

Nomex® Kapton NKN and NK (manufacturer DuPont) are insulation laminates made of calendered Nomex® bonded to Kapton polyimide film. The material has very good properties such as dielectric strength, initial tear strength, tensile strength and thermal properties.



## Typical applications

The material often finds use in both the manufacture and remanufacture of electric motors and generators of many sizes and temperature classes. The most important area of application is slot and phase insulation of motors and generators with thermal requirements above class H applications.

## Properties

- High dielectric strength.
- Good initial tear strength.
- Good tensile strength.
- Good chemical properties.
- High thermal resistance for applications class H (integrated in UL systems up to +220°C).

## Composition

NK and NKN are duplex and triplex insulation laminate materials made of calendered Nomex® bonded to Kapton polyimide film with a proprietary high temperature adhesive. The materials are designed not to delaminate or blister at high temperatures.

NK is produced in 4 variants (with various thicknesses of Kapton film). See technical data:

- NKN alt. NK-5 with a Nomex® thickness of 50 µm. Usually calendered Nomex® Type 464.
- NKN alt. NK-8 with a Nomex® thickness of 80 µm. Usually calendered Nomex® Type 416.
- NKN alt. NK-13 with a Nomex® thickness of 130 µm. Usually calendered Nomex® Type 416.
- NKN alt. NK-18 with a Nomex® thickness of 1800 µm. Usually calendered Nomex® Type 410.

## Colours

Nomex® is usually whitish and Kapton is usually brownish.

## Dimensioner

- Nomex® Kapton (NK) is manufactured in thicknesses ca 80–280 µm.
- Nomex® Kapton Nomex® (NKN) is manufactured in thicknesses 150–450 µm.

Can be slit to desired widths up to our standard width usually 914 mm.

Can be punched or cut to desired form or shape. In the case of die-cutting a die tool is required.

## Packaging

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

## Technical data

Properties	Test method											Unit
NK-XX		5	5	5	8	8	13	13	13	18	18	
Nominal thickness (ca)	IEC60626	80	100	130	110	140	200	230	280	210	240	µm
<b>Mechanical properties</b>												
Grade (mil)		2/1	2/2	2/3	3/1	3/2	5/2	5/3	5/5	7/1	7/2	
Film thickness Nomex®		50	50	50	80	80	130	130	130	180	180	µm
Film thickness Kapton		25	50	75	25	50	50	75	125	25	50	µm
Thickness tolerance	IEC60626	10	10	10	10	10	20	20	20	20	20	+/-µm
Weight/m <sup>2</sup> ca	IEC60626	91	127	164	116	152	203	240	308	225	261	g/m <sup>2</sup>
Area/kg ca		11.0	7.9	6.1	8.6	6.6	4.9	4.2	3.25	4.4	3.8	m <sup>2</sup> /kg
Tensile strength MD	IEC60626	80	80	80	160	200	155	155	200	140	180	>=N/10 mm
Tensile strength XD	IEC60626	-	-	-	-	-	-	-	-	70	100	>=N/10 mm
Elongation MD	IEC60626	3	3	3	15	15	-	-	-	15	15	>=%
Elongation XD	IEC60626	-	-	-	-	-	-	-	-	10	10	>=%
<b>Thermal properties</b>												
Electrical insulation class*	IEC60626, UL1446	H/180	H/180	H/180	H/180	H/180	H/180	H/180	H/180	H/180	H/180	class/°C
<b>Electrical properties</b>												
Electrical insulation class*	IEC60626	4	9	12	7	9	8	13	19	5	9	kV

\*Material used in many UL insulations systems up to +220°C

Properties	Test method											Unit
NK-XX		5	5	5	5	8	8	8	8	13	13	
Nominal thickness (ca)	IEC60626	150	170	200	230	200	220	260	300	300	330	µm
<b>Mechanical properties</b>												
Grade (mil)		2/1/2	2/2/2	2/3/2	2/5/2	3/1/3	3/2/3	3/3/3	3/5/3	5/1/5	5/2/5	
Film thickness Nomex®		50	50	50	50	80	80	80	80	130	130	µm
Film thickness Kapton		25	50	75	125	25	50	75	125	25	50	µm
Thickness tolerance	IEC60626	15	15	15	15	10	10	10	10	20	10	+/-µm
Weight/m <sup>2</sup> ca	IEC60626	143	179	216	284	195	231	240	336	297	333	g/m <sup>2</sup>
Area/kg ca		7.0	5.6	4.6	3.5	5.1	4.3	4.2	3.0	3.4	3.0	m <sup>2</sup> /kg
Tensile strength MD	IEC60626	120	160	180	200	160	200	250	280	270	300	>=N/10 mm
Tensile strength XD	IEC60626	70	90	120	150	120	180	200	220	180	210	>=N/10 mm
Elongation MD	IEC60626	15	17	17	17	15	15	17	17	15	15	>=%
Elongation XD	IEC60626	15	17	17	17	15	15	17	17	15	15	>=%
<b>Thermal properties</b>												
Electrical insulation class*	IEC60626, UL1446	H/180	H/180	H/180	H/180	H/180	H/180	H/180	H/180	H/180	H/180	class/°C
<b>Electrical properties</b>												
Electrical insulation class*	IEC60626	7	9	13	18	7	9	14	19	9	13	>=kV

\*Material used in many UL insulations systems up to +220°C

## Technical data

Properties	Testmetod						Enhet
NK-XX		13	13	18	18	18	
Nominal thickness (ca)	IEC60626	350	400	400	430	450	µm
<b>Mechanical properties</b>							
Grade (mil)		5/3/5	5/5/5	7/1/7	7/2/7	7/3/7	
Film thickness Nomex®		130	130	180	180	180	µm
Film thickness Kapton		75	125	25	50	75	µm
Thickness tolerance	IEC60626	10	10	10	10	10	+/-µm
Weight/m <sup>2</sup> ca	IEC60626	370	438	413	449	486	g/m <sup>2</sup>
Area/kg ca		2.7	2.3	2.4	2.2	2.1	m <sup>2</sup> /kg
Tensile strength MD	IEC60626	390	520	400	400	400	>=N/10 mm
Tensile strength XD	IEC60626	250	320	250	250	250	>=N/10 mm
Elongation MD	IEC60626	17	17	15	15	15	>=%
Elongation XD	IEC60626	17	17	15	15	15	>=%
<b>Thermal properties</b>							
Electrical insulation class*	IEC60626, UL1446	H/180	H/180	H/180	H/180	H/180	class/°C
<b>Electrical properties</b>							
Electrical insulation class*	IEC60626	15	20	14	18	21	>=kV

\*Material used in many UL insulations systems up to +220°C

### How to contact BEVI

Contact details for all countries are continually updated on our website. Please visit [www.bevi.com](http://www.bevi.com) to access the information direct.

BEVI AB (Headquarters)  
Blomstermåla, Sweden  
Tel. +46 499 271 00  
[info@bevi.se](mailto:info@bevi.se)

