DuPont™ Kapton® E

High Modulus Polyimide Film

Description

DuPont™ Kapton® E is a premium performance polyimide film for use as a dielectric substrate for flexible printed circuits and high density interconnects. Kapton® E is the preferred dielectric film for very fine pitch circuitry due to its superior dimensional stability, lay-flat, high modulus, and a coefficient of thermal expansion matched to copper. The excellent electrical characteristics and chemical etchability inherent to Kapton® HN and VN films have been maintained in Kapton® E polyimide film. Kapton® E film also has very low moisture absorption and is laser ablatable.

Constructions

Kapton® E film is available in 13, 25, 38 and 50 micron thicknesses.

Packaging

Kapton® E film is supplied in standard widths of 10 inches (254 mm) to 56 inches (1422 mm). Roll length is 3200 feet on a nominal 6 inch paper core. Other sizes are available by special order. All packaging materials are 100% recyclable.

Processing

Kapton® E film can be processed using normal roll-to-roll processing. Typical properties for Kapton® E are listed in **Table 1**.

Storage Conditions / Shelf Life

Proper storage of Kapton® film will ensure its performance. Kapton® E film should not be exposed to ultraviolet radiation as from direct sunilght or in conditions of high humidity for extended periods of time. The storage life will be decreased dramatically under these conditions. The shelf life for Kapton® in typical warehouse temperature will be in excess of 20 years. Rolls should be kept wrapped in storage to prevent surface contamination.

Safe Handling

Proper care should be taken when handling Kapton® E polyimide film. Processing at high temperatures requires adequate ventilation and air circulation.

Scrap film should be disposed of in a landfill.

Table 1
Typical Properties of Kapton® Type E Film

Property	Typical Value	Test Method
Mechanical		
Tensile Strength, Kpsi	50	IPC-TM-650, Meth. 2.4.19
Young's Modulus, Kpsi	780	ASTM D-882
Modulus, Kpsi	780	ASTM D-882
Elongation, %	50	IPC-TM-650, Meth. 2.4.19
Elmendorf Tear, gm/mil	12	IPC-TM-650, Meth. 2.4.16
MIT Fold, cycles	6800	ASTM D-2176
Poisson's Ratio, RT	0.32	
Electrical		
Dielectric Strength, v/mil	7000	ASTM D-149
Dielectric Constant @ 1Khz	3.1	IPC-TM-650, Meth. 2.5.5.3
Dissipation Factor	0.002	IPC-TM-650, Meth. 2.5.5.3
Volume Resistivity, ohm/cm	1.00E+17	IPC-TM-650, Meth. 2.5.17
Surface Resisitivity, ohm/cm	1.00E+17	IPC-TM-650, Meth. 2.5. 17
Thermal		
Meltpoint, polyimide, °C	none	ASTM E-794
CTE ppm/°C (50 to 200 C)	16	TMA
Tg °C	354	DMA
Dimensional Stability @150°C, %	0.05	IPC-TM-650, Meth. 2.2.4A
Flammability	94V-O	UL-94
Temperature Index, min/°C	200	UL-746B
Chemical		
Moisture Absorption @ 100%RH, %	1.8	IPC-TM-650, Meth. 2.6.2
Water Vapor Permeability, gms/m²/day	5	ASTM E-96
CHE, ppm/%RH	8	DuPont

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