DuPont™ Nomex® N196 Paper, 3 mil Nominal Thickness

Category : Other Engineering Material , Composite Fibers , Polymer , Film , Thermoset , Aramid

Material Notes:

Nomex® Type N196 is a high floc grade of Nomex® paper. This leads to a high degree of saturability combined with high stiffness and mechanical properties. Type N196 is used where good saturability is required, for example as layer insulation within cast resin transformers and as phase insulation in small to medium motors.General NOMEX Information: Nomex® is a family of aromatic polyamide (aramid) fibers. This family consists of staple fibers, continuous filament yarns, paper, and spunlaced fabrics. The paper is produced from two forms of the aramid polymer. Small fibrous binder particles (fibrids) derived directly from the polymer under high shear conditions are mixed with short fibers (floc) which are cut to length from a fiber filament. The floc and fibrids are combined in a water based slurry from which a continuous sheet is produced on a specialized papermaking machine. This initial paper (as in Type 411) is low density and has poor properties. Subsequent densification and internal bonding is achieved by high temperature calendaring. The resulting paper is mechanically strong and has good electrical properties. Some uses for paper product include insulation in electric motors and transformers, wire wrapping, and honeycombed strength members in many aircraft. Nomex® brand fibers are inherently flame resistant: the flame resistance is a polymer property and does not diminish with the life of the fiber.Nomex® meta-aramid, poly(meta-phenyleneisophthalamide), is prepared from meta-phenylenediamine and isophthaloyl chloride in an amide solvent. It is a long chain polyamide in which at least 85% of the amide linkages are attached directly to two aromatic rings. The meta oriented phenylene forms bends in the polymer chain, reducing chain rigidity as compared to the para orientation in the chemically similar Kevlar® chain. This flexible polymer chain gives Nomex® more textile-like qualities while retaining high temperature properties similar to Kevlar®.Information provided by DuPont.

Order this product through the following link:

http://www.lookpolymers.com/polymer_DuPont-Nomex-N196-Paper-3-mil-Nominal-Thickness.php

Physical Properties	Metric	English	Comments
Bulk Density	0.740 g/cc	0.0267 lb/in³	
Density	0.740 g/cc	0.0267 lb/in³	
Thickness	76.2 microns	3.00 mil	Nominal
	78.7 microns	3.10 mil	Typical; ASTM D374

Mechanical Properties	Metric	English	Comments
Film Elongation at Break, MD	7.7 %	7.7 %	ASTM D828
Film Elongation at Break, TD	5.8 %	5.8 %	ASTM D828
Tear Strength, Total	11.1 N	2.50 lb (f)	Initial in TD; ASTM D1004
	17.8 N	4.00 lb (f)	Initial in MD; ASTM D1004
Elmendorf Tear Strength, MD	3.90 g/micron	99.0 g/mil	Calculated from mfr's report of 3 N per TAPPI-414 and the typical thickness

Mechanical Properties	Metric	English	Comments
Elmendorf Tear Strength, TD	0.54 g/micron	14 g/mil	Calculated from mfr's report of 4.9 N per TAPPI-414 and the typical thickness
Film Tensile Strength at Break, MD	51.4 MPa	7450 psi	Calculated from mfr's report of 40.5 N/cm per ASTM D828 and the typical thickness
Film Tensile Strength at Break, TD	29.6 MPa	4290 psi	Calculated from mfr's report of 23.3 N/cm per ASTM D828 and the typical thickness

Thermal Properties	Metric	English	Comments
Shrinkage, MD	0.70 %	0.70 %	at 300°C
Shrinkage, TD	0.10 %	0.10 %	at 300°C

Electrical Properties	Metric	English	Comments
Volume Resistivity	4.00e+17 ohm-cm	4.00e+17 ohm-cm	ASTM D257
Dielectric Constant	2.0 @Frequency 60 Hz	2.0 @Frequency 60 Hz	ASTM D150
	2.1 @Frequency 1000 Hz	2.1 @Frequency 1000 Hz	ASTM D150
Dielectric Strength	9.00 kV/mm	229 kV/in	AC Rapid Rise; ASTM D149
Dissipation Factor	0.0060 @Frequency 60 Hz	0.0060 @Frequency 60 Hz	ASTM D150
	0.0080 @Frequency 1000 Hz	0.0080 @Frequency 1000 Hz	ASTM D150

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