



3M™ Flame Barrier FRB-NT Series

Data Sheet

March 2023

Description	3M™ Flame Barrier FRB-NT Series provides flame resistance, arc resistance, and electrical insulation performance. These barriers are available in roll or sheet form.
Applications	The 3M Flame Barrier FRB-NT series provides both electric shock and flame protection for electrical and electronic device applications such as: • General purpose lighting luminaires (including LED type) • Battery housing barrier (including electric and hybrid vehicles) • Appliance enclosure (e.g., timers, actuators, switches)
Features	The 3M Flame Barrier FRB-NT series is: • An inorganic-based, halogen free material (see regulatory section) • UL 94-5VA rated • Dimensionally stable – minimal to no shrinkage at elevated temperatures • Available in thicknesses from 3 to 15 mil (0.08 to 0.38 mm) • Densified for high dielectric strength and smooth surface
Regulatory	The 3M Flame Barrier FRB-NT series is: • For regulatory information visit www.3m.com/regs • Halogen Free defined as both 1) no halogen compounds are intentionally added to the product or used in the manufacturing process for the product and 2) any impurities present are less than 900 ppm bromine, less than 900 ppm chlorine, and/or less than 1500 ppm total bromine and chlorine. The latter are the levels set forth in certain industry standards, such as the International Electrotechnical Commission (IEC) 61249-2-21 standard. • The above information represents 3M's knowledge and belief which may be based in whole or in part on information provided by 3rd party suppliers to 3M. • UL component recognized in accordance with UL 746 file # E65069
Flammability	The UL 94 test method is used to classify materials based on results from specified small-scale flame tests. These classifications (5VA, 5VB, V-0, V-1, V-2, HB, listed in decreasing order of flame resistance) are used to distinguish a material's burning characteristics after test specimens have been exposed to a specified test flame under controlled laboratory conditions. These classifications typically apply to materials used in manufacturing enclosures, structural parts, and insulators found in consumer electronic products. A material classified as 5VA or 5VB is subjected to a 500 W – 125 mm flame height ignition source that is more severe than the 50 W – 20 mm flame height ignition source that is used in the V-0, V-1, V-2 and HB tests. Furthermore, specimens in 5VA or 5VB may not drip any flaming particles and 5VA rated specimens may not develop any burn-through holes during the test.

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Average Properties

Technical information provided consists of average product data and should not be used for specification purposes. Unless otherwise noted, all tests are performed at room temperature.

3M™ Flame Barrier FRB-NT Series - Average Properties								
Property	Units	Test Method	FRB-NT076	FRB-NT102	FRB-NT127	FRB-NT178	FRB-NT254	FRB-NT381
Nominal Thickness	mm mil	ASTM D-645	0.076 3.0	0.102 4.0	0.127 5.0	0.178 7.0	0.254 10.0	0.381 15.0
Physical Properties								
Basis Weight	g/m ² lb/yd ²	ASTM D-202	103 0.19	156 0.29	195 0.36	274 0.49	410 0.76	561 1.04
Density	g/cc		1.4	1.5	1.5	1.5	1.5	1.5
Flame Rating (UL File E65069)	Flammability rating	UL94	V-0, 5VA	V-0, 5VA	V-0, 5VA	V-0, 5VA	V-0, 5VA	V-0, 5VA
Relative Thermal Index, Component, Electrical	°C	UL 746B	140	140	140	140	140	140
Relative Thermal Index, Component, Mechanical without impact	°C	UL 746B	130	130	130	130	130	130
Electrical Properties								
High-Voltage Arc Tracking Rate (HVTR)	PLC assigned	UL 746A	0	0	0	0	0	0
Comparative Tracking Index (CTI)	PLC assigned	UL 746A	0	0	0	0	0	0
Hot Wire Ignition (HWI)	PLC assigned	UL 746A	4*	4*	4*	4*	4*	4*
High Current Arc to Ignition (HAI)	PLC assigned	UL 746A	2	2	2	2	2	2
Glow wire ignition temperature (GWIT)	°C	IEC 60695-2-13	990	990	990	990	990	990
Glow wire flammability index (GWI)	°C	IEC 60695-2-1	960	960	960	960	960	960
High Volt, Low Current Arc Resistance	PLC assigned	ASTM D-495	4	4	4	4	4	4
Dielectric Breakdown Voltage	kV	ASTM D-149	1.1	2.2	2.7	3.0	5.0	8.0
Mechanical Properties								
Tensile Strength, MD	lb/inch N/cm	ASTM D-828	11 19	22 39	31 54	41 72	53 93	100 175
Elongation to Break, MD	%	ASTM D-828	1.0	1.2	1.3	1.2	1.7	1.7

* - Materials that do not comply with the minimum hot-wire ignition levels may be evaluated by an abnormal overload test or the glow-wire end-product test, per UL 746C

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Shelf Life & Storage

This product has a 5-year shelf life from date of manufacture when stored in a humidity controlled storage (from 10°C / 50°F to 27°C / 80°F and <75% relative humidity)

Availability

For availability, please contact your local distributor. Names and addresses are available from 3M.com/electrical [Where to Buy] or call 1-800-676-8381.

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TECHNICAL STATEMENT

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