3M™ Scotchcast™ Electrical Insulating Resin 2104

Data Sheet **January 2015**

Description

3M™ Scotchcast™ Electrical Insulating Resin 2104 is a hard two-part, polyurethane resin encapsulant designed especially for permanent splice protection. Scotchcast resin 2104 is formulated for virtually every electrical application requiring a hard, non-reenterable resin with good handling and performance characteristics. Scotchcast resin 2104 is also used as the insulating material for cable splices operating at 1000 volts or less and is rated for continuous use at 194°F (90°C) with an overload rating of 266°F (130°C). It may be stocked to cover all hard resin needs, ending the need for multiple encapsulant inventories.

Scotchcast resin 2104 is a two-part polyurethane, and is formulated with excellent wetting properties and low viscosity. Scotchcast resin 2104 flows well, even at low temperatures, filling the enclosure completely and eliminating voids.

Resin Features:

- Bonds to all modern cable jackets
- Bonds to itself
- Available in two-part closed mixing pouch for easy mixing and pouring
- Tough
- Excellent multi-purpose moisture sealing resin
- Semi-flexible
- Room temperature cure
- Low viscosity
- Color: Dark Green

Agency Approvals & Self Certifications

For RoHS information, please visit www.3M.com/ROHS

Resin Applications

- Replace or repair the jacket on both single and multi-core power cables
- Insulate between conductors of multi-core splices operating at 1000 volts or less
- 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

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** US units (metric)
Color	Green
Hardness (ASTM D2240)	70 Shore A
Density (ASTM D792)	0.596 oz/in^3 (1,03 g/cu.cm.)
Tensile Strength (ASTM D412)	444 psi (3.06 MPa)
Elongation (ASTM D412)	98%
Glass Transition Temperature (ASTM E1356-03)	-94ºF (-70ºC)
Maximum Exotherm, (100g) (ASTM D2471-99)	150ºF (65ºC)
Gel Time (ASTM D2471-99)	18 minutes
Viscosity (cP) @ 77°F (25°C) (3M Method TM-173) Part A Prepolymer Part B Polyol	 1,000 - 2,300 450 - 750
Specific Gravity (ASTM D891) Part A Prepolymer Part B Polyol	 1.04 1
Moisture Absorption	0.28% wt. gain in 168 hrs
Adhesion to Metals (lb/in^2) (3M TM-456) Copper Brass Steel Aluminum	 411.6 285.1 558 207.03
Adhesion to Cable Jackets (lb/in^2) (3M TM-457) Vinyl Neoprene Nylon XLPE	 10.5 140.8 >25.5 221.5

Electrical Properties (Test Method)	**Typical Value**
Dielectric Strength (ASTM D149)	524 V/mil
Dielectric Constant, @ 60Hz (ASTM D150)	4.59 pf @ 73ºF (23ºC) 6.8 pf @194ºF (90ºC)
Dissipation Factor, @ 60Hz (ASTM D150)	9.1% @ 73ºF (23ºC) >200% @194ºF (90ºC)

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 2 minutes, 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	1.04
Part B	Black	1	1

Typical Cure Time:

Temperature	Approximate Cure Time
70°F (21°C)	1 hour
20°F (-4°C)	20 hours
32°F (0°C)	36+ hours

NOTE: Values are typical, not to be considered minimum or maximum.

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™ Electrical Insulating Resin 2104 has a 2-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).
Availability	Please contact your local distributor or call 1.800.245.3573.

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Electrical Markets Division
6801 River Place Blvd.
Austin, TX 78726-9000
800.245.3573
Fax 800.245.0329
www.3M.com/electrical

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