

Celanex® 2002-2

Ticona - Polybutylene Terephthalate

Friday, August 01, 2008

General Information

Product Description

Celanex 2002-2 is a general purpose, unreinforced polybutylene terephthalate with a good balance of mechanical properties and processability. Celanex 2002-2 is a medium flow material that contains an internal lubricant.

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • North America	• South America
Additive	• Lubricant		
Features	• General Purpose • Good Processability	• Lubricated • Medium Flow	
Uses	• General Purpose		
RoHS Compliance	• Contact Manufacturer		
Forms	• Pellets		
Processing Method	• Injection Molding		
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1)	• Shear Modulus vs. Temperature (ISO 11403-2)	• Viscosity vs. Shear Rate (ISO 11403-2)

ASTM and ISO Properties ¹

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Specific Gravity	1.31	1.31	ASTM D792
Density	0.0473 lb/in ³	1310 kg/m ³	ISO 1183 ²
Melt Mass-Flow Rate (MFR)	20 g/10 min	20 g/10 min	ASTM D1238
Melt volume-flow rate (250°C/2.16 kg)	1.22 in ³ /10min	20.0 cm ³ /10min	ISO 1133 ²
Molding Shrinkage (Flow)	0.018 to 0.020 in/in	1.8 to 2.0 %	ASTM D955
Molding Shrinkage (Flow)	1.8 to 2.0 %	1.8 to 2.0 %	ISO 2577 ²
Water Absorption (73 °F (23 °C), Saturation)	0.090 %	0.090 %	ISO 62

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			ASTM D638
-40 °F (-40 °C)	450000 psi	3100 MPa	
25 °F (-4 °C)	43000 psi	296 MPa	
73 °F (23 °C)	460000 psi	3170 MPa	
176 °F (80 °C)	68000 psi	469 MPa	
Tensile Modulus	377000 psi	2600 MPa	ISO 527-2/1
Tensile Strength			ASTM D638
Yield, -40 °F (-40 °C)	14600 psi	101 MPa	
Yield, 32 °F (0 °C)	11000 psi	75.8 MPa	
Yield, 73 °F (23 °C)	8100 psi	55.8 MPa	
Yield, 176 °F (80 °C)	3600 psi	24.8 MPa	
Yield, 250 °F (121 °C)	2600 psi	17.9 MPa	
Tensile Stress (Yield)	8700 psi	60.0 MPa	ISO 527-2/50
Tensile Strength (Break, 73 °F (23 °C))	8100 psi	55.8 MPa	ASTM D638
Tensile Stress (Break)	8700 psi	60.0 MPa	ISO 527-2/50
Tensile Stress (50% Strain)	4350 psi	30.0 MPa	ISO 527-2/50

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Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Elongation			ASTM D638
Yield, -40 °F (-40 °C)	7.2 %	7.2 %	
Yield, 32 °F (0 °C)	4.4 %	4.4 %	
Yield, 73 °F (23 °C)	3.2 %	3.2 %	
Yield, 176 °F (80 °C)	17 %	17 %	
Yield, 250 °F (121 °C)	23 %	23 %	
Tensile Strain (Yield)	4.0 %	4.0 %	ISO 527-2/50
Tensile Elongation (Break, 73 °F (23 °C))	200 %	200 %	ASTM D638
Nominal Tensile Strain at Break	50 %	50 %	ISO 527-2/1A/50
Flexural Modulus (73 °F (23 °C))	363000 psi	2500 MPa	ISO 178
Flexural Strength (73 °F (23 °C))	11600 psi	80.0 MPa	ISO 178
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy notched impact strength			ISO 179/1eA ²
73 °F (23 °C)	2.86 ft-lb/in ²	6.00 kJ/m ²	
Charpy notched impact strength			ISO 179/1eA ²
-22 °F (-30 °C)	2.86 ft-lb/in ²	6.00 kJ/m ²	
Charpy impact strength (73 °F (23 °C))	No Break	No Break	ISO 179/1eU ²
Charpy impact strength (-22 °F (-30 °C))	90.4 ft-lb/in ²	190 kJ/m ²	ISO 179/1eU ²
Notched Izod Impact Strength (73 °F (23 °C))	2.38 ft-lb/in ²	5.00 kJ/m ²	ISO 180/1A
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (M-Scale)	78	78	ISO 2039-2
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			ASTM D648
66 psi (0.45 MPa), Unannealed	320 °F	160 °C	
Deflection Temperature Under Load			ISO 75-2 ²
66 psi (0.45 MPa)	302 °F	150 °C	
Deflection Temperature Under Load			ASTM D648
264 psi (1.8 MPa), Unannealed	131 °F	55.0 °C	
Deflection Temperature Under Load			ISO 75-2 ²
264 psi (1.8 MPa)	131 °F	55.0 °C	
Glass Transition Temperature			ISO 11357-2 ²
18 °F/min (10 °C/min)	140 °F	60 °C	
Vicat Softening Temperature			ISO 306 ²
50°C/h, B (50N)	374 °F	190 °C	
Melting Temperature	437 °F	225 °C	
Melting Temperature (18 °F/min (10 °C/min))	437 °F	225 °C	ISO 11357-3 ²
CLTE (Flow)	0.000061 in/in/°F	0.00011 cm/cm/°C	ISO 11359-2 ²
CLTE (Transverse)	0.000071 in/in/°F	0.00013 cm/cm/°C	ISO 11359-2 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	1.0E+16 ohm-cm	1.0E+16 ohm-cm	ASTM D257
Volume resistivity	3.9E+14 ohm-in	1.0E+13 ohm-m	IEC 60093 ²
Dielectric Strength ³	420 V/mil	16.5 kV/mm	ASTM D149
Dielectric Constant (1E+6 Hz)	3.200	3.200	ASTM D150
Relative Permittivity (100 Hz)	4.00	4.00	IEC 60250 ²
Relative Permittivity (1 MHz)	3.50	3.50	IEC 60250 ²

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Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Dissipation Factor (100 Hz)	0.0014	0.0014	IEC 60250 ²
Dissipation Factor (1 MHz)	0.022	0.022	IEC 60250 ²
Comparative tracking index	600	600	IEC 60112 ²
Electric strength	580 V/mil	23 kV/mm	IEC 60243-1 ²

Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating - UL (0.0280 in (0.710 mm))	HB	HB	UL 94
Oxygen index	22 %	22 %	ISO 4589-2 ²

Additional Properties

Nominal Strain at Break, ISO 527, Type 1A, 50 mm/min: >50%

Processing Information

Injection	Nominal Value (English)	Nominal Value (SI)
Suggested Max Regrind	25 %	25 %
Rear Temperature	450 to 470 °F	232 to 243 °C
Middle Temperature	460 to 480 °F	238 to 249 °C
Front Temperature	470 to 500 °F	243 to 260 °C
Nozzle Temperature	480 to 500 °F	249 to 260 °C
Processing (Melt) Temp	460 to 500 °F	238 to 260 °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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