Celanese
The chemistry inside innovation™

CELANEX® XFR 4840

CELANEX® PBT

Celanex XFR 4840 is an unreinforced, flame retardant PBT grade featuring a halogen and antimony free flame retardant system. It is UL certified to be V-0 at 0.8 mm in all colors. Our proprietary flame retardant system enables a combination of excellent mechanical properties, flame retardant efficiency and processability. The product is WEEE and RoHS compliant.

Product information

Resin Identification	PBT FR(40)	ISO 1043
Part Marking Code	>PBT FR(40)<	ISO 11469

Rheological properties

Melt volume-flow rate	10	cm^3/10min	ISO 1133
Temperature	250	°C	
Load	2.16	kg	
Moulding shrinkage range, parallel	1.8 - 2.2	%	ISO 294-4, 2577
Moulding shrinkage range, normal	1.6 - 1.8	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	3250	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	50	MPa	ISO 527-1/-2
Tensile stress at break, 50mm/min	45	MPa	ISO 527-1/-2
Tensile strain at break, 50mm/min	12	%	ISO 527-1/-2
Charpy impact strength, 23°C	32	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	3	kJ/m^2	ISO 179/1eA
Ball indentation hardness, H 961/30	160	MPa	ISO 2039-1
Poisson's ratio	0.37[C]		

[C]: Calculated

Thermal properties

Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	70	°C	ISO 75-1/-2
RTI, electrical, 0.75mm	130	°C	UL 746B
RTI, electrical, 1.5mm	130	°C	UL 746B
RTI, electrical, 3.0mm	130	°C	UL 746B
RTI, impact, 0.75mm	120	°C	UL 746B
RTI, impact, 1.5mm	120	°C	UL 746B
RTI, impact, 3.0mm	120	°C	UL 746B
RTI, strength, 0.75mm	130	°C	UL 746B
RTI, strength, 1.5mm	130	°C	UL 746B
RTI, strength, 3.0mm	130	°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	0.8	mm	IEC 60695-11-10
UL recognition	yes		UL 94
FMVSS Class	SE/NBR		ISO 3795 (FMVSS 302)

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Electrical properties

Relative permittivity, 1MHz	2.5		IEC 62631-2-1
Volume resistivity	1E14	Ohm.m	IEC 62631-3-1
Surface resistivity	7E15	Ohm	IEC 62631-3-2
Electric strength	38	kV/mm	IEC 60243-1
Comparative tracking index	600		IEC 60112

Physical/Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Density	1340	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
Ejection temperature	189	°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

Rear Temperature 450-470 (230-240) deg F (°C)
Center Temperature 460-480 (235-250) deg F (°C)
Front Temperature 470-490 (240-255) deg F (°C)
Nozzle Temperature 480-490 (250-255) deg F (°C)

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Melt Temperature 460-490 (235-255) deg F (°C)
Mold Temperature 150-200 (65-93) deg F (°C)
Back Pressure 0-50 psi
Screw Speed Medium
Injection Speed Fast

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, in particular for flame retardant grades. Up to 25% clean and dry regrind may be used for the XFR series' halogen-free flame retardant grades.

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.

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Li Auto	Q/LiA5310038	2021 (V2)

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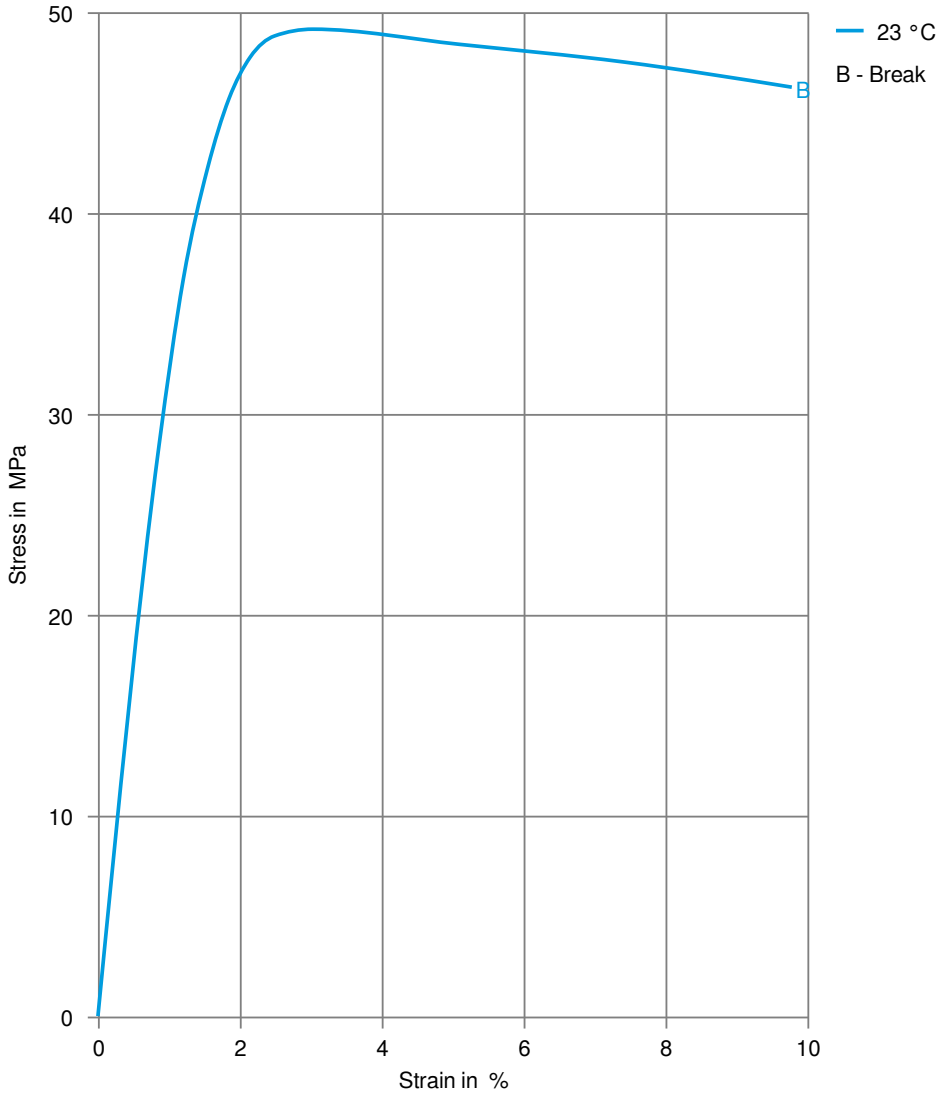
Stress-strain



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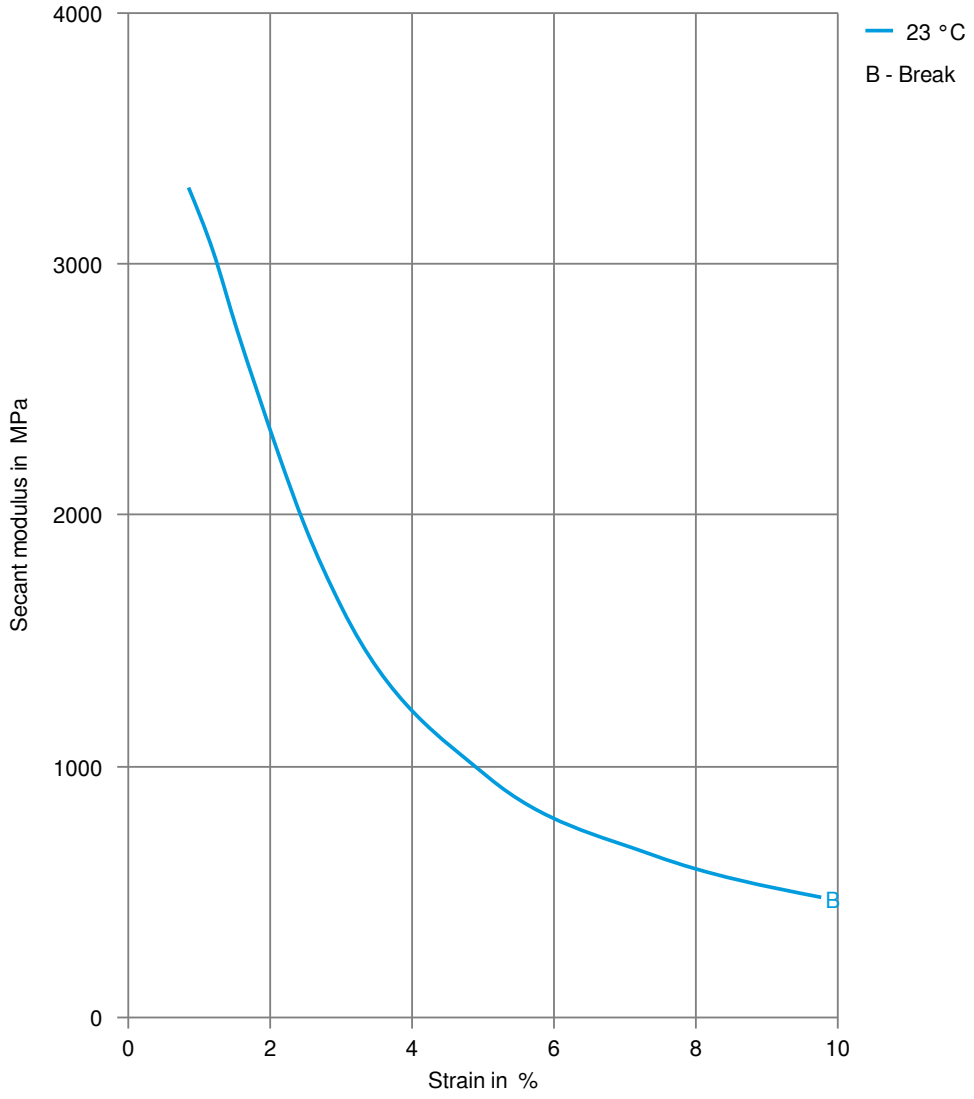
Secant modulus-strain



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