

[Low Dk/Df specialty material](#)

High thermal reliability laminate and prepreg

## TU-872 LK Sp

TU-872 LK Sp is based on a high performance modified epoxy FR-4 resin. This material is reinforced with novel woven glass and designed with extra low dielectric constant and low dissipation factor for high speed low loss and high frequency multilayer circuit board application. TU-872 LK Sp material is suitable for environmental protection lead free process and also compatible with FR-4 processes. TU-872 LK Sp laminates also exhibit excellent CTE, superior chemical resistance, thermal stability, CAF resistance, and toughness enhanced by an allyl network forming compound.

### PERFORMANCE AND PROCESSING ADVANTAGES

- Excellent electrical properties
- Dielectric constant less than 3.5
- Dissipation factor less than 0.010
- Excellent, stable and flat Dk/Df performance
- Compatible with most FR-4 processes
- Lead Free process compatible
- Anti-CAF capability
- Improved Z-axis thermal expansion
- Superior dimensional stability, thickness uniformity and flatness
- Excellent through-hole and soldering reliability

### GENERAL INFORMATION

- Industry Approvals

UL Designation – ANSI Grade	FR-4
UL File Number	E1 89572
Flammability Rating	94V-0
Maximum Operating Temperature	130°C

- Standard Availability

Thickness: 0.002"[0.05mm] to 0.062"[1.58mm], available in sheet or panel form  
 Copper Foil Cladding: 1/3 to 5 oz for built-up & double sides  
 Prepregs: Available in roll or panel form  
 Glass Styles: 106, 1080, 2116

TYPICAL PROPERTIES FOR TU-872 LK Sp LAMINATES

PROPERTY	IPC-4101	SPEC	TYPICAL VALUES
<b>Thermal</b>			
Tg (DMA)			220 °C
Tg (DSC)			200 °C
Tg (TMA)	E-2/105+des	N/A	190 °C
Td (TGA)			340 °C
CTE x-axis	Ambient to Tg	-	12~15 ppm/°C
CTE y-axis	Ambient to Tg	-	12~15 ppm/°C
CTE z-axis	50 to 260°C	-	2.5 %
<b>Thermal Stress,</b>			
Solder Float , 288°C	A	> 10	> 60 sec
T-260			60 min
T-288	E-2/105+des	N/A	20 min
Flammability	E-24/125+des	94V-0	94V-0
<b>Electrical</b>			
<b>Permittivity (RC50%)</b>			
1GHz ( SPC method )			3.6
5GHz ( SPC method )	C-24/23/50	< 5.4	3.5
10GHz ( SPC method )			3.5
<b>Loss Tangent (RC50%)</b>			
1GHz ( SPC method )			0.006
5GHz ( SPC method )	C-24/23/50	< 0.035	0.007
10GHz ( SPC method )			0.008
Volume Resistivity	C-96/35/90	> 10 <sup>6</sup>	> 10 <sup>10</sup> MΩ·cm
Surface Resistivity	C-96/35/90	> 10 <sup>4</sup>	> 10 <sup>8</sup> MΩ
Electric Strength		>30 kV/mm	> 40 kV/mm
Dielectric Breakdown Voltage		>40 kV	> 50 kV
<b>Mechanical</b>			
<b>Young's Modulus</b>			
Warp Direction			26
Fill Direction	-	G Pa	24
<b>Flexural Strength</b>			
Lengthwise	A	> 60,000	> 60,000 psi
Crosswise	A	> 50,000	> 50,000 psi
<b>Peel Strength</b>			
1.0 oz. Cu foil	A	> 4	5~7 lb/inch
Water Absorption	E-1/105+des+D-24/23	< 0.8	0.15 %

## NOTE:

- Property values are for information purposes only and not intended for specification.
- Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.
- This product is based on a patent pending technology.