



Glass cloth base epoxy resin
Flame retardant copper clad laminate

UV BLOCK FR-4-86

■ FEATURES

- High luminance of epoxy contrast with copper for laser type A.O.I.
- UV solder mask may be applied simultaneously to increase yields.
- High performance epoxy blended to achieve higher heat resistance than that of FR-4-86
- Thickness 0.8mm capability.
- IPC-4101E L21

■ PERFORMANCE LIST

Characteristics		Unit	Condition	Typical Values	SPEC	Test Method
Volume resistivity		MΩ-cm	C-96/35/90	$5 \times 10^8 \sim 5 \times 10^9$	$10^6 \uparrow$	2.5.17
Surface resistivity		MΩ	C-96/35/90	$5 \times 10^6 \sim 5 \times 10^7$	$10^4 \uparrow$	2.5.17
Permittivity 1MHz		-	C-24/23/50	4.5-4.7	$5.4 \downarrow$	2.5.5.9
Permittivity 1GHz		-	C-24/23/50	4.0-4.2	-	2.5.5.9
Loss Tangent 1MHz		-	C-24/23/50	0.015-0.020	$0.035 \downarrow$	2.5.5.9
Loss Tangent 1GHz		-	C-24/23/50	0.012-0.014	-	2.5.5.9
Arc resistance		SEC	D-48/50+D-0.5/23	120 $\uparrow$	60 $\uparrow$	2.5.1
Dielectric breakdown		KV	D-48/50	60 $\uparrow$	40 $\uparrow$	2.5.6
Moisture absorption		%	D-24/23	0.05-0.10	$0.8 \downarrow$	2.6.2.1
Flammability		-	C-48/23/50	V-0	V-0	UL94
Peel strength 1 oz ($\geq 0.5\text{mm}$)		lb/in	288°C x10" solder floating	10-14	6 $\uparrow$	2.4.8
Thermal stress		SEC	288°C solder dipping	200 $\uparrow$	10 $\uparrow$	2.4.13.1
Pressure cooker (2 atm 120°C)	1/2 hr	SEC	288°C dipping	150 $\uparrow$	N/A	-
	1 hr	SEC	288°C dipping	150 $\uparrow$	N/A	-
	2 hrs	SEC	288°C dipping	150	N/A	-
Flexural strength	LW	N/mm ²	A	480-550	415 $\uparrow$	2.4.4
	CW	N/mm ²	A	415-480	345 $\uparrow$	2.4.4
Dimensional stability X-Y axis		%	E-2/150	0.005-0.030	$0.050 \downarrow$	2.4.39
Coefficient of thermal expansion						
Z-axis before Tg		ppm/°C	TMA	50-70	N/A	2.4.24
Z-axis after Tg		ppm/°C	TMA	250-350		
Glass transition temp.		°C	DSC	135 $\pm$ 5	N/A	2.4.25
Decomposition temperature (Td 5% W/L)		°C	TGA	310	N/A	2.4.24.6

Data shown are nominal values for reference only.

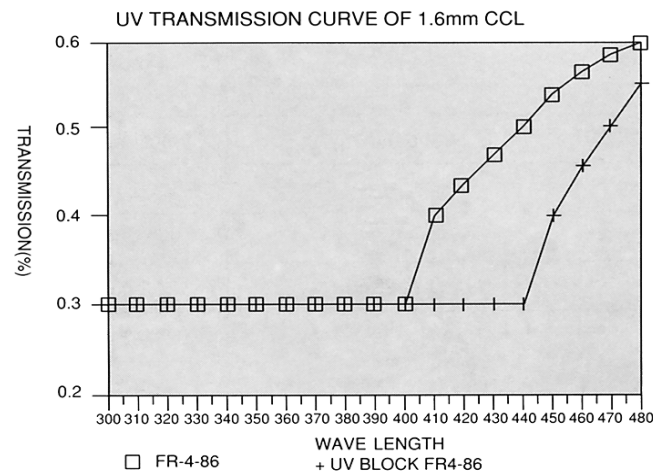
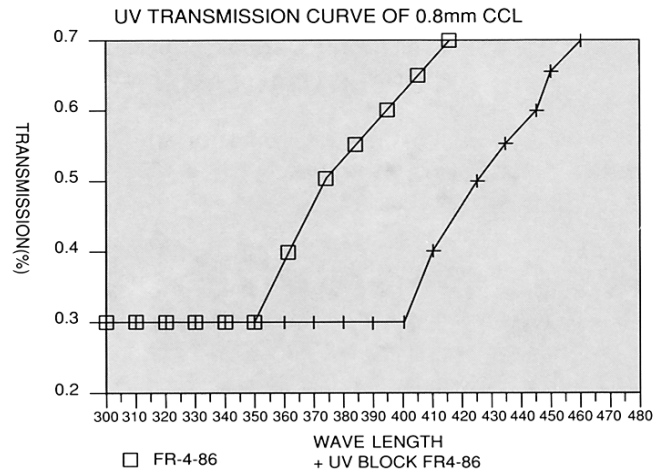
NOTE:

The average value in the table refers to samples of .062" 1/1.

Test method per IPC-TM-650

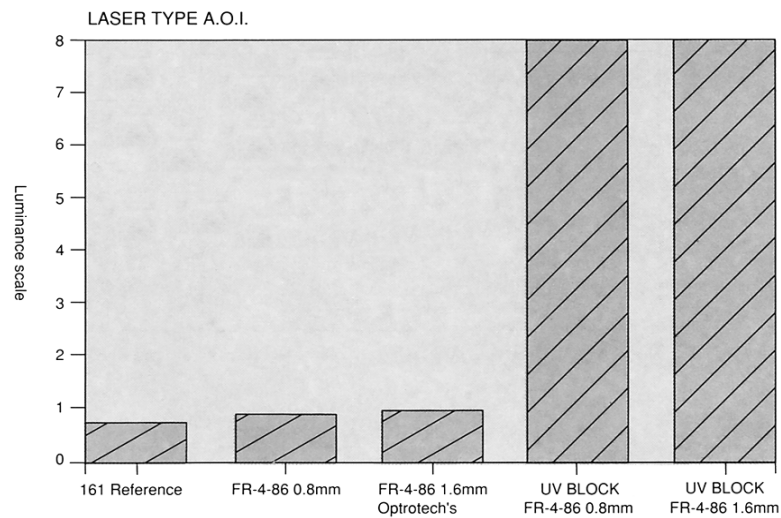


■ LOW UV TRANSMISSION



■ HIGH LUMINANCE of EPOXY CONTRAST with COPPER

FR-4-86 1.6 mm
Orbotech's



■ CERTIFICATION UL

- UL File No.: E98983
- ANSI TYPE: FR-4.0