

# 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, it has an excellent GWIT rating of  $\geq 775^{\circ}\text{C}$  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 <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/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	7.5 kJ/m <sup>2</sup>	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

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

# CELANEX® XFR6842GF30 ECO-B252

## CELANEX® PBT

RTI, strength, 1.5mm	140 °C	UL 746B
RTI, strength, 3.0mm	140 °C	UL 746B

### 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)
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

# CELANEX® XFR6842GF30 ECO-B252

## CELANEX® PBT

### Physical/Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Density	1530 kg/m <sup>3</sup>	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 °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

# CELANEX® XFR6842GF30 ECO-B252

## CELANEX® PBT

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 °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.