

Cytec Cyply® 1002 Epoxy Fiberglass Composite, Isotropic

Category : Polymer , Thermoset , Epoxy

Material Notes:

CYPLY® 1002 is a cured epoxy composite material based on a unique non-woven parallel filament construction. This type of construction minimizes filament stress abrasion that can shorten fatigue life in conventional reinforced plastics. CYPLY® 1002 uses type E continuous filament fiberglass. It is supplied as cured panels or cut to size shapes. CYPLY 1002 is available in unidirectional, crossply, or isotropic fiber orientation, each offering a different balance of properties. Features and benefits include: High impact strength, chemical and corrosion resistance, high strength-to-weight ratio, excellent fatigue life and high strain capability, low notch sensitivity, increased design options (springs to rail joints), resistant to solvents and cleaning fluids, less downtime in harsh environments, weight reduction, greater capacity to store energy than 1060 spring steel. Information provided by Red Seal Electric Company.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Cytec-Cyply-1002-Epoxy-Fiberglass-Composite-Isotropic.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.85 g/cc	1.85 g/cc	
Filler Content	64 %	64 %	

Mechanical Properties	Metric	English	Comments
Hardness, Barcol	70	70	
Tensile Strength, Ultimate	248 MPa	36000 psi	45° stress angle
	248 MPa	36000 psi	90° stress angle
	331 MPa	48000 psi	0° stress angle
Tensile Modulus	17.2 GPa	2500 ksi	0° stress angle
	19.3 GPa	2800 ksi	45° stress angle
	19.3 GPa	2800 ksi	90° stress angle
Flexural Strength	483 MPa	70000 psi	45° stress angle
	517 MPa	75000 psi	90° stress angle
	524 MPa	76000 psi	0° stress angle
Flexural Modulus	17.9 GPa	2600 ksi	90° stress angle
	18.6 GPa	2700 ksi	45° stress angle
	20.0 GPa	2900 ksi	0° stress angle
Compressive Strength	441 MPa	64000 psi	45° stress angle

Mechanical Properties	Metric	English	Comments
	517 MPa	75000 psi	0° stress angle
Fatigue Strength	110 MPa	16000 psi	Flexural Fatigue (SN)
	@# of Cycles 1.00e+8	@# of Cycles 1.00e+8	
	131 MPa	19000 psi	Flexural Fatigue (SN)
	@# of Cycles 1.00e+7	@# of Cycles 1.00e+7	
	165 MPa	24000 psi	Flexural Fatigue (SN)
	@# of Cycles 1.00e+6	@# of Cycles 1.00e+6	
	193 MPa	28000 psi	Flexural Fatigue (SN)
	@# of Cycles 100000	@# of Cycles 100000	
	234 MPa	34000 psi	Flexural Fatigue (SN)
	@# of Cycles 10000	@# of Cycles 10000	
	276 MPa	40000 psi	Flexural Fatigue (SN)
	@# of Cycles 3000	@# of Cycles 3000	
Shear Modulus	65.5 GPa	9500 ksi	Short Beam; 0° stress angle; span/depth 5:1; ASTM D2344-76; span/depth 5:1

Thermal Properties	Metric	English	Comments
CTE, linear	15.1 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	8.40 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	parallel to one array of filaments; ASTM D696-42T
	@Temperature -34.4 - 93.3 $^\circ\text{C}$	@Temperature -30.0 - 200 $^\circ\text{F}$	
Specific Heat Capacity	0.879 J/g- $^\circ\text{C}$	0.210 BTU/lb- $^\circ\text{F}$	
Thermal Conductivity	0.334 W/m-K	2.32 BTU-in/hr-ft 2 - $^\circ\text{F}$	on 1 inch thick isotropic laminate
	@Temperature 7.22 $^\circ\text{C}$	@Temperature 45.0 $^\circ\text{F}$	
	0.336 W/m-K	2.33 BTU-in/hr-ft 2 - $^\circ\text{F}$	on 1 inch thick isotropic laminate
	@Temperature 2.22 $^\circ\text{C}$	@Temperature 36.0 $^\circ\text{F}$	
	0.342 W/m-K	2.37 BTU-in/hr-ft 2 - $^\circ\text{F}$	on 1 inch thick isotropic laminate
	@Temperature 51.7 $^\circ\text{C}$	@Temperature 125 $^\circ\text{F}$	
	0.346 W/m-K	2.40 BTU-in/hr-ft 2 - $^\circ\text{F}$	on 1 inch thick isotropic laminate
	@Temperature 85.6 $^\circ\text{C}$	@Temperature 186 $^\circ\text{F}$	

Electrical Properties	Metric	English	Comments
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Volume Resistivity Electrical Properties	4.90e+17 ohm-cm Metric	4.90e+17 ohm-cm English	50% RH and at 90% RH Comments
Insulation Resistance	5.30e+15 ohm	5.30e+15 ohm	50% RH
	6.80e+10 ohm	6.80e+10 ohm	50% RH
	@Temperature 150 °C	@Temperature 302 °F	
	6.20e+11 ohm	6.20e+11 ohm	50% RH
	@Temperature 120 °C	@Temperature 248 °F	
	9.70e+12 ohm	9.70e+12 ohm	90% RH
	@Temperature 60.0 °C	@Temperature 140 °F	
Dielectric Constant	2.70e+14 ohm	2.70e+14 ohm	50% RH
	@Temperature 60.0 °C	@Temperature 140 °F	
	3.30e+14 ohm	3.30e+14 ohm	90% RH
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	4.8	4.8	50% RH
	@Frequency 1e+6 Hz	@Frequency 1e+6 Hz	
	5.2	5.2	50% RH
@Frequency 1000 Hz	@Frequency 1000 Hz		
4.4	4.4	50% RH	
@Frequency 3.00e+7 Hz, Temperature 23.0 °C	@Frequency 3.00e+7 Hz, Temperature 73.4 °F		
5.1	5.1	50% RH	
@Frequency 100000 Hz, Temperature 23.0 °C	@Frequency 100000 Hz, Temperature 73.4 °F		
5.3	5.3	50% RH	
@Frequency 60.0 Hz, Temperature 23.0 °C	@Frequency 60.0 Hz, Temperature 73.4 °F		
5.5	5.5	90% RH	
@Frequency 1.00e+6 Hz, Temperature 23.0 °C	@Frequency 1.00e+6 Hz, Temperature 73.4 °F		
5.7	5.7	50% RH	
@Frequency 1000 Hz, Temperature 60.0 °C	@Frequency 1000 Hz, Temperature 140 °F		
6.1	6.1		

Electrical Properties	@Frequency 1000 Hz, Metric Temperature 120 °C	@Frequency 1000 Hz, English Temperature 248 °F	50% RH Comments
	6.5	6.5	
	@Frequency 1000 Hz, Temperature 23.0 °C	@Frequency 1000 Hz, Temperature 73.4 °F	90% RH
	6.8	6.8	
	@Frequency 1000 Hz, Temperature 60.0 °C	@Frequency 1000 Hz, Temperature 140 °F	90% RH
	7.0	7.0	
	@Frequency 60.0 Hz, Temperature 23.0 °C	@Frequency 60.0 Hz, Temperature 73.4 °F	90% RH
	7.3	7.3	
	@Frequency 1000 Hz, Temperature 150 °C	@Frequency 1000 Hz, Temperature 302 °F	50% RH
Dielectric Strength	24.4 kV/mm	620 kV/in	50% RH
Dissipation Factor	0.0060	0.0060	50% RH
	@Frequency 1000 Hz	@Frequency 1000 Hz	
	0.017	0.017	
	@Frequency 1e+6 Hz	@Frequency 1e+6 Hz	50% RH
	0.0033	0.0033	
	@Frequency 1000 Hz, Temperature 120 °C	@Frequency 1000 Hz, Temperature 248 °F	50% RH
	0.0052	0.0052	
	@Frequency 60.0 Hz, Temperature 23.0 °C	@Frequency 60.0 Hz, Temperature 73.4 °F	50% RH
	0.0087	0.0087	
	@Frequency 1000 Hz, Temperature 60.0 °C	@Frequency 1000 Hz, Temperature 140 °F	50% RH
	0.014	0.014	
	@Frequency 100000 Hz, Temperature 23.0 °C	@Frequency 100000 Hz, Temperature 73.4 °F	50% RH
	0.019	0.019	
	@Frequency 1.00e+6 Hz, Temperature 23.0 °C	@Frequency 1.00e+6 Hz, Temperature 73.4 °F	90% RH
	0.023	0.023	

Electrical Properties	@Frequency 3.00e+7 Metric Hz, Temperature 23.0 °C	@Frequency 3.00e+7 English Hz, Temperature 73.4 °F	50% RH Comments
	0.036	0.036	90% RH
	@Frequency 60.0 Hz, Temperature 23.0 °C	@Frequency 60.0 Hz, Temperature 73.4 °F	
	0.050	0.050	90% RH
	@Frequency 1000 Hz, Temperature 23.0 °C	@Frequency 1000 Hz, Temperature 73.4 °F	
	0.054	0.054	90% RH
	@Frequency 1000 Hz, Temperature 60.0 °C	@Frequency 1000 Hz, Temperature 140 °F	
	0.13	0.13	50% RH
	@Frequency 1000 Hz, Temperature 150 °C	@Frequency 1000 Hz, Temperature 302 °F	
Arc Resistance	20 sec	20 sec	with filaments; 50% RH and at 90% RH
	80 sec	80 sec	across filaments; 50% RH and at 90% RH

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