Celanex® 3316

Ticona - Polybutylene Terephthalate

Wednesday, April 02, 2008

General Information

Product Description

Celanex 3316 is a non-exuding flame retarded (UL and CSA approved V-0 at 1/32 inch and 5V at 1/16 inch), 30% fiberglass reinforced polybutylene terephthalate which has an excellent balance of mechanical properties and processability. It is well suited for electrical connector applications where its UL approved 50% regrind use capability allows maximum use of purchased product.

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America • South America
Filler / Reinforcement	• Glass fiber reinforcement, 30 % Filler by Weight		
Additive	• Ignition Resistant		
Features	• Flame Retardant	• Processability, Good	
Uses	• Connectors		
RoHS Compliance	• Contact Manufacturer		
Forms	• Pellets		
Processing Method	• Injection Molding		
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1)	• Viscosity vs. Shear Rate (ISO 11403-2)	

ASTM and ISO Properties

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Specific Gravity	1.66	1.66	ASTM D792
Density	0.0600 lb/in³	1660 kg/m³	ISO 1183 [2]
Melt volume-flow rate (250°C/2.16 kg)	0.427 in³/10min	7.00 cm³/10min	ISO 1133 [2]
Molding Shrink (Flow)	0.30 to 0.50 %	0.30 to 0.50 %	ASTM D955
Molding Shrinkage (Normal)	0.30 to 0.50 %	0.30 to 0.50 %	ISO 2577 [2]
Water Absorption Sat/23C	0.40 %	0.40 %	ISO 62
Water Absorption 23C/50RH	0.20 %	0.20 %	ISO 62

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus (73 °F (23 °C))	1.40E+6 psi	9650 MPa	ASTM D638
Tensile Modulus	1.55E+6 psi	10700 MPa	ISO 527-1, -2/1
Tensile Strength (Break, 73 °F (23 °C))	19500 psi	134 MPa	ASTM D638
Tensile Stress (Break)	19600 psi	135 MPa	ISO 527-1, -2/5
Tensile Elongation (Break, 73 °F (23 °C))	2.5 %	2.5 %	ASTM D638
Tensile Strain (Break)	2.5 %	2.5 %	ISO 527-1, -2/5
Flexural Modulus (73 °F (23 °C))	1.49E+6 psi	10300 MPa	ISO 178
Flexural Strength (73 °F (23 °C))	29000 psi	200 MPa	ISO 178

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Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy notched impact strength			ISO 179 /1eA [2]
73 °F (23 °C)	4.04 ft·lb/in²	8.50 kJ/m²	
Charpy notched impact strength			ISO 179 /1eA [2]
-22 °F (-30 °C)	4.04 ft·lb/in²	8.50 kJ/m²	
Charpy impact strength (73 °F (23 °C))	20.0 ft·lb/in²	42.0 kJ/m²	ISO 179 /1eU [2]
Charpy impact strength (-22 °F (-30 °C))	20.0 ft·lb/in²	42.0 kJ/m²	ISO 179 /1eU [2]
Notched Izod Impact Strength (73 °F (23 °C))	3.66 ft·lb/in²	7.70 kJ/m²	ISO 180/1A

Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (M-Scale)	89	89	ISO 2039-2

Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			ASTM D648
66 psi (0.45 MPa), Unannealed	430 °F	221 °C	
Temperature of Deflection Under Load			ISO 75-1, -2 [2]
66 psi (0.45 MPa)	428 °F	220 °C	
Deflection Temperature Under Load			ASTM D648
264 psi (1.8 MPa), Unannealed	403 °F	206 °C	
Temperature of Deflection Under Load			ISO 75-1, -2 [2]
264 psi (1.8 MPa)	406 °F	208 °C	
Temp. of deflection under load (8.00 MPa)	329 °F	165 °C	ISO 75-1, -2 [2]
Vicat softening temperature (50°C/h 50N)	437 °F	225 °C	ISO 306 [2]
Melting Temperature	437 °F	225 °C	
Melting temperature (10°C/min)	437 °F	225 °C	ISO 11357-1, -3 [2]
Coeff.of linear therm. expansion (parallel)			ISO 11359-1, -2 [2]
--	0.000014 in/in/°F	0.000025 cm/cm/°C	
Coeff.of linear therm. expansion (normal)	0.000043 in/in/°F	0.000077 cm/cm/°C	ISO 11359-1, -2 [2]

Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface resistivity	1.0E+15 ohms	1.0E+15 ohms	IEC 60093 [2]
Volume Resistivity	2.0E+16 ohm·cm	2.0E+16 ohm·cm	ASTM D257
Volume resistivity	3.9E+14 ohm·in	1.0E+13 ohm·m	IEC 60093 [2]
Dielectric Strength [3]	500 V/mil	19.7 kV/mm	ASTM D149
Dielectric Constant (1E+6 Hz)	3.500	3.500	ASTM D150
Relative Permittivity (100 Hz)	4.00	4.00	IEC 60250 [2]
Relative Permittivity (1000 Hz)	3.60	3.60	IEC 60250 [2]
Dissipation Factor (1E+6 Hz)	0.020	0.020	ASTM D150
Dissipation Factor (100 Hz)	0.0033	0.0033	IEC 60250 [2]
Dissipation Factor (1000 Hz)	0.014	0.014	IEC 60250 [2]
Arc Resistance	106 sec	106 sec	ASTM D495
Comparative tracking index	250	250	IEC 60112 [2]
Electric strength	860 V/mil	34 kV/mm	IEC 60243-1 [2]

Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating - UL			UL 94
0.0150 in (0.380 mm)	V-0	V-0	
0.0591 in (1.50 mm)	5VA	5VA	
Oxygen index	30 %	30 %	ISO 4589-1, -2 [2]

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UL 746	Nominal Value (English)	Nominal Value (SI)	Test Method
Comparative Tracking Index (CTI)	250 V	250 V	UL 746

Additional Properties

The value listed as Comparative Tracking Index, UL 746, was tested in accordance with ASTM D3638.

Processing Information

Injection	Nominal Value (English)	Nominal Value (SI)
Suggested Max Regrind	50 %	50 %
Rear Temperature	450 to 470 °F	232 to 243 °C
Middle Temperature	460 to 480 °F	238 to 249 °C
Front Temperature	470 to 490 °F	243 to 254 °C
Nozzle Temperature	480 to 490 °F	249 to 254 °C
Processing (Melt) Temp	460 to 490 °F	238 to 254 °C
Mold Temperature	150 to 200 °F	65.6 to 93.3 °C
Injection Rate	Fast	Fast
Back Pressure	0.00 to 50.0 psi	0.00 to 0.345 MPa

Injection Notes

Screw Speed: Medium

Notes

[1] Typical properties: these are not to be construed as specifications.

[2] Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.

[3] Method A (Short-Time)

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