

Electrical Markets  
3M™ Flame Barrier FRB Series



Blocks Flame,  
Builds Confidence

**3M**

# 3M™ Flame Barrier FRB Series

The 3M™ Flame Barrier FRB Series is flexible insulation for OEM electrical flame barrier applications. The FRB Series products are made primarily of inorganic materials that are intrinsically flame retardant with good dielectric strength.

## The FRB Series has six product families:

- FRB-NT Series (natural-color, densified barrier)
- FRB-NC Series (natural-color, undensified barrier)
- FRB-WT Series (white-coated, densified barrier)
- FRB-BK Series (black-coated, densified barrier)
- FRB-NT Laminate Series (FRB-NT/Polyester/FRB-NT laminate barrier)
- FRB-NC Laminate Series (FRB-NC/Polyester/FRB-NC laminate barrier)

## The key features of these products are:

- An inorganic-based, halogen-free\* material (per IEC 61249-2-21 standard)
- Base material with UL 94 5VA flame rating (five times more severe flame than V-0 test method)
- Excellent ignitability resistance
- Excellent arc and track resistance
- Good dielectric strength, made even better when densified or laminated to polyester
- Good rated thermal index of 130°C for base material (tested only for FRB-NT Series)
- Low outgassing for base material (tested only for FRB-NT Series)
- Dimensionally stable (very low moisture absorption and very low shrinkage at high temperature)

\*Halogen-free is defined as having less than 900 ppm bromine, less than 900 ppm chlorine, and less than 1500 ppm total bromine and chlorine; other halogens are excluded from this definition. These are levels set forth in certain industry standards, such as International Electrotechnical Commission (IEC) 61249-2-21 standard. This information is 3M's current knowledge and belief, which may be based in whole or in part on information provided by its suppliers.

- Thin calipers with 5VA flame ratings - saves cost and weight in end-use applications
- Optional increased density for higher dielectric strength, a smoother surface and a more closed cell structure
- Optional white and black flame-retardant coatings for excellent optical and aesthetic results
- Optional laminated product is manufactured with UL Recognized UL 94 VTM-2 PET film
- Good convertibility - material is easily slit, cut, formed and die cut

## How the Flame Barrier FRB Series is different:

- 5VA flame rating is better than aramid, polypropylene & polycarbonate
- 130°C rated thermal index (RTI) rating is better than polypropylene & polycarbonate

## Target flame barrier applications:

- General purpose lighting luminaires (including LED type)
- Electric and hybrid electric vehicles (between batteries, power converters, etc.),
- Appliances (vacuum cleaners, slow cookers, rice cookers, etc.)
- Electrical devices (timers, actuators, switches, etc.)

## 3M™ Flame Barrier FRB-NT Series (natural-color, densified barrier)

| Product # | Thickness* |       | Roll Width<br>(inches) | Roll Length*<br>(yds) | Roll O.D.<br>(inches) | Weight*<br>(Lbs/SqYd) |
|-----------|------------|-------|------------------------|-----------------------|-----------------------|-----------------------|
|           | (mils)     | (mm)  |                        |                       |                       |                       |
| FRB-NT076 | 3          | 0.076 | 36                     | 265                   | 7.00                  | 0.19                  |
| FRB-NT076 | 3          | 0.076 | 36                     | 1090                  | 12.75                 | 0.19                  |
| FRB-NT102 | 4          | 0.102 | 36                     | 200                   | 7.00                  | 0.29                  |
| FRB-NT102 | 4          | 0.102 | 36                     | 815                   | 12.75                 | 0.29                  |
| FRB-NT127 | 5          | 0.127 | 36                     | 155                   | 7.00                  | 0.36                  |
| FRB-NT127 | 5          | 0.127 | 36                     | 650                   | 12.75                 | 0.36                  |
| FRB-NT178 | 7          | 0.178 | 36                     | 110                   | 7.00                  | 0.49                  |
| FRB-NT178 | 7          | 0.178 | 36                     | 465                   | 12.75                 | 0.49                  |
| FRB-NT254 | 10         | 0.254 | 36                     | 75                    | 7.00                  | 0.70                  |
| FRB-NT254 | 10         | 0.254 | 36                     | 325                   | 12.75                 | 0.70                  |
| FRB-NT381 | 15         | 0.381 | 36                     | 50                    | 7.00                  | 1.04                  |
| FRB-NT381 | 15         | 0.381 | 36                     | 215                   | 12.75                 | 1.04                  |

The FRB-NT series products are standard flame barriers for general purpose applications. The densified material provides higher dielectric strength, a smoother surface for improved tape adhesion and a closed cell structure.

\*Roll thickness, length and weight are for guideline purposes only, as they can vary by +/- 15%. Product is also available in 8.5"x11", 36"x24" or 36"x36" sheets.

## 3M™ Flame Barrier FRB-NC Series (natural-color, undensified barrier)

| Product # | Thickness* |       | Roll Width<br>(inches) | Roll Length*<br>(yds) | Roll O.D.<br>(inches) | Weight*<br>(Lbs/SqYd) |
|-----------|------------|-------|------------------------|-----------------------|-----------------------|-----------------------|
|           | (mils)     | (mm)  |                        |                       |                       |                       |
| FRB-NC127 | 5          | 0.127 | 36                     | 160                   | 7.00                  | 0.19                  |
| FRB-NC127 | 5          | 0.127 | 36                     | 650                   | 12.75                 | 0.19                  |
| FRB-NC178 | 7          | 0.178 | 36                     | 115                   | 7.00                  | 0.29                  |
| FRB-NC178 | 7          | 0.178 | 36                     | 465                   | 12.75                 | 0.29                  |
| FRB-NC229 | 9          | 0.229 | 36                     | 90                    | 7.00                  | 0.37                  |
| FRB-NC229 | 9          | 0.229 | 36                     | 360                   | 12.75                 | 0.37                  |
| FRB-NC305 | 12         | 0.305 | 36                     | 65                    | 7.00                  | 0.50                  |
| FRB-NC305 | 12         | 0.305 | 36                     | 270                   | 12.75                 | 0.50                  |

The 3M™ Flame Barrier FRB-NC series products are lower-cost flame barriers for general purpose applications. The undensified material does not have the improved characteristics of a densified material (see the FRN-NT short description).

## 3M™ Flame Barrier FRB-WT Series (white-coated, densified barrier)

| Product # | Thickness* |       | Roll Width<br>(inches) | Roll Length*<br>(yds) | Roll O.D.<br>(inches) | Weight*<br>(Lbs/SqYd) |
|-----------|------------|-------|------------------------|-----------------------|-----------------------|-----------------------|
|           | (mils)     | (mm)  |                        |                       |                       |                       |
| FRB-WT145 | 5.8        | 0.145 | 36                     | 135                   | 7.00                  | 0.43                  |
| FRB-WT145 | 5.8        | 0.145 | 36                     | 565                   | 12.75                 | 0.43                  |
| FRB-WT225 | 8.8        | 0.225 | 36                     | 90                    | 7.00                  | 0.63                  |
| FRB-WT225 | 8.8        | 0.225 | 36                     | 370                   | 12.75                 | 0.63                  |

The FRB-WT series products are white-coated flame barriers for lighting and label applications. White coating has 90% reflectivity to maximize the light output of a luminaire. FRB-WT series can also be used as a high-temperature label.

## 3M™ Flame Barrier FRB-BK Series (black-coated, densified barrier)

| Product # | Thickness* |       | Roll Width<br>(inches) | Roll Length*<br>(yds) | Roll O.D.<br>(inches) | Weight*<br>(Lbs/SqYd) |
|-----------|------------|-------|------------------------|-----------------------|-----------------------|-----------------------|
|           | (mils)     | (mm)  |                        |                       |                       |                       |
| FRB-BK145 | 5.8        | 0.145 | 36                     | 135                   | 7.00                  | 0.38                  |
| FRB-BK145 | 5.8        | 0.145 | 36                     | 565                   | 12.75                 | 0.38                  |
| FRB-BK225 | 8.8        | 0.225 | 36                     | 90                    | 7.00                  | 0.58                  |
| FRB-BK225 | 8.8        | 0.225 | 36                     | 370                   | 12.75                 | 0.58                  |

The FRB-BK series products are black-coated flame barriers for lighting and label applications. Black coating has only 6% reflectivity to minimize light pollution of a luminaire. FRB-BK series can also be used as a high-temperature label.

## 3M™ Flame Barrier FRB-NT Laminate Series (FRB-NT/Polyester/FRB-NT laminate barrier)

| Product #      | Thickness* |       | Roll Width<br>(inches) | Roll Length*<br>(yds) | Roll O.D.<br>(inches) | Weight*<br>(Lbs/SqYd) |
|----------------|------------|-------|------------------------|-----------------------|-----------------------|-----------------------|
|                | (mils)     | (mm)  |                        |                       |                       |                       |
| FRB-NT 3/5/3   | 11.0       | 0.279 | 36                     | 72                    | 7.00                  | 0.72                  |
| FRB-NT 3/5/3   | 11.0       | 0.279 | 36                     | 300                   | 12.75                 | 0.72                  |
| FRB-NT 5/5/5   | 15.0       | 0.381 | 36                     | 53                    | 7.00                  | 1.05                  |
| FRB-NT 5/5/5   | 15.0       | 0.381 | 36                     | 220                   | 12.75                 | 1.05                  |
| FRB-NT 5/7.5/5 | 17.5       | 0.445 | 36                     | 45                    | 7.00                  | 1.22                  |
| FRB-NT 5/7.5/5 | 17.5       | 0.445 | 36                     | 185                   | 12.75                 | 1.22                  |

The FRB-NT Laminate series products are polyester-reinforced flame barriers for appliance and lighting applications, particularly for formed shapes. The densified laminate provides smoother surface for improved tape adhesion and a closed cell structure.

## 3M™ Flame Barrier FRB-NC Laminate Series (FRB-NC/Polyester/FRB-NC laminate barrier)

| Product #      | Thickness* |       | Roll Width<br>(inches) | Roll Length*<br>(yds) | Roll O.D.<br>(inches) | Weight*<br>(Lbs/SqYd) |
|----------------|------------|-------|------------------------|-----------------------|-----------------------|-----------------------|
|                | (mils)     | (mm)  |                        |                       |                       |                       |
| FRB-NC 5/5/5   | 15.0       | 0.381 | 36                     | 53                    | 7.00                  | 0.72                  |
| FRB-NC 5/5/5   | 15.0       | 0.381 | 36                     | 220                   | 12.75                 | 0.72                  |
| FRB-NC 5/7.5/5 | 17.5       | 0.445 | 36                     | 45                    | 7.00                  | 0.91                  |
| FRB-NC 5/7.5/5 | 17.5       | 0.445 | 36                     | 185                   | 12.75                 | 0.91                  |

The FRB-NC Laminate series products are lower-cost polyester-reinforced flame barriers for appliance and lighting applications, particularly for formed shapes. The undensified material does not have the improved characteristics of a densified material (see the FRN-NT Laminate short description).

\*Roll thickness, length and weight are for guideline purposes only, as they can vary by +/- 15%. Product is also available in 8.5"x11", 36"x24" or 36"x36" sheets.



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## Availability

For availability, please contact your 3M sales representative. Contact details are available at [3M.com/electrical](http://3M.com/electrical) [Where to Buy] or call 866-357-2737.

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80-6016-0658-7