



ThinFlex

ThinFlex Corporation

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# ThinFlex-W22, W-2005RD-C Adhesiveless Double Sided Copper Clad Laminate (Halogen Free)

ThinFlex-W22, W-2005RD-C is an adhesiveless double-sided (D/S) copper clad laminate, using ThinFlex TPI film and laminated with RA copper foil on both sides. The W-2005RD-C adhesiveless D/S composites are designed for a wide variety of flexible circuit applications which require advanced material performance and high reliability.

## 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

## 2. Specifications:

W- 20 05 R D-C

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

\* Other product size is also available on customer's demand.



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### 3. Construction:

Copper foil  
Polyimide film

### 4. Properties:

Copper foil

Test item	Unit	Specification	Typical Value	Test Method	
<b>Peel Strength</b>					
As Received	Kgf/cm	≥ 0.6	1.1	IPC-TM650 2.4.9 B	
Solder Float	Kgf/cm	≥ 0.6	1.1	IPC-TM650 2.4.13 B	
After Temp. Cycling	Kgf/cm	≥ 0.6	1.1	IPC-TM650 2.4.9	
Chemical Resistance	Kgf/cm	≥ 0.6	1.1	IPC-TM650 2.3.2	
Tensile Strength (Base Film)	Kg/mm <sup>2</sup>	≥ 25	26	IPC-TM-650 2.4.19	
Elongation (Base Film)	%	≥ 25	30	IPC-TM-650 2.4.19	
Tensile Modulus (Base Film)	Kg/mm <sup>2</sup>	≥ 600	680	ASTM D882	
Initial Tear Strength (Base Film)	g	≥ 800	860	IPC-TM-650 2.4.16	
Propagation Tear Strength (Base Film)	g	≥ 15	16	IPC-TM-650 2.4.17.1	
<b>Flexural Endurance, MIT</b>					
M.D.	Cycles	NA	200	JIS-C 6471, 0.8mmR, 0.5kg	
T.D.	Cycles	NA	200	JIS-C 6471, 0.8mmR, 0.5kg	
<b>Electrical Properties</b>					
Surface Resistance	Ω	≥ 1.0×10 <sup>11</sup>	~10 <sup>12</sup>	IPC-TM650 2.5.17	
Volume Resistance	Ω-cm	≥ 1.0×10 <sup>12</sup>	~10 <sup>14</sup>	IPC-TM650 2.5.17	
Insulation Resistance	Ω	≥ 1.0×10 <sup>9</sup>	~10 <sup>10</sup>	IPC-TM650 2.6.3.2	
Dielectric Strength	kV/mil	≥ 5.5	5.7	ASTM-D149	
Dielectric Constant	-	≤ 3.3	3.2	IPC-TM650 2.5.5.3	
Dissipation factor	-	≥ 0.01	0.011	IPC-TM650 2.5.5.3	
<b>Physical and Thermal Properties</b>					
Dimensional Stability	M.D.	%	-0.1~0.1	-0.08~0.08	IPC-TM650 2.2.4C
	T.D.	%	-0.1~0.1	-0.08~0.08	IPC-TM650 2.2.4C
CTE	ppm/°C	≤ 24	23	ThinFlex	
T <sub>g</sub>	°C	≥ 350	355	ThinFlex	
Solder Float	10sec at 288°C (550°F)	-	Pass	Pass	IPC-TM650 2.4.13
Moisture Absorption Test	%	≤ 1.1	1.0	IPC-TM650 2.6.2	
Chemical Resistance-single	-	Pass	Pass	IPC-TM650 2.3.2	
Thickness tolerance	um	86±10%	86.6	ThinFlex	
UL Flame Class	-	≤ V-0	V-0	UL94	

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

Technical Data Sheet: 201709



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### 5. Storage:

ThinFlex-W22, W-2005RD-C will meet its shelf-life for at least 12 months after arrival at purchaser's factory with original package, stored at temperature of 25°C or less and relative humidity of 70% or less. The product is no need to be kept in the refrigeration.

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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