

Industrial Laminates/Norplex NP610 Paper Base Laminate

Category : Polymer , Thermoset , Phenolic

Material Notes:

Description: Phenolic paper based grade for mechanical applications. Good tensile, compressive and flexural strength. Primarily a machining material, but may be hot punched up to .093" thick. Thickness Tested: 0.062", 0.125", and 0.500".

Order this product through the following link:

http://www.lookpolymers.com/polymer_Industrial-LaminatesNorplex-NP610-Paper-Base-Laminate.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.35 - 1.45 g/cc	1.35 - 1.45 g/cc	ASTM D792
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Moisture Absorption at Equilibrium	1.8 %	1.8 %	ASTM D229
	@Thickness 1.57 mm	@Thickness 0.0620 in	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	95 - 115	95 - 115	ASTM D785
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Tensile Strength, Yield	110 MPa	16000 psi	CW; ASTM D638
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	138 MPa	20000 psi	LW; ASTM D638
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Modulus of Elasticity	9.65 GPa	1400 ksi	CW; ASTM D229
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	13.1 GPa	1900 ksi	LW; ASTM D229
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Flexural Strength	193 MPa	28000 psi	CW; ASTM D790
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	234 MPa	34000 psi	LW; ASTM D790
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Compressive Strength	241 MPa	35000 psi	ASTM D695
	@Thickness 12.7 mm	@Thickness 0.500 in	
Shear Strength	103 MPa	15000 psi	ASTM D732
	@Thickness 15.7 mm	@Thickness 0.620 in	

Mechanical Properties	Metric <small>J/cm</small>	English <small>-lb/in</small>	Comments
Izod Impact, Unnotched	@Thickness 12.7 mm	@Thickness 0.500 in	CW, Cond E-48/50; ASTM D256
	0.438 J/cm @Thickness 12.7 mm	0.820 ft-lb/in @Thickness 0.500 in	LW, Cond E-48/50; ASTM D256

Thermal Properties	Metric	English	Comments
CTE, linear	13.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$ @Thickness 1.57 mm, Temperature 20.0 $\text{Å}^\circ\text{C}$	7.22 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$ @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	17.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$ @Thickness 1.57 mm, Temperature 20.0 $\text{Å}^\circ\text{C}$	9.44 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$ @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 Strength	23.6 kV/mm @Thickness 1.57 mm	600 kV/in @Thickness 0.0620 in	Cond A; ASTM D229 S.T.
Dielectric Breakdown	40000 V @Thickness 1.57 mm	40000 V @Thickness 0.0620 in	Cond A; ASTM D229 S/S
Arc Resistance	90 sec @Thickness 3.17 mm	90 sec @Thickness 0.125 in	ASTM D495

Descriptive Properties	Value	Comments
Bond Strength	1000 lb	0.5", ASTM D229
Color	Natural, Black, Chocolate	

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