

## Industrial Laminates/Norplex NP691 Paper Base Laminate

Category : Polymer , Thermoset

### Material Notes:

Description: Flame resistant, room temperature punching grade. NP691 is very similar to NP612 in electrical properties and mechanical strength, with improved moisture resistance. Thickness Tested: 0.062", 0.125" & 0.500".

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Industrial-LaminatesNorplex-NP691-Paper-Base-Laminate.php](http://www.lookpolymers.com/polymer_Industrial-LaminatesNorplex-NP691-Paper-Base-Laminate.php)

Physical Properties	Metric	English	Comments
Specific Gravity	1.30 - 1.35 g/cc	1.30 - 1.35 g/cc	ASTM D792
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Moisture Absorption at Equilibrium	1.2 %	1.2 %	ASTM D229
	@Thickness 1.57 mm	@Thickness 0.0620 in	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	75 - 95	75 - 95	ASTM D785
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Tensile Strength, Yield	62.1 MPa	9000 psi	CW; ASTM D638
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	82.7 MPa	12000 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	89.6 MPa	13000 psi	CW; ASTM D790
	@Thickness 1.57 mm	@Thickness 0.0620 in	
	110 MPa	16000 psi	LW; ASTM D790
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Compressive Strength	172 MPa	25000 psi	ASTM D695
	@Thickness 12.7 mm	@Thickness 0.500 in	
Shear Strength	82.7 MPa	12000 psi	ASTM D732
	@Thickness 15.7 mm	@Thickness 0.620 in	

Mechanical Properties	Metric <small>/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
	0.374 J/cm @Thickness 12.7 mm	0.700 ft-lb/in @Thickness 0.500 in	LW, Cond E-48/50; ASTM D256

Thermal Properties	Metric	English	Comments
CTE, linear	16.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	8.89 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	x-axis; IPC-TM 650-2.4.24
	@Thickness 1.57 mm, Temperature 20.0 $\text{Å}^\circ\text{C}$	@Thickness 0.0620 in, Temperature 68.0 $\text{Å}^\circ\text{F}$	
CTE, linear, Transverse to Flow	20.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	11.1 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	x-axis; IPC-TM 650-2.4.24
	@Thickness 1.57 mm, Temperature 20.0 $\text{Å}^\circ\text{C}$	@Thickness 0.0620 in, Temperature 68.0 $\text{Å}^\circ\text{F}$	
Maximum Service Temperature, Air	105 $\text{Å}^\circ\text{C}$	221 $\text{Å}^\circ\text{F}$	
Flammability, UL94	V-1	V-1	
	@Thickness 1.57 mm	@Thickness 0.0620 in	

Electrical Properties	Metric	English	Comments
Dielectric Constant	5.2	5.2	Permittivity, Cond D-24/23; ASTM D150
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Dielectric Strength	11.8 kV/mm	300 kV/in	Cond D-48/50; ASTM D229 S.T.
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Dielectric Breakdown	19.7 kV/mm	500 kV/in	Cond A; ASTM D229 S.T.
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Dielectric Breakdown	5000 V	5000 V	Cond D-48/50; ASTM D229 S/S
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Dielectric Breakdown	55000 V	55000 V	Cond A; ASTM D229 S/S
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Dissipation Factor	0.065	0.065	Cond D-24/23; ASTM D150
	@Thickness 1.57 mm	@Thickness 0.0620 in	
Arc Resistance	100 sec	100 sec	ASTM D495
	@Thickness 3.17 mm	@Thickness 0.125 in	
Comparative Tracking Index	240 V	240 V	ASTM D3638
	@Thickness 3.17 mm	@Thickness 0.125 in	

Electrical Properties	Metric	English	Comments
Descriptive Properties		Value	Comments
Bond Strength		1200 lb	0.5", ASTM D229
Color		Natural, Black	

## Contact Songhan Plastic Technology Co.,Ltd.

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