

DuPont™ Nomex® 430 1200 Denier Aramid Yarn

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

Material Notes:

A high crystallinity natural filament yarn of NOMEX with higher strength and chemical resistance than staple spun yarns. Type 430 is used where the aesthetics and properties of a filament yarn are required. It is available in light deniers for textile applications or higher deniers for rubber hose reinforcement applications. Type 430 is used in firefighters' turnout gear shells and liners, coated fabrics, electrical insulation, radiator hoses, and industrial laundry press covers. Generally, it is used in its natural color because of difficulty in producing a uniformly dyed product. 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. Uses for staple, yarn, and spunlaced fabrics include apparel fabrics to protect against flash fire and electric arcs exposure; firefighter garments; fabrics and spun yarns for filtration applications; insulation in fire resistant thermal protective apparel; rubber reinforcement; and in transportation textiles such as airline carpeting. 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. The fiber's low stiffness and high elongation give it textile-like characteristics which allow processing on conventional textile equipment. 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-430-1200-Denier-Aramid-Yarn.php

Physical Properties	Metric	English	Comments
Density	1.38 g/cc	0.0499 lb/in ³	
Water Absorption	4.0 %	4.0 %	As shipped; Typical moisture levels on fiber as shipped. Equilibrium moisture levels are dependent on humidity and processing conditions.
Moisture Absorption at Equilibrium	4.5 %	4.5 %	Billed (Commercial, ASTM)

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	607 MPa	88000 psi	Calculated from tenacity
Elongation at Break	30.5 %	30.5 %	Filament yarn tested at 3 TPI, 10" gauge length and 60%/minute extension rate. DuPont Test Method 12002.
Tenacity	0.441 N/tex	5.00 g/denier	Straight test - filament yarn tested at 3 TPI, 10 inch gauge length and 60%/min extension rate. DuPont Test Method 12002

Thermal Properties	Metric	English	Comments
CTE, linear	18.0 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	10.0 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 $^{\circ}\text{C}$	@Temperature 68.0 $^{\circ}\text{F}$	
Specific Heat Capacity	0.300 J/g- $^{\circ}\text{C}$	0.0717 BTU/lb- $^{\circ}\text{F}$	A Instruments Model 2920 modulated DSC, ASTM TM E1269.
Thermal Conductivity	0.250 W/m-K	1.74 BTU-in/hr-ft 2 - $^{\circ}\text{F}$	Per ATM E1530-93 on 1.4 g/cc compressed paper; density equivalent to crystallized yarn.
Shrinkage	1.30 %	1.30 %	in water
	@Temperature 100 $^{\circ}\text{C}$	@Temperature 212 $^{\circ}\text{F}$	

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