CELANEX® XFR 6842 GF30 ECO-B 252

CELANEX® PBT

Celanex® XFR® 6842 GF30 ECO-B 252 is a halogen and antimony free flame retardant (UL94 V-0 @ 0.4 mm for ALL colors) 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 for all colors. The product is WEEE and RoHS compliant.
Celanex® XFR® 6842 GF30 ECO-B 252 incorporates 25% of biobased content derived from waste by weight in the finished product through mass balance allocation. The product is a drop-in replacement to the standard grade with the same performance and processing properties and contributes to the displacement of virgin fossil fuel resources. The biobased source and allocated content in the product are certified according to ISCC PLUS mass balance approach.

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	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	14800	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	2	%	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
Hardness, Rockwell, M-scale	83		ISO 2039-2

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
Oxygen index	32	%	ISO 4589-1/-2
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

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	302	°F	
Surface resistivity	3.4E16	Ohm	IEC 62631-3-2
Surface resistivity, at high temperature	1.75E14	Ohm	IEC 62631-3-2
Temperature	302	°F	
Electric strength	737	kV/in	IEC 60243-1
Comparative tracking index	500		IEC 60112
Comparative tracking index, 23 °C	1	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/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
Additives	Release agent, Flame retardant, Non-halogenated/Red phosphorus free flame retardant
Special characteristics	Flame retardant, Heat stabilized or stable to heat, Colorable
Sustainability	Bio-Content

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.

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*) For moulded parts with especially high requirements to the surface quality or dimensional stability, a mold temperature of up to 120 °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.

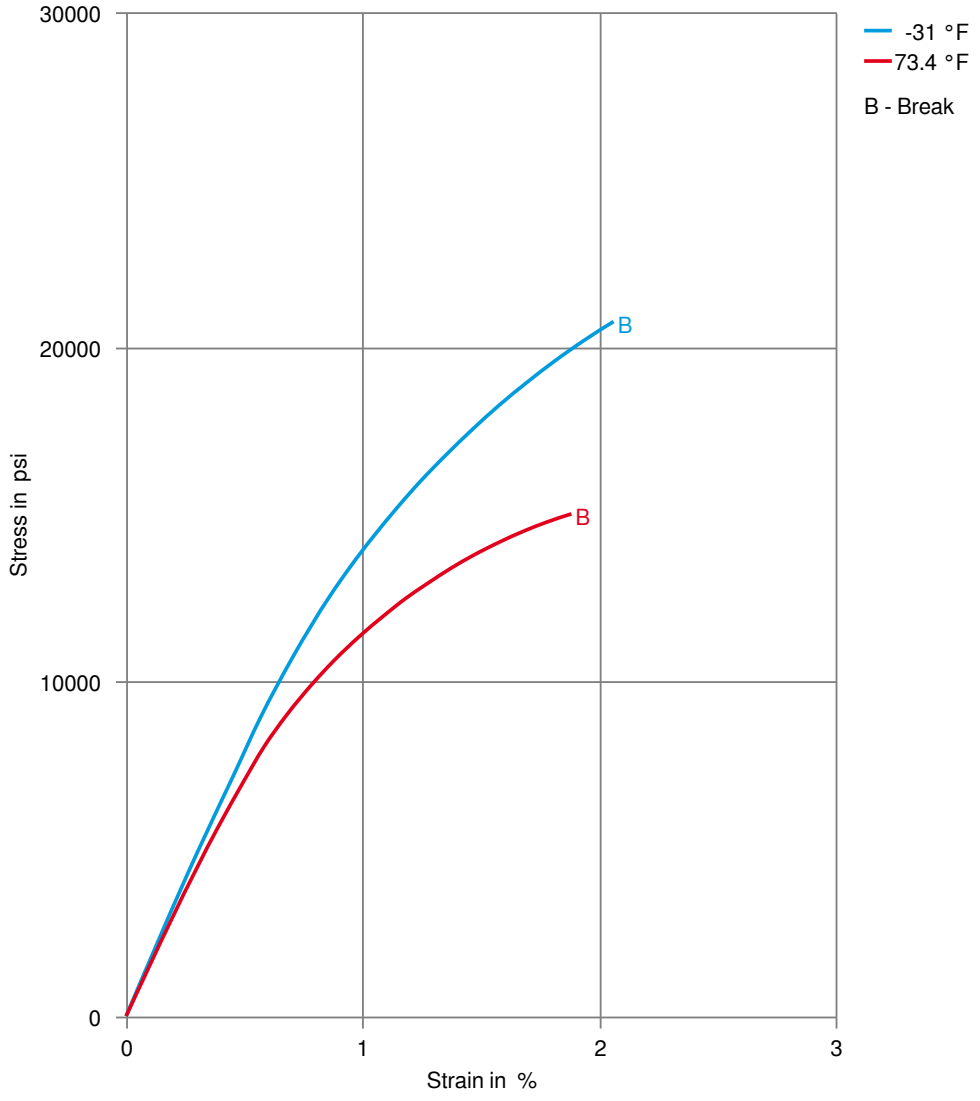
Storage

For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to <100° C.

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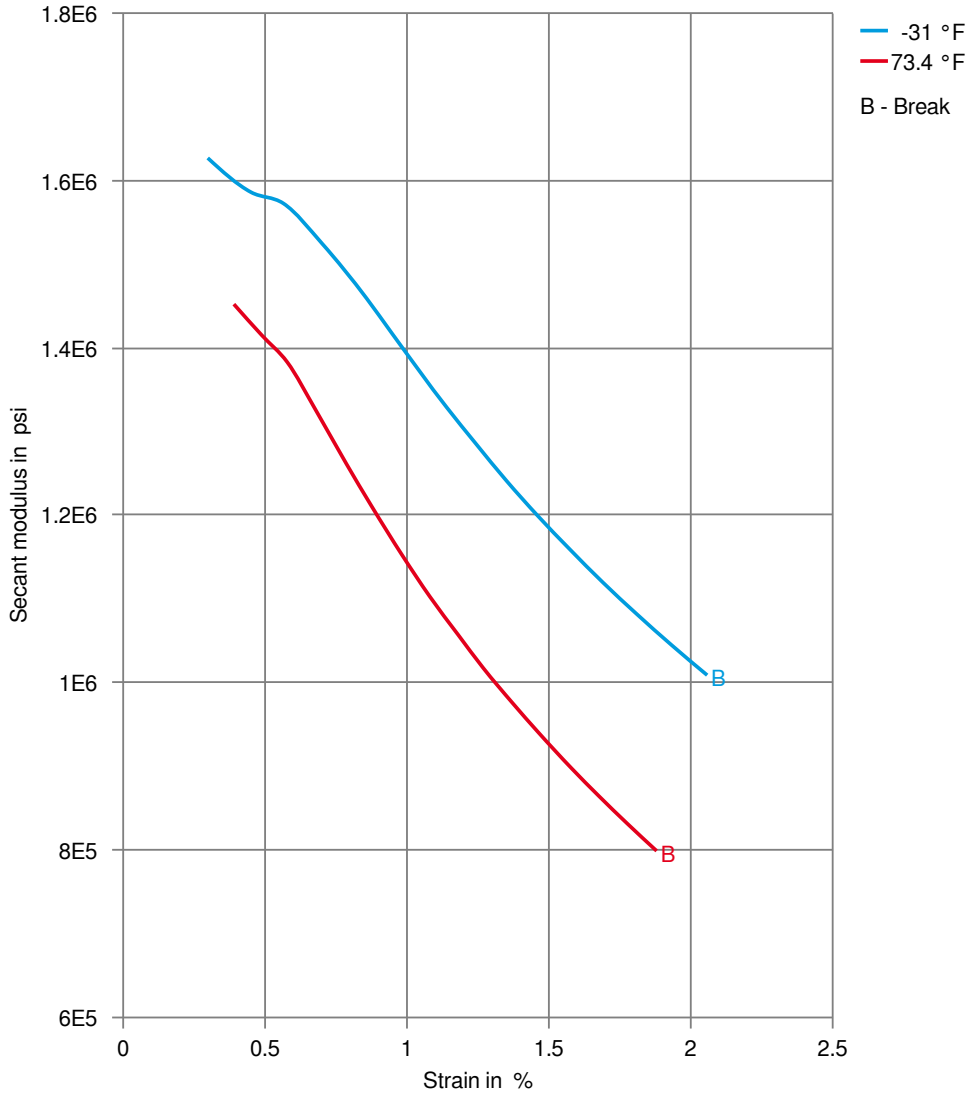
Stress-strain



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Secant modulus-strain



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