SynFlex Elektro GmbH
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Nomex® 410

Nomex® 410 is a synthetic electro-insulation paper constructed of a calendered, aromatic polyamide fibride flock composition.

Attributes

Nomex® 410 is a Class H (180 °C) insulating material. Temperatures below 200 °C only slightly influence its electrical properties. The excellent mechanical properties can be extrapolated at much higher temperatures. Due to the polymer structure, Nomex® 410 can also be used at temperatures as low as -190 °C.

It has a high short-term dielectric strength; nevertheless, the permanent dielectric strength should not exceed 1.2 kV/mm. Nomex® 410 is compatible with all common resins, varnish, adhesive classes, as well as transformer liquids, oils and cooling agents. Common solvents may lead to slightly reversible moisture expansion. Nomex® 410 has a low flammability (UL 94V-0), moreover, it displays a very high level of beta and gamma-ray resistance.

Application

High quality Nomex® 410 is used in almost all known applications for electrical insulating materials. Application ranges from AC and DC motors to large generators, wet and dry transformers and chokes, even with beta and gamma radiation exposure.

Standards

- Class H (180 °C) insulating material.
- UL listed (RTI mech. + elect. 220 °C)

Delivery forms

Film thickness in µm:

50, 80, 130, 180, 250, 300, 380, 510, 610, 760

Nomex® 410 can be supplied:

- in slit rolls: depending on the material thickness
- in rolls: 457 mm or 914 mm

Feathering:

- depth approx. 1 - 12 mm, distance approx. 1 - 10 mm
- from widths of 10 to 240 mm and thickness of 0.25 mm

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Updated 07/21

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Base

Calandered aromatic polyamide fibride composition.

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Mechanical	Unit of measure						
Nominal thickness	µm	50	80	130	180	250	300
Typical thickness	µm	60	80	130	180	260	310
Specific weight	g/m²	41	64	115	174	249	310
Density	g/cm³	0.72	0.81	0.88	0.95	0.96	1.00
Tensile strength longitudinal	N/cm	43	68	141	227	296	380
Tensile strength transversal	N/cm	19	34	71	116	161	185
Elongation at break longitudinal	%	10	12	16	20	22	23
Elongation at break transversal	%	7	9	13	15	18	18
Shrinkage at 300 °C longitudinal	%	1.8	0.8	0.4	0.5	0.2	0.2
Shrinkage at 300 °C transversal	%				0.1	0,0	0.1
Elmendorf tear strength longitudinal	N	0.8	1.2	2.3	3.7	5.6	7.1
Elmendorf tear strength transversal	N	1.5	2.4	4.8	7.2	10.6	13.7

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Mechanical	Unit of measure					Test standard
Nominal thickness	µm	380	510	610	760	
Typical thickness	µm	390	520	610	780	ASTM D-374
Specific weight	g/m²	395	549	692	839	ASTM D-646
Density	g/cm³	1.02	1.06	1.13	1.08	
Tensile strength longitudinal	N/cm	462	610	728	816	ASTM D-828
Tensile strength transversal	N/cm	252	374	500	592	ASTM D-828
Elongation at break longitudinal	%	22	23	21	21	ASTM D-828
Elongation at break transversal	%	16	18	16	17	ASTM D-828
Shrinkage at 300 °C longitudinal	%	0.2				
Shrinkage at 300 °C transversal	%	0.1				
Elmendorf tear strength longitudinal	N	9.0	14.3	N/A	N/A	TAPPI 414
Elmendorf tear strength transversal	N	16.7	24.8	N/A	N/A	TAPPI 414

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Thermal	Unit of measure	
Nominal thickness	µm	50
Thermal conductivity	mW / (m.K)	103

Thermal	Unit of measure						
Nominal thickness	µm	80	130	180	250	300	380
Thermal conductivity	mW / (m.K)	114	123	143	139	N/A	149

Thermal	Unit of measure				Test standard
Nominal thickness	µm	510	610	760	
Thermal conductivity	mW / (m.K)	157	N/A	175	

Electrical	Unit of measure						
Nominal thickness	µm	50	80	130	180	250	300
Short-time AC	kV/mm	18	22	28	34	33	34

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Electrical	Unit of measure						
Dielectric constant at 60 Hz		1.6	1.6	2.4	2.7	2.9	2.9

Electrical	Unit of measure					Test standard
Nominal thickness	µm	380	510	610	760	
Short-time AC	kV/mm	33	32	32	27	ASTM D-149
Dielectric constant at 60 Hz		3.2	3.4	3.7	3.7	ASTM D-150

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