Kapton polyimide film

Kapton polyimide film (manufacturer DuPont) is an insulation material with extremely good thermal, mechanical, chemical and electrical properties. Kapton is recommended for applications which require a polyimide film with very many stable properties covering a wide temperature range.

Various different types of Kapton are manufactured of which Type HN is the standard. Other commonplace variants of Kapton are Types FN, HPP-ST, CR and FCR.

Typical applications

- Electric motors
- Generators
- Transformers
- Mechanical components
- Electronic components
- Most types of electrical equipment and apparatus
- Fiberoptic cables
- Insulation tubes
- Interlays

Properties

- Extremely good thermal properties in both low and high temperatures. The material is suitable for applications from -269°C to +400°C with good results.
- Extremely good mechanical properties.
- Extremely good electrical properties.
- Extremely good chemical properties.
- Kapton HN has an excellent balance of properties ver a very wide temperature range.

Composition

Kapton is a polyimide polymer of imide monomers that can withstand very high temperatures. Kapton is produced from the condensation of pyromellitic dianhydride and 4.4'-oxydianiline that is an ether derivative of aniline.

For more information on the various types of Kapton Type HN made, see technical data.

- Kapton HN, standard variant of Kapton film.
- Kapton FN is Kapton HN film coated on one or both sides with Teflon FEP fluorocarbon resin for applications where heat sealability is required.
- Kapton HPP-ST is the same as Kapton HN film but with far superior properties as regards dimensional stability and adhesion.
- Kapton CR is a type of Kapton developed specifically to withstand the damaging effects of "corona".
- Kapton FCR is Kapton CR coated on one or both sides with Teflon FEP fluoropolymer (see Kapton FN).

Colour

Usually brownish.

Norms

Kapton complies with ASTMD-5213-07, a specification for "Polymeric resin films" for electric insulation and dielectric applications.

Dimensions

Kapton HN is manufactured in thicknesses 7.5–125 µm (standard type of Kapton).

Our standard width is usually 914 mm. Can be slit to desired widths up to ca 1 320 mm.

Can be punched or cut to desired form or shape. In the case of die-cutting a die tool is required (tools available at low costs).

Packaging

Standard packaging width ca 914 mm, MOQ (minimum order quantity) in kg on request.

Other slit-to-width dimensions on MOQ (minimum order quantity) in kg on request.

Punched and die-cut items: volume MOQ (minimum order quantity) by agreement (with die tool or cut).

Technical data

The properties stated in this data sheet are typical values unless otherwise stated.

Properties	Test method							Unit
Kapton type		30HN	50HN	100HN	200HN	300HN	500HN	
Nominal thickness (ca)		7.5	12.7	25	50	75	125	µm
Mechanical properties								
Grade (mil)		0.3	0.5	1	2	3	5	
Thickness max		unspec	8.9	21.6	44.5	69.1	118	µm
Thickness min		unspec	16.5	29.2	57.2	83.3	136	µm
Weight/m^2 max		unspec	14	32.7	66.9	101.9	169.5	g/m^2
Weight/m^2 min		unspec	26	39.7	77.9	115.4	192.5	g/m^2
Density ca		unspec	1.42	1.42	1.42	1.42	1.42	g/cm^3
ca Area/kg		unspec	55.7	27.9	13.9	9.2	5.5	m^2/kg
Tensile strength +23°C	ASTM D882-91, method A	unspec	138 (min)	231	231	231	231	N/mm^2
Tensile strength + 200°C	ASTM D882-91, method A	unspec	unspec	139	139	139	139	N/mm^2
Elongation +23°C	ASTM D882-91, method A	unspec	35 (min)	72	82	82	82	%
Elongation +200°C	ASTM D882-91, method A	unspec	unspec	83	83	83	83	%
MIT Folding Endurance test	ASTM D-2176-89	unspec	unspec	285 000	55 000	6 000	5 000	Number of cycles
Shrinkage at +200°C		unspec	unspec	0.3	0.4	0.4	0.4	% (max)
Moisture absorption (24h at +23°C)		unspec	4.0	4.0	4.0	4.0	4.0	% (max)
Thermal properties								
Electrical insulation class (UL E39505)		unspec	C/240	C/240	C/240	C/240	C/240	class/°C
Mechanical temp.class		unspec	200	200	200	200	200	°C
Flammability	UL94 - VO	-	Yes	Yes	Yes	Yes	Yes	
Electrical properties								
Dielectric strength	ASTM D-149-97	unspec	118	236	197	177	118	kV/mm

How to contact BEVI
Contact details for all countries are continually updated on our website.
Please visit www.bevi.com to access the information direct.

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