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CELANEX® XFR 6842 GF30

CELANEX® PBT

Celanex XFR 6842 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 enhanced tracking resistance, toughness, and flame retardancy at < 0.75 mm wall thickness and it is well suited for electrical connector applications where its UL approved 50% regrind use capability allows maximum use of purchased product. Further, is has an excellent GWIT rating of >=775°C at all thicknesses including a VDE listing at 0.4 and 0.8mm. 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	15	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	102	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2	%	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
Hardness, Rockwell, M-scale	83		ISO 2039-2
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

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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
Oxygen index	32	%	ISO 4589-1/-2
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
FMVSS Class	SE/NBR		ISO 3795 (FMVSS 302)
Railway classification	R23		EN 45545-2
Railway classification rating	HL2		EN 45545-2
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

Relative permittivity, 1MHz	3.6		IEC 62631-2-1
Dissipation factor, 1MHz	140	E-4	IEC 62631-2-1
Volume resistivity	5E14	Ohm.m	IEC 62631-3-1
Volume resistivity, at high temperature	4E9	Ohm.m	IEC 62631-3-1
Temperature	150	°C	
Surface resistivity	3.4E16	Ohm	IEC 62631-3-2
Surface resistivity, at high temperature	1.75E14	Ohm	IEC 62631-3-2
Temperature	150	°C	
Electric strength	29	kV/mm	IEC 60243-1
Comparative tracking index	525		IEC 60112
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/m³	ISO 1183

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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
Ejection temperature	190	°C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent, Flame retardant, Non-halogenated/Red phosphorous free flame retardant
Special characteristics	Flame retardant, Heat stabilised or stable to heat, Colourable

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 4-6 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.

Celanese recommends only externally heated hot runner systems.

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*) For moulded parts with especially high requirements to the surface quality or dimensional stability, a mold temperature of up to 100 °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 (120 - 140°C) for 4 - 6 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.