DuPont™ Kapton® FWR

Polyimide Film

Product Description

DuPont™ Kapton® FWR is a heat fusible polyimide-FEP fluoropolymer composite film that has a unique balance of excellent electrical, thermal durability, and chemical resistance properties. The properties of Kapton® FWR will provide a tough, high dielectric strength insulation with significantly improved hydrolysis resistance compared to other commonly used polyimide materials.

Kapton® FWR can be properly processed on most tape wrapping machines. It can be fused using either induction or radiant heat. Kapton® FWR films have a higher modulus and lower water vapor permeability than equivalent Kapton® FN films. The wire wrapping and sealing process may have to be modified to compensate for these differences.

Kapton® 150FWR019 film is constructed of a 1.0 mil Kapton® polyimide film with 0.5 mil of FEP fluoropolymer on one side. Kapton® 200FWR919 film is constructed of a 1.0 mil Kapton® polyimide film with 0.5 mil of FEP fluoropolymer on each side.

Characteristics

- Excellent hydrolysis resistance
- UL 94 recognition: V-0
- High dielectric strength
- Mechanically Tough
- Heat Fusible

Applications

- Magnet wire
- Traction motors: rail, auto, mining
- Industrial motor insulation
- Wind, hydro generators
- ESP motors
- High temperature
- High reliability
- Aerospace and specialty wires

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Table 1. Typical Physical Properties of DuPont™ Kapton® FWR Polyimide Film

Property	Unit	150FWR019	200FWR919	Test Method
Thickness	mil	1.5	2.0	ASTM D374
	µm	38	50	
Tensile Strength	kpsi	34	30	ASTM D882
	MPa	234	207	
Elongation	%	60	63	ASTM D882
Tensile Modulus	kpsi	520	430	ASTM D882
	GPa	3.6	3.0	
Dielectric Strength	V/mil	4500	5000	ASTM D149
	kV/mm	177	197	
Yield	ft^2/lb	79.7	56.8	–
	m^2/kg	16.3	11.6	
Density	g/cc	1.69	1.83	ASTM D1505
Dielectric Constant @ 1 kHz	–	2.7		ASTM D150
Dissipation Factor @ 1 kHz	–	0.0013		ASTM D150
Volume Resistivity	ohm-cm	2.30^{17}		ASTM D257
Results Below - polyimide film data only				
UL Electrical RTI	°C	240		UL746B
UL Mechanical RTI	°C	200		UL746B
Flammability	UL-94	V-0		UL Test Method
Moisture Absorption, 100% RH	%	2.2		ASTM D570
Water Vapor Permeability	$g/m^2/day$	8.4		ASTM E96
Hydroscopic Coefficient of Expansion	ppm/% RH	9		–

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For more information on DuPont™ Kapton® polyimide films or other DuPont products, please visit our website.

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