

3M Advanced Materials Division

3M™ Nextel™ Ceramic Structural Fabrics 610 and 720

Introduction

3M™ Nextel™ Ceramic Structural Fabrics 610 and 720 are made from continuous oxide composite grade fibers designed for load bearing applications in metal, ceramic and polymer matrices.

Nextel fibers are offered in a variety of forms including chopped fibers, fabrics, rovings, and yarns. Because the filaments are continuous and strong, textiles can be produced without the aid of other fibers or wire inserts.

Features and Benefits

- High strength/modulus
- Low elongation at operating temperatures
- Low shrinkage at operating temperatures
- Good chemical resistance
- Low thermal conductivity
- Thermal shock resistance
- Low porosity
- Broad electromagnetic transparency
- Electrically insulating

Typical Applications

Application	3M™ Nextel™ Ceramic Structural Fabrics	
	610	720
Continuous Use Temperature*	1832°F (1000°C)	2102°F (1150°C)

Ceramic Matrix Composites

Ideal for applications requiring high oxidation resistant structural fibers with low creep

Metal Matrix Composites

Ideal for applications requiring high temperature resistant fibers that won't react with aluminum

Polymer Matrix Composites

Ideal for applications requiring non-conductive, electromagnetically transparent structural fibers

* Single filament $\leq 1\%$ strain under 69 Mpa after 1000 hours.

Important Processing Information

Heat Cleaning: Nextel ceramic structural fabrics 610 and 720 are coated during manufacture with sizings or finishes to serve as aids in textile processing. The sizings or finishes consist of organic polymers which, when first heated, may ignite and/or decompose to potentially hazardous byproducts or process contaminants. See Safety Data Sheet or contact 3M for more information.

Heat cleaning of Nextel ceramic structural fabrics is a service offered by 3M.

Additional Information

For additional information about 3M Nextel ceramic structural fabrics, please call **1-800-367-8905**, or contact your local 3M representative.

Typical Physical Properties (not for specification purposes)

								3M™ Nextel™ Ceramic Structural Fabrics 610 and 720					
								Sized		Heat Cleaned			
Style	Target thread count per in. (cm)		Input fiber		Weave	Permeability* (Heat cleaned)	Width in. (cm)	Weight oz/yd ² (g/m ²)	Thickness in. (mm)	Weight oz/yd ² (g/m ²)	Thickness in. (mm)	Breaking strength lbs/in. (kg/cm)	
	Warp	Fill	Yarn type	Denier (Tex)								Warp	Fill
Nextel 610													
DF-6	18.5 (7)	18.5 (7)	Roving	1500 (167)	4 Harness Satin	Med	36 (91)	7.5 (250)	0.008 (0.20)	7.3 (250)	0.006 (0.15)	180 (32)	180 (32)
DF-11	27.5 (11)	27.5 (11)	Roving	1500 (167)	8 Harness Satin	Med	36 (91)	11 (370)	0.012 (0.30)	11 (370)	0.010 (0.25)	260 (46)	260 (46)
DF-19	23.5 (9)	23.5 (9)	Roving	3000 (333)	8 Harness Satin	Med	36 (91)	19 (640)	0.020 (0.51)	18 (610)	0.017 (0.43)	-	330 (59)
DF-11-3000	14 (5.5)	14 (5.5)	Roving	3000 (333)	5 Harness Satin	-	36 (91)	11 (370)	0.013 (0.33)	11 (370)	0.010 (.25)	-	-
DF-13-4500	12 (4.7)	12 (4.7)	Roving	4500 (500)	5 Harness Satin	-	36 (91)	14.1 (480)	0.019 ¹ (0.48)	13.8 (470)	0.014 (0.36)	-	-
Nextel 720													
EF-11	27.5 (11)	27.5 (11)	Roving	1500 (167)	8 Harness Satin	Med	36 (91)	11 (370)	0.013 (0.33)	11 (370)	0.012 (0.30)	180 (32)	170 (30)
EF-19	23.5 (9)	23.5 (9)	Roving	3000 (333)	8 Harness Satin	Med	36 (91)	19 (640)	0.023 (0.58)	18 (610)	0.021 (0.53)	240 (43)	230 (41)
EF-20	16 (6)	5 (2)	Roving	10,000 warp × 1500 fill (1111 × 167)	Plain-Semi Unidirection	Low	25 (64)	22 (750)	0.030 (0.76)	22 (750)	0.026 (0.66)	260 (46)	90 (16)

* Permeability (cfm/ft²): Low <20; Med 20–70; High >70. D-Nextel 610 E-Nextel 720

¹ Thickness values shown for DF-13-4500 are based on ASTM D1777 Option 1 with an applied pressure of 0.60 psi. Thickness values shown for all other products are based on a 3M test method using a greater applied pressure of 0.625 psi. For a direct thickness comparison between DF-13-4500 and other products, reduce the thickness values shown for DF-13-4500 by 0.002 inch.

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