

Dr. Dietrich Müller GmbH, Zeppelinring 18, D-26197 Ahlhorn

Electrical Insulation Materials

Nomex[®] 410 FI 15000

Structure: Nomex[®] 410 FI 15000 is a synthetic electrical insulation paper which consists of a calendered, aromatic polyamide fibrid flake composition.

Characteristics: Nomex[®] 410 FI 15000 is an insulation material of insulation class H (180°C). Temperatures up to 200°C only have a small effect on its electrical properties. The good mechanical properties can be extrapolated from higher temperatures.

Due to the polymer structure Nomex[®] 410 FI 15000 can also be used at low temperatures down to -190°C. It has high short-time field intensity. The permanent field intensity, however should not be above 1.5 kV/mm. Nomex[®] 410 FI 15000 is compatible with all classes of conventional resins, coatings, adhesives and transformer fluids, lubricating oils and coolants. Common solvents can lead to light reversible expansion. Nomex[®] 410 FI 15000 is flame-retardant (UL94V-0), it also has a very high level of beta and gamma ray resistance.

Application: Nomex[®] 410 FI 15000 is used in almost all known electrical sheet insulation applications. The application ranges from AC and DC motors up to large generators, wet and dry transformers and chokes, also under beta and gamma radiation.

Standard color: Nomex[®] 410 FI 15000 is supplied in Beige/Amber.

Stand October 2014

Zeppelinring 18 | D-26197 Ahlhorn | Tel.: +49 (0) 4435 97 10 10 | Fax: +49 (0) 4435 97 10 11
info@mueller-ahlhorn.com | www.mueller-ahlhorn.com | Sitz der Gesellschaft: Ahlhorn
Geschäftsführer: Heinz-Jürgen Siebert | AG Oldenburg: HRB 209026 | Ust. ID-Nr.: DE 295969093
St.-Nr.: 68/207/07677 | Zertifiziert nach DIN EN ISO 9001:2008 | UL anerkannter Repacker E341377

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Nomex® 410 FI 15000

Delivery Forms: Nomex® 410 FI 15000 is available on rolls (up to 910 mm wide) and slit rolls (from 10 mm wide). Slot insulations, wedges, caps, phase insulation, coil insulation, end caps, die-cut and cut blanks can be supplied on request.

Storage Conditions: Nomex® 410 FI 15000 has an unlimited shelf life under normal conditions (20°C, 50% RH.)

Properties	Test method	Unit	Value					
Nominal thickness	-	µm	50	80	130	180	250	300
Typical thickness	ASTM D-374	µm	60	80	130	180	260	310
Specific weight	ASTM D-646	g/m ²	41	63	116	175	249	309
Density	-	g/cm ³	0.72	0.80	0.87	0.95	0.96	1.00
Tensile strength								
MD	ASTM D-828	N/cm	39	65	137	219	285	378
CMD	ASTM D-828	N/cm	18	32	66	111	152	196
Elongation								
MD	ASTM D-828	%	9	11	15	18	19	22
CMD	ASTM D-828	%	6	8	12	14	15	17
Shrinkage at 300°C								
MD	ASTM D-828	-	2.2	1.1	0.9	0.6	0.4	0.4
CMD	ASTM D-828	-	0.1	0.0	0.0	0.2	0.1	0.2
Thermal conductivity	-	mW/(m.K)	103	114	123	143	139	-
Dielectric strength								
Short-time AC	ASTM D-149	V/mil	430	550	680	840	815	820
Short-time AC	ASTM D-149	kV/mm	17	22	27	33	32	32
Full wave impulse AC	ASTM D-3426	V/mil	1000	1000	1400	1400	1600	N/A
Full wave impulse AC	ASTM D-3426	kV/mm	39	39	55	55	36	N/A
Dielectric constant at 60 Hz	ASTM D-150	-	1.6	1.6	2.4	2.7	2.7	2.9
Dissipation factor 60 Hz (x10 ⁻³)	ASTM D-150	-	4	5	6	6	6	7

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Properties	Test method	Unit	Value					
Nominal thickness	-	µm	380	510	610	650	730	760
Typical thickness	ASTM D-374	µm	390	520	610	650	730	770
Basis weight	ASTM D-646	g/m ²	397	547	693	696	854	847
Density	-	g/cm ³	1.03	1.06	1.13	1.08	1.17	1.10
Tensile strength								
MD	ASTM D-828	N/cm	459	606	741	758	860	841
CMD	ASTM D-828	N/cm	252	354	497	524	630	595
Elongation								
MD	ASTM D-828	%	19	20	18	19	16	17
CMD	ASTM D-828	%	14	16	14	16	12	13
Shrinkage at 300°C								
MD	ASTM D-828	-	0.3	0.1	0.0	N/A	0.0	0.2
CMD	ASTM D-828	-	0.3	0.0	0.0	0.0	0.0	0.0
Thermal conductivity	-	mW/(m.K)	149	157	-	-	-	175
Dielectric strength								
Short-term AC	ASTM D-149	V/mil	830	810	800	730	-	750
Short-term AC	ASTM D-149	kV/mm	33	32	31	29	-	30
Full wave impulse AC	ASTM D-3426	V/mil	1400	1400	N/A	N/A	-	N/A
Full wave impulse AC	ASTM D-3426	kV/mm	55	55	N/A	N/A	-	N/A
Dielectric constant at 60 Hz	ASTM D-150	-	3.2	3.4	3.7	N/A	-	3.7
Dissipation factor 60 Hz (x10 ⁻³)	ASTM D-150	-	7	7	7	N/A	-	7

Trademark information: Nomex® is a registered trademark of DuPont.

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Information:

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