ERBA ISOLANTI srl

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NOMEX aramid paper Type 410

Type 410 is a calendered insulation paper which offers high inherent dielectric strength, mechanical toughness, flexibility and resilience. Type 410 is the original form of NOMEX paper, and is widely used in a majority of electrical equipment applications. Available in 10 thicknesses (0,05 to 0,76 mm), Type 410 is used in almost every known electrical sheet insulation application.

Please note:
The properties in this data sheet are typical, or average, values and should not be used as specification limits. Unless otherwise noted, all properties were measured in air under "standard" conditions (in equilibrium at 23°C, 50% relative humidity). Note that, like other products of papermaking technology, NOMEX papers have somewhat different properties in the papermaking machine direction (MD) compared to the cross direction (XD). In some applications (for example, motor slot liners), it is necessary to orient the paper in the optimum direction to obtain its maximum potential performance.

Electrical properties

The typical electrical property values for Type 410 paper are shown in Table I. The *AC Rapid Rise* dielectric strength data of Table I represent voltage stress levels withstood for 10 to 20 second time periods at a frequency of 60 Hz. These values differ from long-term strength potential. DuPont recommends that continuous stresses in transformers not exceed 1,6 kV/mm to minimize the risk of partial discharges (corona). The *Full Wave Impulse* dielectric strength data of Table I were generated on flat sheets, such as in layer and barrier applications. The geometry of the system has an effect on the actual impulse strength values of the material. The dielectric strength data are typical values and not recommended for design purposes. Design values can be supplied upon request.

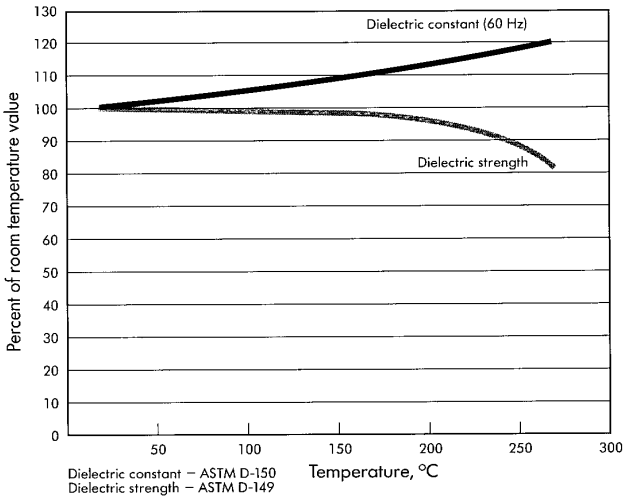
Temperature has a minor effect on dielectric strength and dielectric constant, as shown in Figure 1.

Table I — Typical electrical properties

Nominal thickness (mm)	0,05	0,08	0,13	0,18	0,25	0,30	0,38	0,51	0,61	0,65	0,76
Dielectric strength AC rapid rise[1] (kV/mm)	17	22	26	33	32	33	32	31	32	32	27
Full wave impulse[2] (kV/mm)	39	39	55	55	63	N/A	55	55	N/A	N/A	49
Dielectric constant[3] at 60 Hz	1,6	1,6	2,4	2,7	2,7	2,9	3,2	3,4	3,7	3,7	3,7
Dissipation factor[3] at 60 Hz (x 10^{-3})	4	5	6	6	6	7	7	7	7	7	7

[1] ASTM D-149, 50 mm electrodes, rapid rise; corresponds with IEC 243-1 subclause 9,1, except for equal electrode set-up of 50 mm
[2] ASTM D-3426
[3] ASTM D-150

Figure 1 — Effect of temperature on electrical properties Type 410 — 0,25 mm



Le notizie contenute nel presente bollettino sono frutto di accurate ricerche e di numerosi esperimenti nel ns laboratorio.
Data però la molteplicità delle applicazioni pratiche, esse hanno valore unicamente indicativo, senza alcuna nostra responsabilità.

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TIPO 410

THICK. MM	APPROX WEIGH FOR STANDARD ROLL mm 610	mm 914	LENGHT OF ROLL	YELD	WEIGHT FOR 1 SQM	THICKNESS
	KG	KG	MT	Mq	GR	MM
0,05	27	41	1143	25,6	39	0,05
0,08	29	44	768	15,9	63	0,08
0,13	33	45	439	8,9	112	0,13
0,18	33	49	320	5,9	168	0,18
0,25	35	53	238	4,1	244	0,25
0,30	34	51	183	3,3	305	0,30
0,38	37	55	155	2,6	388	0,38
0,51	38	57	119	1,9	524	0,51
0,61	42	63	101	1,5	682	0,61
0,76	41	62	82	1,2	827	0,76

Diameters of Rolls: Outside 300 +/- 15 mm
Inside 76 mm

Width of Rolls: 914 mm +/- 15 mm

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