NORPLEX MICARTA
Global Thermoset Composite Solutions

NP130

TECHNICAL DATA BULLETIN

GRADE: NP130 **NEMA LI 1-1998 Grade: FR-4** **U.L. LISTED: N**

DESCRIPTION: NP130 is a woven glass fabric combined with halogenated epoxy resin system. NP130 is produced to printed circuit board quality standards. It is flame retardant, and is certifiable to MIL-I-24768/27, Type GEE-F, ANSI/NEMA IM 60000-2021 Grade FR-4, IEC 60893-3-2 PE GC 202, ASTM D709 Type FR-4 and IPC 4101/21.

TYPICAL PROPERTIES

		UNITS	VALUE		
			Thickness Tested		
			0.0625″	0.125″	0.500″
PHYSICAL PROPERTIES					
Specific Gravity *(ASTM D792)*		-			1.80
Rockwell Hardness *(ASTM D785)*	0.250″ Build-up	M Scale	100		
Moisture Absorption *(ASTM D570)*	Condition D_1-24/23	%	0.10		
Flexural Strength *(ASTM D790)*	Condition A LW / CW	psi (MPa)	80,000 / 60,000 (551.6) / (413.7)		
Flexural Modulus *(ASTM D790)*	Condition A LW / CW	kpsi (GPa)	2,700 / 2,400 (18.6) / (16.5)		
Tensile Strength *(ASTM D638)*	Condition A LW / CW	psi (MPa)		50,000 / 40,000 (344.7) / (275.8)	
Izod Impact Strength *(ASTM D256)*	Condition A LW / CW	ft-lb/in (J/cm)			
	Condition E-48/50 LW / CW	ft-lb/in (J/cm)			15.00 / 12.00 (8.01) / (6.41)
Compressive Strength *(ASTM D695)*	Condition A Flatwise	psi (MPa)			70,000 (482.6)
Bonding Strength *(ASTM D229)*	Condition A	lb (kg)			2,200 (997.9)
Shear Strength *(ASTM D732)*	Condition A Perpendicular	psi (MPa)	22,000 (151.7)		

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TYPICAL PROPERTIES (continued)

		UNITS	VALUE		
			Thickness Tested		
			0.0625″	0.125″	0.500″
THERMAL PROPERTIES					
Temperature Index [1] *(UL Bulletin 746b)*	Electrical / Mechanical	°C	130 / 140		
Coefficient of Thermal Expansion *(IPC-TM 650-2.4.24)*	X-axis / Y-axis	"/"/°C x10^{-6}		10.0 / 12.0	
Tg by DMA		°C			135
Flammability Vertical *(UL Bulletin 94)*	Condition A	Class	V-0		
ELECTRICAL PROPERTIES					
Dissipation Factor @ 1 MHz *(ASTM D150)*	Condition A	-			
	Condition D-24/23	-	0.025		
Relative Permittivity @ 1 MHz *(ASTM D150)*	Condition A	-			
	Condition D-24/23	-	4.80		
Breakdown Voltage *(ASTM D149)*	Condition A	kVolts	65		
	Condition D-48/50	kVolts	54		
Electric Strength *(ASTM D149)*	Condition A	Volts/mil (kV/cm)	670 (263.8)		
	Condition D-48/50	Volts/mil (kV/cm)	650 (255.9)		
Arc Resistance *(ASTM D495)*	Condition A	sec		120	
Comparative Tracking Index *(ASTM D3638)*		Volts		150	

[1] This temperature is a recommendation only, and based upon experience in various applications. The maximum operating temperature is dependent upon the application and should be investigated prior to use.

This data, while believed to be accurate and based on reliable analytical methods, is for informational purposes only. The terms and conditions of the agreement under which it is sold will govern any sales of this product. Data supplied above are "typical values"; not to be considered "specification values".

To assure the material's performance is adequate for a specific application; customers should verify, independent of Norplex-Micarta, performance characteristics of interest.

It is the responsibility of the users of this information to make sure that they have the latest version of this TDB, and are urged to check with Customer Service or, preferably our web site, www.norplex-micarta.com, to determine if the information is the most current available.
Specification writers: Contact Norplex-Micarta for specification values before submission.