

For Your Dream & Happiness

Nippon Steel Chemical Co., Ltd.

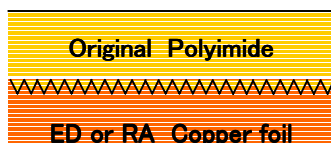
Adhesiveless, Flexible Copper Clad
Polyimide Laminate
Single side

ESPANEX KC series

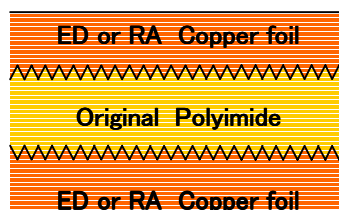
Adhesiveless, Flexible Copper Clad
Polyimide Laminate
Double side

ESPANEX KB series

ESPANEX KC & KB series: are single and double sided flexible copper clad adhesiveless polyimide dielectric laminates, and have been improved heat resistance by our original polyimide to adapt the lead free solder process. ESPANEX KC & KB series indicate excellent heat resistance, flammability, electric characteristics, dimensional stability, and can be applied fine pattern wiring board. ESPANEX KC & KB series are used for Flex circuitry, Flex-rigid multilayers and TBGA chip carrier packaging.



KC series
Single side



KB series
Double side

■ Features

- 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
- Multilayer Rigid-Flex wiring boards
- Chip On Film substrate (Chip on Flex)
- CSP
- BGA
- PDP driver etc.

■ Copper Foil Types & Polyimide Thickness Selection

● Copper foil selections

ESPANEX KC & KB series adhesiveless copper clad laminates 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 requirements of each application.

● Polyimide thickness

Our CASTING process can provide 12 μ m, 25 μ m, 40 μ m and 50 μ m thickness polyimide for single sided and 25 μ m and 50 μ m for double sided.

Polyimide thickness	NSCC grade	
	Single side	Double side
12 μ m	(Please ask for specific)	
25 μ m	KCXX-25-00ZZ	(Please ask for specific)
40 μ m	KCXX-40-00ZZ	
50 μ m	(Please ask for specific)	(Please ask for specific)

XX=Copper foil thickness, ZZ=Copper foil type

■ General Properties

Property	Units	KC18-25-00GE		Test method
		F2-WS		
Tensile Strength	MPa	249.4		IPC-TM-650, 2.4.19
Tensile Elongation	%	50.0		
Tensile Modulus	MPa	4600		
Peel Strength	Initial	kN/m	1.0	JIS C-5012
	Aging	kN/m	0.8	150°C, 7days
Etch Shrinkage	MD	%	0.02	250°C, 30min.
	TD	%	(-0.01)	
Thermal Shrinkage	MD	%	(-0.03)	
	TD	%	(-0.04)	
Insulation Resistance	M Ω	1.0×10^8		IPC-TM-650, 2.5.9
Volume Resistivity	M $\Omega \cdot$ cm	5.0×10^9		IPC-TM-650, 2.5.17
Dielectric strength	kV/mil	≥ 5		ASTM-D-149 Short time test
Solder float resistance	°C	400		1 min. dipping

■ Technical availability to lead-free solder

ESPANEX KC & KB series, have been improved heat resistance by our engineered polyimide chemistries, correspond to lead free solder that has higher melting point than conventional Tin/Lead alloy.

<Reflow resistance of ESPANEX SB/KB after humidification>

Cycle	85°C, 60%RH, 168hr. + Reflow		
	1st cycle	2nd cycle	3rd cycle
ESPANEX SB	260°C ○	260°C × 250°C ○	250°C ×
ESPANEX KB	260°C ○	260°C ○	260°C ○

(Evaluation ○; No change ×; Swelling etc.)

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.

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