Applied Precision Technology
And
Liberty Plastics Company

Technical Data Bulletin

GRADE: Standard FR-4 NEMA GRADE: FR-4 U.L. Listed: N

DESCRIPTION:

Low cost woven glass fabric epoxy laminate. Engineered to provide NEMA grade FR-4 properties at lower cost. This material contains bromine on the epoxy resin backbone. Certifiable to MIL-I-24768/27, Type GEE-F.

THICKNESS TESTED: 0.062" & 0.500" TYPICALLY: 0.062" & 0.500"

TYPICAL PROPERTIES

General Physical Properties	Units	Value
Specific Gravity	-	1.85
Rockwell Hardness (.062")	M Scale	115
Moisture Absorption (.062")	%	.10
Flexural Strength LW (.062") CW	psi	65,000 52,000
Flexural Modulus LW (.062") CW	kpsi	2,900 2,600
Tensile Strength LW (.125") CW	psi	40,000 32,000
Compressive Strength flatwise (.500")	psi	66,000
Izod Impact Strength LW E-48/50 (.500") CW	ft – lb/in	7.9 7.3
Bond Strength (.500")	lb	2,300
Shear Strength (Perpendicular) (.062")	lbs per sq. inch	21,500
Maximum Operating Temperature[1]	°C	140
Coefficient of Thermal Expansion X-axis	In/in/°C x 10^{-6}	10.0

(.062") Y-axis		13.0
Flammability Raring – U.L. 94	V-0, V-1, HB	V-0
Dielectric Breakdown Condition A (.062") D-48/50	 kV	 66 65
Electric Breakdown Condition A (.062") D-48/50	 V/mil	 800 750
Permittivity Condition (.062") D-24/23	-	 4.8
Dissipation Factor Condition (.062") D-24/23	-	 .032
Arc Resistance (.125") D-495	sec	130
Comparative Tracking Index (.125") D-3638	-	 300
T_g	**°C**	-

Tests conducted by IL Norplex, Inc. Industrial Laminates/Norplex, Inc.

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

Last Revision: 04/12/99 pas

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