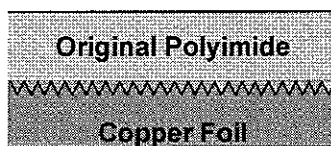


- Adhesive-less Flexible Copper Clad Laminate -

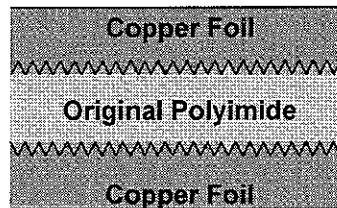
**ESPANEX<sup>®</sup> MC Series (Single Sided)**

**ESPANEX<sup>®</sup> MB Series (Double Sided)**

*ESPANEX<sup>®</sup> MC & MB series* are single and double sided flexible copper clad laminate adhesive less laminates, and have been improved heat resistance by our original polyimide to adapt the lead free solder process. *ESPANEX<sup>®</sup> MC & MB series* indicate excellent heat resistance, flammability, electric characteristics, dimensional stability, and can be applied fine pattern wiring board. *ESPANEX<sup>®</sup> MC & MB series* are used for Flex circuitry, Flex-rigid multi-layers and TBGA chip carrier packaging.



**MC Series**  
Single Sided



**MB Series**  
Double Sided

● **Feature**

- ✦ Excellent dimensional stability
- ✦ Excellent heat resistance
- ✦ Excellent availability to lead free solder
- ✦ Excellent chemical resistance
- ✦ Multiple Copper foil selections
- ✦ Excellent electrical performance
- ✦ Excellent performance for laser processing

● **Application**

- ✦ Flex circuits, Multi layer Rigid-flex wiring boards
- ✦ Chip on Film substrate (Chip on Flex)
- ✦ CSP, BGA
- ✦ PDP driver etc.

## ●Copper foil types

ESPANEX® MC & MB series are produced by our original polyimide process technology. We can supply both ED and RA copper. Copper foil types and thickness may be selected according to the design requirement of each application.

## ●Polyimide thickness selection

Our Casting process can provide 12 μm, 20 μm, 25 μm, 35 μm and 40 μm thickness polyimide for single sided and 12 μm, 20 μm, 25 μm, and 50 μm for double sided laminate.

## ●General Properties

Property		Units	MC18-25-00FR	Test Method
Tensile Strength		MPa	390	IPC-TM-650, 2.4.19
Tensile Elongation		%	50	
Tensile Modulus		MPa	7600	
Peel Strength	Initial	kN/m	1.2	JIS C-5012
	Aging	kN/m	1.2	150°C, 7 days
Etch Shrinkage	MD	%	-0.01	
	TD	%	-0.01	
Thermal Shrinkage	MD	%	-0.03	250°C, 30min
	TD	%	-0.03	
Insulation Resistance		MΩ	1.0E+14	IPC-TM-650, 2.5.9
Volume Resistance		MΩ · cm	1.0E+14	IPC-TM-650, 2.5.17
Dielectric Strength		kV/25 μm	5	ASTM-D-149
Solder Float Resistance		°C	400	1min dipping
Flammability		-	VTM-0	UL-94

The information and data on this leaflet are measured by reliable test method. But confirm the property of the products according to your actual process condition or test method before use. We are not guaranty that the method or usage on this leaflet are not conflict all the patent. The contents of this leaflet are changed according to our reasons. - Apr 2005 -

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