

性能Property		实验条件 Treatment Condition	单位 Unit	指标 Index	典型值 Typical Value
玻璃化转变温度 Glass Transition Temperature(Tg by DSC)		A	°C	≥145	150
热分解温度 Decomposition Temperature (TD)		A	°C	≥325	345
Z轴热膨胀系数 Z-Axis CTE	Alpha 1	TMA	PPM/°C	≤60	48
	Alpha 2			≤300	288
	50-260 Degrees		%	≤3.5	3.2
阻燃性Flammability		A	-	94V-0	94V-0
耐热分层时间(蚀刻后) Thermal Resistance (Copper removed)	T260	TMA	Minutes	≥30	60
	T288			≥10	13
	T300			ABBUS	5
体积电阻率 Volume Resistivity	高温处理 At elevated temperature	E-24/125	MΩ.CM	≥10 ³	5.6×10 ⁷
表面电阻率 Surface Resistivity	高温处理 At elevated temperature	E-24/125	MΩ	≥10 ³	2.8×10 ⁷
吸水性Moisture Absorption	0.10-0.77mm	E-1/105+des	%	≤0.8	0.25
	0.78-3.20mm			≤0.35	0.12
介电常数 Dielectric constant (1MHz)		C-24/23/50	-	≤5.4	4.6
介质损耗角正切 Loss tangent (1MHz)		C-24/23/50	-	≤0.035	0.015
剥离强度 Peel strength	1OZ铜箔 1OZ HTE copper foil	A	N/mm	≥1.43	1.8
弯曲强度 Flexural strength	纵向 Length direction	A	MPa	≥41	515
	横向 Cross direction			≥34	405
高压锅热应力 Thermal stress 20s@288°C	未蚀刻前 Unetched	A	Pass/Fail	Pass	Pass
	蚀刻后 Etched			Pass	Pass
击穿电压 Dielectric Breakdown		D-48/50+D-0.5/23	KV	≥40	42
耐离子迁移 Anti-CAF		A	Pass/Fail	Pass	Pass
耐电弧性 Arc Resistance		A	S	≥60	105

FR-4 刚性覆铜箔层压板 (FR-4 Rigid Laminate)

厚度 (Thickness)		偏差 (Tolerance)		铜箔 (Copper Foil)
英制 (in)	公制 (mm)	英制 (in)	公制 (mm)	
0.0310	0.80	± 0.0039	± 0.10	H/H H/0 1/1 1/0 2/2 2/0 3/3 3/0
0.0390	1.00	± 0.0039	± 0.10	
0.0470	1.20	± 0.0051	± 0.13	
0.0590	1.50	± 0.0051	± 0.13	
0.0630	1.60	± 0.0051	± 0.13	
0.0780	2.00	± 0.0071	± 0.18	
0.0980	2.50	± 0.0071	± 0.18	
0.1180	3.00	± 0.0091	± 0.23	
0.1260	3.20	± 0.0091	± 0.23	

UL Online Certifications Directory

QMTS2. E213990

Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

See General Information for Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

SHANGHAI NANYA COPPER CLAD LAMINATES CO LTD
158 CHANGXIANG RD
NANXIANG
210802 SHANGHAI, CHINA

E213990

Mt1 Dsg	Copper Clad Mt1 Dsg	
	Single Side	Double Side

Industrial laminates, furnished in sheet, rod or tube form.

SN-L1, SN-L2	SN-L3, SN-L4	SN-L3, SN-L4
	-	SN-L1, SN-L2
SN-CEM-3	SN-CEM-3	SN-CEM-3
SN-L5 (LF)	SN-L6 (LF)	SN-L6 (LF)
	-	SN-L5 (LF)

Mt1 Dsg	ANSI Type	Col	Min Thk		UL94 Flame Class	TI		H W I	H A I	H V T R	C T I	Meets UL746E DSR
			In.	(mm)		Elec	Mech					

Industrial laminates, furnished in sheet, rod or tube form.

SN-L1, SN-L2	FR-4	NC	0.015	(0.38)	V-0	130	130	0	3	2	3	Yes
		YL	0.025	(0.63)	V-0	130	140	0	3	2	3	Yes
			0.055	(1.40)	V-0	130	140	0	2	0	3	Yes
SN-CEM-3	-	NC	0.025	(0.63)	V-0	50	50	-	-	-	-	-

Industrial laminates, furnished in sheet, rod or tube form. Flame Only Recognition.

SN-L5 (LF)	-	YL	0.015	(0.38)	V-0	-	-	-	-	-	-	-
	-	YL	0.025	(0.63)	V-0	-	-	-	-	-	-	-
	-	YL	0.055	(1.40)	V-0	-	-	-	-	-	-	-

Mt1 Dsg		ANSI Type	Col	Min Thk		TI	
Lam	Prepreg			In.	(Mics)	Elec	Mech

Ultrathin industrial laminates, furnished in sheet form, for use in multilayer printed wiring boards, where the thickness is built-up to 0.025 in. (0.63 mm).

SN-L1, SN-L2	-	FR-4	NC, YL	0.002	(0.05)	90	-
-	SN-P1, SN-P2	FR-4	NC, YL	0.002	(0.05)	90	-

Ultrathin industrial laminates, furnished in sheet form, for use in multilayer printed wiring boards, where

the thickness is built-up to 0.015 in. (0.38 mm). Flammability Only Recognition.									
SN-L5(LF)		SN-P3(LF)	-	YL	0.003	(0.075)	-	-	
				Clad Cond					
Mtl Dsg		Min	Thk		Max Area				
Metal Clad Lam	Prepreg	Thk In. (mm)	Min Mils (Mics)	Max Mils (Mics)	Diam In. (mm)	Sold Lts		UL94 Flame Class	Max Oper Temp
						Temp C	Time Sec		
Ultrathin industrial laminates with copper on one or both sides and prepregs for use in multilayer printed wiring boards where thickness is built up to at least 0.025 in. (0.63 mm).									
SN-L1, SN-L2	SN-P1, SN-P2	0.002	0.67	2.68	2.0	288	20	V-0	130
		(0.05)	(17)	(68)	(50.8)				
SN-L1, SN-L2	SN-P1, SN-P2	0.002	0.67	2.68	0.51	288	20	V-0	130
		(0.05)	(17)	(68)	(13.0)				
Ultrathin industrial laminates, furnished in sheet form, for use in multilayer printed wiring boards, where the thickness is built-up to 0.015 in. (0.38 mm). Flammability Only Recognition.									
SN-L5(LF)	SN-P3(LF)	0.003	-	-	-	288	20	V-0	-
		(0.075)							
		Base Mtl Min	Clad Cond Thk		Max Area				
Clad Mtl Dsg	ANSI Type	Thk In. (mm)	Min Mils (Mics)	Max Mils (Mics)	Diam In. (mm)	Sold Lts		UL94 Flame Class	Max Oper Temp
						Temp C	Time Sec		
Metal clad industrial laminates for use in printed wiring boards, furnished in the form of sheets with copper cladding on one or both sides.									
SN-L3, SN-L4	FR-4	0.63	17	103	50.8	288	20	V-0	130
SN-L3, SN-L4	FR-4	0.38	17	103	13.0	288	20	V-0	130
SN-CEM-3	-	0.63	-	-	-	260	10	V-0	-
Metal clad industrial laminates for use in printed wiring boards, furnished in the form of sheets with copper cladding on one or both sides. Flame Only Recognition.									
SN-L6(LF)	-	0.38	-	-	-	288	20	V-0	-

Marking: Company name and material designation.

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Questions?

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