130 °C	UL 746B
RTI, impact, 3.0mm	130 °C	UL 746B
RTI, strength, 0.75mm	140 °C	UL 746B
RTI, strength, 1.5mm	140 °C	UL 746B
RTI, strength, 3.0mm	140 °C	UL 746B

CELANEX® XFR 6852 GF30

CELANEX® PBT

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0 class	IEC 60695-11-10
Thickness tested	1.5 mm	IEC 60695-11-10
UL recognition	yes	UL 94
Burning Behav. at thickness h	V-0 class	IEC 60695-11-10
Thickness tested	0.4 mm	IEC 60695-11-10
UL recognition	yes	UL 94
Burning Behav. 5V at thickness h	5VA class	IEC 60695-11-20
Thickness tested	1.5 mm	IEC 60695-11-20
UL recognition	yes	UL 94
Glow Wire Flammability Index, 0.4mm	850 °C	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 1.0mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	775 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	775 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	800 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	775 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	850 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	850 °C	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

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	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	265 °C
Min. melt temperature	255 °C
Max. melt temperature	275 °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

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CELANEX® PBT

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Flame retardant, Non-halogenated/Red phosphorous 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.

CELANEX® XFR 6852 GF30

CELANEX® PBT

Storage

For subsequent storage of the material in the dryer until processed (≤ 60 h) it is necessary to lower the temperature to $<100^{\circ}\text{C}$.