

## 3M Nextel™ 312 Industrial Ceramic Fiber

Category : Ceramic , Oxide , Aluminum Oxide , Silicon Oxide , Other Engineering Material , Composite Fibers

### Material Notes:

Chemical composition above is wt%. Crystal phase is mullite + amorphous (or 100% amorphous). Filament diameter is 10-12 µm. 3M Nextel fibers 312, 440, and 550 are designed for non-structural applications where their primary purpose is to act as a flame barrier. 3M Nextel Ceramic Fiber 312 is made from Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, and B<sub>2</sub>O<sub>3</sub>. Because B<sub>2</sub>O<sub>3</sub> is present, this composition has both crystalline and glassy phases. The glassy phase helps the fiber retain strength after exposure to high temperatures because it slows the growth of crystalline phases that weaken the fiber. However, when the fiber is stressed at high temperature, the glassy phase weakens the fiber due to viscous flow much like a glass fiber. Information provided by 3M Ceramic Textile and Composites.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_3M-Nextel-312-Industrial-Ceramic-Fiber.php](http://www.lookpolymers.com/polymer_3M-Nextel-312-Industrial-Ceramic-Fiber.php)

Physical Properties	Metric	English	Comments
Density	2.70 g/cc	0.0975 lb/in <sup>3</sup>	
Particle Size	<= 0.50 µm	<= 0.50 µm	Crystal size
Specific Surface Area	<= 0.20 m <sup>2</sup> /g	<= 0.20 m <sup>2</sup> /g	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1700 MPa @Thickness 25.4 mm	247000 psi @Thickness 1.00 in	filament
Modulus of Elasticity	150 GPa	21800 ksi	Filament in Tension

Thermal Properties	Metric	English	Comments
CTE, linear	3.00 µm/m-°C @Temperature 25.0 - 500 °C	1.67 µin/in-°F @Temperature 77.0 - 932 °F	
Specific Heat Capacity	1.05 J/g-°C @Temperature 500 °C	0.251 BTU/lb-°F @Temperature 932 °F	
Melting Point	1800 °C	3270 °F	

Optical Properties	Metric	English	Comments
Refractive Index	1.568	1.568	

Component Elements Properties	Metric	English	Comments
Al <sub>2</sub> O <sub>3</sub>	62.5 %	62.5 %	

Component Elements Properties	Metric	English	Comments
SiO2	24.5 %	24.5 %	

Electrical Properties	Metric	English	Comments
Dielectric Constant	5.2	5.2	
	@Frequency 9.375e+9 Hz	@Frequency 9.375e+9 Hz	
Dissipation Factor	0.018	0.018	
	@Frequency 9.375e+9 Hz	@Frequency 9.375e+9 Hz	

Descriptive Properties	Value	Comments
Color	White	

## Contact Songhan Plastic Technology Co.,Ltd.

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