

Industrial Laminates/Norplex NP680 Paper Base Laminate

Category : Polymer , Thermoset

Material Notes:

Description: Hot punching grade with electrical properties between NP611 to NP631. Thickness Tested: 0.062", 0.125" & 0.500"

Order this product through the following link:

http://www.lookpolymers.com/polymer_Industrial-LaminatesNorplex-NP680-Paper-Base-Laminate.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.25 - 1.35 g/cc	1.25 - 1.35 g/cc	ASTM D792
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Moisture Absorption at Equilibrium	1.5 %	1.5 %	ASTM D229
	@Thickness 1.57 mm	@Thickness 0.0620 in	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	85 - 105	85 - 105	ASTM D785
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Tensile Strength, Yield	93.1 MPa	13500 psi	CW; ASTM D638
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	117 MPa	17000 psi	LW; ASTM D638
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Modulus of Elasticity	6.21 GPa	900 ksi	CW; ASTM D229
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	6.89 GPa	1000 ksi	LW; ASTM D229
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Flexural Strength	149 MPa	21600 psi	CW; ASTM D790
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	182 MPa	26400 psi	LW; ASTM D790
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Compressive Strength	262 MPa	38000 psi	ASTM D695
	@Thickness 12.7 mm	@Thickness 0.500 in	
Shear Strength	75.8 MPa	11000 psi	ASTM D732
	@Thickness 15.7 mm	@Thickness 0.620 in	
	0.262 J/cm	0.490 ft-lb/in	

Impact, Unnotched Mechanical Properties	Metric @ Thickness 12.7 mm	English @ Thickness 0.500 in	CW, Cond E-48/50; ASTM D256 Comments
	0.299 J/cm @Thickness 12.7 mm	0.560 ft-lb/in @Thickness 0.500 in	LW, Cond E-48/50; ASTM D256

Thermal Properties	Metric	English	Comments
CTE, linear	20.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$ @Thickness 1.57 mm, Temperature 20.0 $\text{Å}^\circ\text{C}$	11.1 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$ @Thickness 0.0620 in, Temperature 68.0 $\text{Å}^\circ\text{F}$	x-axis; IPC-TM 650-2.4.24
CTE, linear, Transverse to Flow	16.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$ @Thickness 1.57 mm, Temperature 20.0 $\text{Å}^\circ\text{C}$	8.89 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$ @Thickness 0.0620 in, Temperature 68.0 $\text{Å}^\circ\text{F}$	x-axis; IPC-TM 650-2.4.24
Maximum Service Temperature, Air	130 $\text{Å}^\circ\text{C}$	266 $\text{Å}^\circ\text{F}$	
Flammability, UL94	HB @Thickness 1.57 mm	HB @Thickness 0.0620 in	

Electrical Properties	Metric	English	Comments
Dielectric Constant	5.0 @Thickness 1.57 mm	5.0 @Thickness 0.0620 in	Permittivity, Cond D-24/23; ASTM D150
Dielectric Strength	11.8 kV/mm @Thickness 1.57 mm	300 kV/in @Thickness 0.0620 in	Cond D-48/50; ASTM D229 S.T.
	29.5 kV/mm @Thickness 1.57 mm	750 kV/in @Thickness 0.0620 in	Cond A; ASTM D229 S.T.
Dielectric Breakdown	10000 V @Thickness 1.57 mm	10000 V @Thickness 0.0620 in	Cond D-48/50; ASTM D229 S/S
	55000 V @Thickness 1.57 mm	55000 V @Thickness 0.0620 in	Cond A; ASTM D229 S/S
Dissipation Factor	0.040 @Thickness 1.57 mm	0.040 @Thickness 0.0620 in	Cond D-24/23; ASTM D150
Arc Resistance	100 sec @Thickness 3.17 mm	100 sec @Thickness 0.125 in	ASTM D495
Comparative Tracking Index	180 V @Thickness 3.17 mm	180 V @Thickness 0.125 in	ASTM D3638

Descriptive Properties	Value	Comments
Bond Strength	1300 lb	0.5", ASTM D229
Color	Natural, Black	

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