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## CELANEX® XFR6842GF30 ECO-B252

**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<sup>®</sup> XFR<sup>®</sup> 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 <sup>3</sup> /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/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	7.5	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	7.5	kJ/m <sup>2</sup>	ISO 180/1A
Hardness, Rockwell, M-scale	83		ISO 2039-2
Poisson's ratio	0.34 <sup>[C]</sup>		
[C]: Calculated			

#### Thermal properties

225	°C	ISO 11357-1/-3
210	°C	ISO 75-1/-2
207	°C	ISO 306
222	°C	IEC 60695-10-2
140	°C	UL 746B
140	°C	UL 746B
140	°C	UL 746B
130	°C	UL 746B
130	°C	UL 746B
130	°C	UL 746B
140	°C	UL 746B
	210 207 222 140 140 130 130	225 °C 210 °C 207 °C 222 °C 140 °C 140 °C 130 °C 130 °C 130 °C 140 °C

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### **CELANEX® PBT**

RTI, strength, 1.5mm RTI, strength, 3.0mm	140 140		UL 746B UL 746B
Flammability			
Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	-	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		IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	960		IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960		IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	775		IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	775		IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	800		IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	775		IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	850		IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	850	°C	IEC 60695-2-13
FMVSS Class	SE/NBR		ISO 3795 (FMVSS 302)
Hot Wire Ignition, 0.75mm	PLC 1		UL 746A
Hot Wire Ignition, 1.5mm	PLC 0		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		kV/mm	IEC 60243-1
Comparative tracking index	525		IEC 60112
High Amperage Arc Ignition Category, 1.5 mm	PLC 0	class	UL 746A

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#### **CELANEX® PBT**

#### Physical/Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Density	1530 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, Non-halogenated/Red phosphorous free flame

retardant

Special characteristics Flame retardant, Heat stabilised or stable to heat, Colourable

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  $^{\circ}$ F (-40  $^{\circ}$ C) at 250-285  $^{\circ}$ F (120-140  $^{\circ}$ 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

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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 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  $^{\circ}$ F (-40  $^{\circ}$ C) at 250-285  $^{\circ}$ F (120 - 140  $^{\circ}$ C) for 4 - 6 hours.

#### Storage

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

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