

Технологические параметры FR-4

Features

- UVB and AOI (automatic optical inspection) compatible, so as to increase productivity and accuracy.
- Excellent heat resistance and mechanical properties
- IPC-4101B/21 specification is applicable.

General Properties

Test Item	Unit	Test Method (IPC-TM-650)	Test Condition	Specification (IPC-4101B)	Typical Value
Peel Strength (1 oz.)	N/mm	2.4.8	125°C	≥0.70	1.70
			Float 288°C / 10 Sec	≥1.05	1.75
Thermal Stress	Sec	2.4.13.1	Float 288°C/unetched	≥10	180
Bow / Twist	%	2.4.22.1	A	≤1.0	0.17 / 0.35
Flexural Strength	N/mm ²	2.4.4	Warp	≥415	565
			Fill	≥345	416
Flammability	Rating	UL94	UL94	UL94 V-0	V-0
Glass Transition (Tg)	°C	2.4.25	E-2/105 DSC	≥130	135
Surface Resistivity	MΩ	2.5.17.1	C-96/35/90	$\geq 1.0 \times 10^{10}$	1.0×10^6
Volume Resistivity	MΩ-cm	2.5.17.1	C-96/35/90	$\geq 1.0 \times 10^{12}$	1.0×10^8
Dielectric Constant	—	2.5.5.2	Etched/@1 MHZ	≤5.4	4.58
Loss Tangent	—	2.5.5.2	Etched/@1 MHZ	≤0.035	0.022
Arc Resistance	Sec	2.5.1	D-48/50+D-0.5/23	≥60	125
Moisture Absorption	%	2.6.2.1	D-24/23	≤0.35(min0.51mm)	0.21
				≤0.80(max0.51mm)	0.19
Z-Axis Expansion	ppm/°C	2.4.24	E-2/105 TMA	—	58/286
TD	°C	2.4.24.6	TGA	—	305
T-260	min	2.4.24.1	TMA	—	20
T-288	min	2.4.24.1	TMA	—	3

Remarks: Specimen Thickness: 1.6 mm 1/1

A = Keep the specimen originally without any process

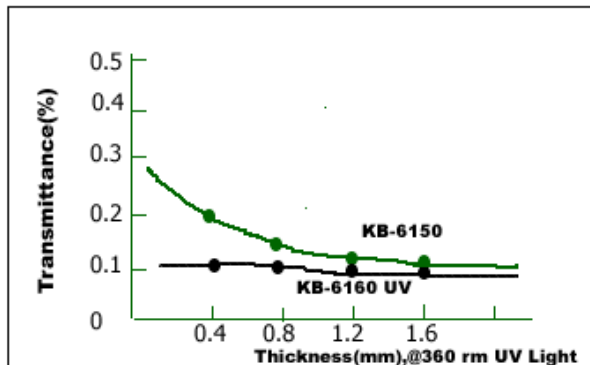
C = Temperature and humidity conditioning

D = Temperature conditioning immersion in distilled water.

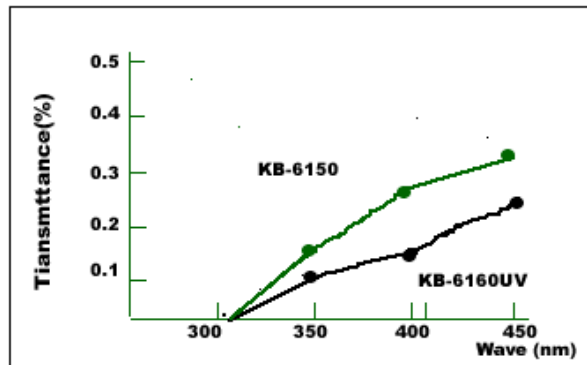
E = Immersing in distilled water with temperature control

Speciality Chart

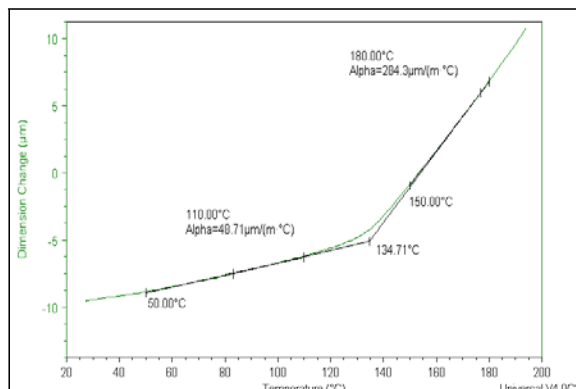
UV blocking (thickness) UV



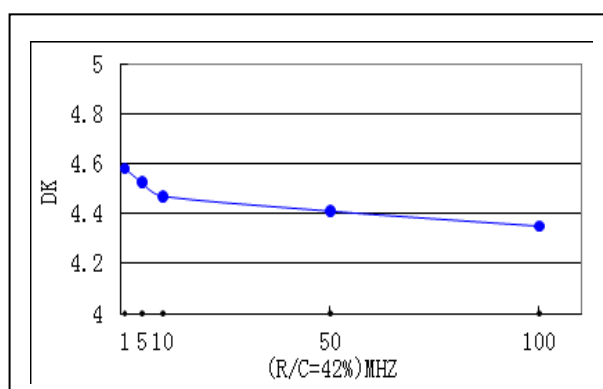
UV blocking (wave / UV-3100)



Thermal expansion of Z-direction (test by TMA)



Dielectric constant



Applications

- Computer, communication equipment, instrument, OA equipment, etc.

Purchasing Information

Base Color	Thickness	Copper Cladding	Regular Size (mm)	CTI Value
(yellow)	0.05mm ~ 3.5mm	12μm, 18μm 35μm, 70μm 105μm	940*1245mm (37" * 49") 1042*1245mm (41" * 49") 1093*1245mm (43" * 49")	KB-6160:150V KB-6160A:175V KB-6160C: 300V/600V

Note: Other sheet size and thickness could be available upon request.