



GF21 A1 Grade Laminate Property Values

试验项目 Test item	试样处理 Test Condition	标准值 Standard Value	典型值 Typical value
1. Peel Strength ,in lbs per inch width 抗剥, 磅/英寸 As received 接收状态 After thermal stress 热应力后 At Elevated Temperature 提高温度下	A A 125°C	≥6.0 ≥6.0 ≥4.0	6.0-8.0 6.0-8.0 5.5
2. Volume Resistivity, minimum in MΩ 体积电阻, 最小值, MΩ .CM 在提高温度下	E-24/125	≥10 ³	2×10 ⁶
3. Surface Resistivity, minimum in MΩ 表面电阻, 最小值, MΩ 在提高温度下	E-24/125	≥10 ³	2×10 ⁶
4. Water Absorption%(Moisture) 吸水率(%)	E-1/105+des	≤0.80	0.20-0.35
5. Dielectric Breakdown Voltage, minimum(KV), step by step(thickness ≥0.50 mm) 击穿电压,最小值(KV),步进(厚度≥0.50 mm)	D-48/50 D-0.5/23	≥40	55
6. Flexural Strength(N/mm ²), (thickness ≥0.50 mm) 抗弯强度(N/mm ²), (厚度≥0.50 mm) Warp 经向 Fill 纬向	A A	≥415 ≥345	490 410
7. Arc Resistance, minimum, seconds 抗电弧性,最小值, 秒	D-48/50 D-0.5/23	≥60	80
8. Flammability 阻燃性	A	UL94V0	UL94V0
9. Solderability 可焊性	A	Solderable	Solderable
10. Dielectric Constant, 1MHZ Max 介电常数	A	≤ 5.4	4.4-4.8
11. Loss Tangent, 1MHZ Max 损耗角正切	A	≤0.035	0.020-0.032
12. Bow and Twist (%), 弯曲和翘曲 Double sides (thickness > 0.78mm; 300×300mm) Single sides (thickness > 0.78mm; 300×300mm) Double sides (thickness 0.5~0.78 mm; 300×300mm) Single sides (thickness 0.5~0.78 mm; 300×300mm)	A A A A	≤1.0 ≤1.5 ≤1.5 ≤2.0	0.15-0.30 0.30-0.45 0.20-0.30 0.35-0.45
13. Thermal Stress ,288°C, 10s 热应力 Unetched 未蚀刻试样	A	NO DEFECT	90-150sec.
14. Glass Transition, TG(DSC, °C) 玻璃化转变温度	A	≥110	≥125
15. Z-Axis Expansion Z 轴膨胀系数	before Tg(μ m/m°C)	TMA	—
	after Tg(μ m/m°C)	TMA	—
	50~260°C (%)	TMA	—

Note:1、The test methods are according to IPC-TM-650, The means of A、D、E or des of specimens tragtments can be found im IPC-TM-650。

实验方法参照 IPC-TM-650, 试样处理方式 A、D、E、des 等的含义参见 IPC-TM-650。

2、The UV features of Laminate are according to the IEC249-1。

UV 板的 UV 特性符合 IEC249-1 标准