AES 100 Laminate

Product Information

Description

AES 100 Laminate, an offering within our Advanced Electronic Solutions portfolio, is designed to meet next generation needs of 5G and 6G platforms, anticipating requirements for both wireless and digital future designs. The AES 100 Laminate is an extremely low dielectric constant and low loss circuit material. The product is a fluoropolymer-based copper clad laminate that is thin, flexible, and is manufactured with a woven reinforcement.

The AES 100 Laminate offers benefits of superior electrical and thermal performance, typical of fluoropolymers, and overcomes traditional limitations associated with current PTFE laminates. The AES 100 Laminate is UV and CO_2 laser compatible, offers superior plating adhesion using standard industry techniques and has manageable and repeatable dimensional control. Additionally, a high level of metal adhesion enables the laminate to be offered with the smoothest and highest performing ED and rolled copper foils available in the industry.

The AES 100 Laminate UL file number is E535604.

Key Features and Benefits

- Low loss dielectric combined with high peel strength on ED and RA copper foil.
- Excellent compatibility with standard PCB processing.
- Minimal variance in dielectric thickness which leads to excellent reproducibility of results.
- UV/CO_2 and UV laser compatible.
- Excellent mechanical drilling in standard and hybrid constructions.

Construction Options

- Copper Cladding: 12 µm and 18 µm rolled and electrodeposited copper foils
- Thickness: 50 µm, 125 µm
- Panel Sizes: Rolls up to 500 mm wide. Sheeted product with 500 mm maximum transverse dimension

Table 1. Properties of AES 100 Laminate[1]

Property	50 µm	125 µm	Direction	Units	Test Conditions	Test Method
Electrical Properties						
Dielectric Constant	2.29	2.21	Z axis	—	10GHz	IPC TM-650 2.5.5.5
Dissipation Factor	0.0009	0.0008			23 °C/24 hr/50% RH	
Dielectric Constant	2.44	2.34	X/Y axis	—	10GHz	IPC TM-650 2.5.5.15
Dissipation Factor	0.0011	0.0009			23 °C/24 hr/50% RH	
Dielectric Strength	197.2 (5,008.9)	202.3 (5,137.4)	Z axis	V/µm (V/mil)	23 °C/24 hr/50% RH	ASTM D149
Thermal Properties						
Melting Temperature (T_m)	307	307	—	°C	1 heat method	ASTM D3418
Decomposition Temperature (T_d)	506	506	—	°C	5% weight loss	IPC TM-650 2.3.40
Coefficient of Thermal Expansion	12.1/16.0	19.6/23.9	MD/TD	ppm/°C	25 °C to 250 °C	IPC TM-650 2.4.41
Mechanical Properties						
Copper Peel Strength	1.5/1.8 (8.6/10.3)	2.2/2.2 (12.6/12.6)	Z Side 1/Side 2	N/mm (pli)	Condition A 12 µm copper	IPC TM-650 2.4.8
Tensile Strength	117/101	71/73	MD/TD	Mpa	23 °C/50% RH	IPC TM-650 2.4.19c
Tensile Modulus	4,649/3,951	2,667/2,524	MD/TD	Mpa	23 °C/50% RH	IPC TM-650 2.4.19c
Tensile Elongation	2.9/2.8	3.3/3.5	MD/TD	%	23 °C/50% RH	IPC TM-650 2.4.19c
Dimensional Stability	0.00/0.06	–0.12/–0.04	MD/TD	%	after etch	IPC TM-650 2.2.4c
	–0.04/–0.07	–0.16/–0.14	MD/TD	%	after etch + bake	
Physical Properties						
Nominal Thickness	52.4	127.9	Z	µm	After etch	IPC TM-650 2.2.18
Solder Float Resistance	Pass	Pass	—	—	288 °C/60 sec	IPC TM-650 2.4.13
Flammability	V-0	V-0	—	—	—	UL94
Moisture Absorption	0.02	0.02	—	%	E1/105 + D48/50	IPC TM-650 2.6.21
Density	2.18	2.18	—	g/cm^3	C-24/23/50	IPC TM-650 2.3.5

[1]This table gives properties (not specifications) based on production performance. Chemours does not make any express or implied warranty that these products will have these typical properties.

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