



ThinFlex



ThinFlex Corporation

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# ThinFlex-LK, LK-2005RD Adhesiveless Double Sided Copper Clad Laminate

ThinFlex-LK, LK-2005RD is an adhesiveless double-sided (D/S) copper clad laminate via the laminating of ThinFlex-LK film with RA copper foil on both sides. The LK-2005RD adhesiveless D/S FCCL shows advanced materials properties, low dielectric constant ( $D_k$ )/low dissipation factor( $D_f$ ), and high reliability for flexible printing circuit (FPC) applications.

## 1. Product Characteristics:

- \* Excellent dimensional stability
- \* Excellent flexibility
- \* Excellent etching capability
- \* Excellent flame resistance
- \* Excellent chemical resistance
- \* Excellent thermal, mechanical, and electrical properties
- \* Low moisture absorption
- \* Low dielectric constant ( $D_k$ ) and low dissipation factor( $D_f$ )

## 2. Specifications:

LK - 20 05 R D

Product	Thickness of PI	Thickness of Cu	Cu Type	Structure
LK-type FCCL	20 : 2.0 mil	05 : 0.5 Oz.	R : RA	D: D/S
Supply Size	W: 250/500 ± 1mm; L: 400~700 ± 2mm (sheet type) W: 250/500 ± 1mm; L: 100 +2/-0m (roll type)			

\*Other thicknesses and dimensions are available on customers' demand.



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**3. Construction:**

Copper foil
Polyimide film
Copper foil

**4. Properties:**

Test item	Unit	LK-2005RD	Test Method	
Peel Strength				
As Received	Kgf/cm	≥ 0.6	IPC-TM650 2.4.9 B	
Solder Float	Kgf/cm	≥ 0.6	IPC-TM650 2.4.13 B	
After Temp. Cycling	Kgf/cm	≥ 0.6	IPC-TM650 2.4.9	
Chemical Resistance	Kgf/cm	≥ 0.6	IPC-TM650 2.3.2	
Tensile Strength (Base Film)	Kg/mm <sup>2</sup>	≥ 20	IPC-TM-650 2.4.19	
Elongation (Base Film)	%	≥ 15	IPC-TM-650 2.4.19	
Tensile Modulus (Base Film)	Kg/mm <sup>2</sup>	≥ 300	ASTM D882	
Initial Tear Strength (Base Film)	g	≥ 750	IPC-TM-650 2.4.16	
Propagation Tear Strength (Base Film)	g	≥ 14	IPC-TM-650 2.4.17.1	
Flexural Endurance, MIT				
M.D.	Cycles	NA	JIS-C 6471, 0.8mmR, 0.5kg	
T.D.	Cycles	NA	JIS-C 6471, 0.8mmR, 0.5kg	
Electrical Properties				
Surface Resistance	Ω	~10 <sup>12</sup>	IPC-TM650 2.5.17	
Volume Resistance	Ω-cm	~10 <sup>15</sup>	IPC-TM650 2.5.17	
Insulation Resistance	Ω	~10 <sup>12</sup>	IPC-TM650 2.6.3.2	
Dielectric Strength	kV/mil	5.0	ASTM-D149	
Dielectric Constant (@10GHz)	-	2.8	IPC-TM650 2.5.5.3	
Dissipation factor (@10GHz)	-	0.005	IPC-TM650 2.5.5.3	
Physical and Thermal Properties				
Dimensional Stability	M.D.	%	-0.1~ 0.1	IPC-TM650 2.2.4C
	T.D.	%	-0.1~ 0.1	IPC-TM650 2.2.4C
CTE	ppm/°C	28	ThinFlex	
T <sub>g</sub>	°C	300	ThinFlex	
Solder Float	30sec at 288°C (550°F)	-	Pass	IPC-TM650 2.4.13
Moisture Absorption		%	1.0	IPC-TM650 2.6.2
Chemical Resistance		-	Pass	IPC-TM650 2.3.2
Thickness tolerance		um	86±10%	ThinFlex
UL Flame Class		-	VTM-0	UL94

\* Above data are typical values, and are not guaranteed values.



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## 5. Storage:

The shelf-life of LK-2005RD is at least **12** months for keeping at temperature of 25°C or less and relative humidity of 70% or less. By the way, it is no need to keep in the refrigeration and frozen condition.

Note: The information and data contained in this technical literature is believed to be accurate and is offered in good faith for the benefit of the user. The user should make his own tests to verify the suitability of this product for any application before its use. All data are typical values only and subject to change without notice.

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