

DuPont™ Nomex® 926

Technical Data Sheet

Product Description

DuPont™ Nomex® 926 is a strong, high dielectric, thermally stable paper that is specifically designed for use as conductor insulation in liquid immersed transformers. Nomex® 926 is not appropriate for use as conductor insulation for dry type transformers. Nomex® 926 is available only in a 0.05-mm (2-mil) thickness. This product is sold as a “splice-free” insulation. This means there are no films or tapes in the rolls, only continuous, uninterrupted material. The product is typically sold by our distributors and customers as thin tapes for wire wrapping or as already wrapped conductor.

Electrical Properties

The typical electrical property values of Nomex® 926 paper in mineral oil are shown in Tables I and II. The AC rapid rise dielectric strength data shown in 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.

The full wave impulse dielectric strength data shown in Table I were generated on flat sheets, such as those used 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.

The electrical properties are enhanced in oil due to the excellent impregnability of Nomex® 926. Processing characteristics of this paper are similar to other papers used to insulate conductors in liquid immersed transformers.

Property	1 layer	5 layers	10 layers	15 layers	Test Method
AC Rapid Rise Breakdown, V/mil kV/mm	1680 66	1650 65	1630 64	1570 62	ASTM D149
Full Wave Impulse Breakdown, V/mil kV/mm	3700 146	4000 157	4100 161	3700 146	ASTM D3426

Property	@ 23°C	@ 90°C	@ 130°C	Test Method
Dielectric Constant at 60 Hz	2.94	3.00	3.10	ASTM D150
Dissipation Factor at 60 Hz	0.008	0.032	0.077	ASTM D150

Mechanical Properties

The typical mechanical property values of DuPont™ Nomex® 926 are shown in Table III. The data in Table IV show the impact of impregnation of mineral oil on the mechanical properties of Nomex® 926.

Table III. Typical Mechanical Properties of DuPont™ Nomex® 926

Property	Typical Value	Test Method
Nominal Thickness, mm mil	0.057 2.12	ASTM D374 ¹
Basis Weight, g/m ²	40.0	ASTM D646
Density, g/cc	0.71	ASTM D646
Tensile Strength, N/cm MD XD	42.0 17.0	ASTM D828
Elongation, % MD XD	10.8 6.2	ASTM D828
Initial Tear Strength, N MD XD	12.4 5.8	ASTM D1004 ²
Shrinkage @ 300°C, % MD XD	1.23 0.01	

MD = machine direction; XD = cross direction
 1. Except 12.6 psi foot pressure is applied.
 2. Data presented for initial tear strength is listed in the direction of the sample, per ASTM D1004. The tear is actually 90 degrees to the sample direction; therefore, for papers with a higher reported machine direction initial tear strength, the paper will be tougher to tear in the cross direction.

Table IV. Effect of Mineral Oil Impregnation on Typical Mechanical Properties of DuPont™ Nomex® 926

Property	Nomex® 926 0.05 mm (2 mil) @ 23°C, 50% RH	Nomex® 926 0.05 mm (2 mil) Impregnated in Mineral Oil
Tensile Strength, N/cm MD XD	42.0 17.0	48.7 20.4
Elongation, % MD XD	10.8 6.2	5.3 3.8

MD = machine direction; XD = cross direction

Thermal Properties

The thermal capability of Nomex® brand papers and pressboards in liquid immersed transformers has been well documented in industry publications. Single-point aging studies have shown that Nomex® 926 has aging

characteristics not significantly different from Nomex® 410 — 0.05 (2 mil) paper in mineral oil. Therefore, extensive long-term aging studies are unwarranted and not planned for this product.

The thermal conductivity of Nomex® 926 paper in mineral oil has not yet been tested; however, based on testing for other Nomex® thin papers, it is expected to be similar to papers used for wrapping conductors.

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The properties in this data sheet are 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 it may be necessary to orient the paper in the optimum direction to obtain its maximum potential performance.

Product safety information is available upon request. This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentations. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge and experience become available. Since we cannot anticipate all variations in actual end-use conditions, DUPONT MAKES NO WARRANTIES AND ASSUMES NO LIABILITY WHATSOEVER IN CONNECTION WITH ANY USE OF THIS INFORMATION. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe upon any trademark or patent right.

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