

# 3M™ Scotchcast™ Flame-Retardant Electrical Insulating Resin 2131

Data Sheet

January 2015

## Description

3M™ Scotchcast™ Flame-Retardant Electrical Insulating Resin 2131 is a two-part polyurethane resin designed to replace the cable jacket when splicing or repairing mine and portable cables. Its formulation makes it particularly suited to withstand the rugged conditions under which mine and portable cables must operate.

Flame-Retardant Resin 2131 is also used as the insulating material for cable splices operating at up to 1000 volts and designed for 194°F (90°C) continuous use/266°F (130°C) overload.

- Flame-retardant
- Bonds to most modern cable jackets
- Bonds to itself
- Tough, yet flexible (semi-flexible)
- Available in two-part closed mixing pouch for easy mixing and pouring
- Excellent multi-purpose moisture sealing resin
- Room temperature cure
- Color: Black

## Agency Approvals & Self Certifications

For RoHS information, please visit [www.3M.com/ROHS](http://www.3M.com/ROHS)

When used in accordance with the appropriate kit configuration, Flame-Retardant Resin 2131 meets Part 7, Title 30 CFR and carries the following MSHA approvals:

|                  |                                                                                                                                                                               |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 07-KA060002-MSHA | 3M™ Scotchcast™ Flexible Power Cable Inline Splice Kit 82-F Series<br>3M™ Scotchcast™ Flexible Power Cable Tap Splice Kit 82-BF1                                              |
| 07-KA060007-MSHA | 3M™ Scotchcast™ Mine and Portable Cable Splice Kit 8096 Series<br>3M™ Three-Conductor Inline Splice Kits 5750 and 5760 Series<br>3M™ Scotchcast™ Jacket Repair Kits M Series* |

\* The Flame-Retardant Resin 2131 is not included with the "M" Series kits and must be ordered separately.

## Resin Applications

- To replace or repair the jacket on both single and multi-core power cables
- To insulate between conductors of multi-core splices operating at up to 1000 volts
- To seal the crotch or sheath when terminating multi-core cables
- Potting cable or wire encasements
- Potting cable fittings & splices
- Potting printed circuit boards
- Potting junction boxes
- Filling back shell connectors
- Potting for motor repairs

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## Typical Physical and Electrical Properties

Not for specifications. Values are typical, not to be considered minimum or maximum.  
Properties measured at room temperature 73°F (23°C) unless otherwise stated.

| Physical Properties (Test Method)                                                                      | Typical Value<br>US units (metric)                  |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <b>Color</b>                                                                                           | Black                                               |
| <b>Hardness</b> (ASTM D2240)                                                                           | 82 Shore A                                          |
| <b>Density</b>                                                                                         | 0.703 oz/in <sup>3</sup> (1,217 g/cm <sup>3</sup> ) |
| <b>Tensile Strength</b> (ASTM D412)                                                                    | 1038 psi (73,0 kg/cm <sup>2</sup> )                 |
| <b>Elongation</b> (ASTM D412)                                                                          | 339%                                                |
| <b>Glass Transition Temperature, T<sub>g</sub></b> (DSC)                                               | -103 °F (-75°C)                                     |
| <b>Maximum Exotherm, 100g</b> (3M TM-67)                                                               | 147°F (64°C) rise                                   |
| <b>Gel Time @ 75°F (23°C)</b> (3M Method TM-67)                                                        | 17 minutes                                          |
| <b>Viscosity (cP) @ 77°F (25°C)</b> (3M Method TM-173)<br>Part A Prepolymer<br>Part B Polyol           | 600 - 1,100<br>4,000 - 10,000                       |
| <b>Specific Gravity</b> (ASTM D891)<br>Part A Prepolymer<br>Part B Polyol                              | 1.08<br>1.29                                        |
| <b>Moisture Absorption</b> (ASTM D471)<br>168 hrs. Immersion @ 212°F (100°C)                           | 4.9%                                                |
| <b>Adhesion to Metals (lb/in<sup>2</sup>)</b> (3M TM-456)<br>Copper<br>Brass<br>Steel<br>Aluminum      | 550.2<br>274<br>491.3<br>221                        |
| <b>Adhesion to Cable Jackets (lb/in<sup>2</sup>)</b> (3M TM-457)<br>Vinyl<br>Neoprene<br>Nylon<br>XLPE | 125<br>115<br>>72<br>208.5                          |

| Electrical Properties (Test Method)               | Typical Value                                                   |
|---------------------------------------------------|-----------------------------------------------------------------|
| <b>Dielectric Strength</b> (ASTM D149)            | 343 V/mil (13,5 kV/mm)                                          |
| <b>Dielectric Constant, @ 60Hz</b><br>(ASTM D150) | 5.22 @ 73°F (23°C)<br>6.33 @140°F (60°C)<br>6.56 @194°F (90°C)  |
| <b>Dissipation Factor, @ 60Hz</b><br>(ASTM D150)  | 5.6% @ 73°F (23°C)<br>7.9% @140°F (60°C)<br>17.0% @194°F (90°C) |

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## Usage & Handling

### IMPORTANT:

Product should remain in the sealed container/envelope until ready to use. In cold weather, warm closed mixing pouch to 60°F (16°C) or warmer before mixing. Keep in a warm area, such as truck cab or inside pocket, until ready to use.

### General Instructions

#### Closed Mixing Pouch:

- Tear open the protective envelope and remove the closed mixing pouch
- Before breaking the barrier, squeeze the bag to premix the separate components.
- Firmly grasp each flat side of the bag near the center barrier, while pulling the sides of the barrier apart and rolling the sides of thumbs through the barrier. Break the barrier all the way across to the side seals.
- Alternately squeeze each end of the bag, forcing the resin back and forth (30 seconds).
- Strip the resin from the corners of the bag and continue to mix until the color is uniform (additional 30 seconds, maximum).
- Clip off a corner of the closed mixing pouch and pour

#### Bulk Components:

Measure the appropriate quantity of each component as indicated in the table below, then thoroughly mix to a uniform color and consistency prior to use. Opened bulk components should be blanketed with nitrogen to prevent moisture contamination.

| Component | Color       | Weight Ratio (w/w) | Volume Ratio (v/v) |
|-----------|-------------|--------------------|--------------------|
| Part A    | Pale Yellow | 1                  | 1                  |
| Part B    | Black       | 2.1                | 1.69               |

#### Typical De-Mold/Cure Time:

| Temperature | De-Mold Time | Approximate Cure Time |
|-------------|--------------|-----------------------|
| 70°F (21°C) | 1.5 – 2 hrs  | 16 – 24 hours         |
| 50°F (10°C) | 3.5 – 4 hrs  | 24 – 30 hours         |
| 32°F (0°C)  | 6 – 8 hrs    | 36+ hours             |

**NOTE:** Values are typical, not to be considered minimum or maximum. Always confirm that material is no longer tacky prior to de-molding.

#### Safety Precautions:

Read all Health Hazard, Precautionary and First Aid statements found in the Safety Data Sheet (SDS) and/or product label of chemicals prior to handling or use.

Wear protective gloves when using this product.

#### CAUTION

Working around energized electrical systems may cause serious injury or death. Installation should be performed by personnel familiar with good safety practice in handling electrical equipment. De-energize and ground all electrical systems before installing product.

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## Shelf Life & Storage

3M™ Scotchcast™ Flame-Retardant Electrical Insulating Resin 2131 has a 3-year shelf life from date of manufacture when stored in the factory-sealed packaging under humidity controlled storage (10°C/50°F to 27°C/80°F and <75% relative humidity).

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## Availability

Please contact your local distributor or call 1.800.245.3573.

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