3M™ Scotchcast™ Electrical Insulating Resin 4

Data Sheet **October 2013**

Product Description

3M™ Scotchcast™ Electrical Insulating Resin 4 is a two-part, epoxy insulating and encapsulating resin. This resin, mixed in its unique two-part bag, generates its own heat to cure. Its compatibility with solid and synthetic cable insulations and jackets makes Resin 4 an excellent insulator and sealer for cable splicing. Use Resin 4 to splice solid dielectric and oil-filled cables up to 8 kV and to jacket high-voltage power cables. It is used in 3M Splice Kit Series 82 and 90-B1.

3M™ Scotchcast™ Resin 4 is packaged in the following sizes:				
Size	g	cu. cm.	oz	cu. in.
A	88	78	3.1	4.8
B	205	181	7.2	11.1
C	414	366	14.6	22.5
D	619	548	21.8	33.6
D-NZ	872	772	30.7	47.3
E	288	255	10.1	15.6

Agency Approvals & Self Certifications

RoHS
2011/65/EU

"**RoHS** 2011/65/EU" means that the product or part does not contain any of the substances in excess of the maximum concentration values (“MCVs”) in EU RoHS Directive 2011/65/EU. The MCVs are by weight in homogeneous materials. This information represents 3M's knowledge and belief, which may be based in whole or in part on information provided by third party suppliers to 3M.

Resin Features

- Excellent multi-purpose moisture sealing resin
- Two-part closed mixing pouch simplifies mixing and pouring
- Bonds to itself and to most modern cable jackets
- Thermal setting; designed to not melt or run once cured
- Designed to be stable at elevated temperatures
- Generates its own heat to cure
- Tough & Oil resistant

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Applications

- Replace or repair the jacket on both single and multi-core power cables
- Insulate between conductors of multi-core splices operating up to 8kV
- Seal the crotch or sheath when terminating multi-core cables.

Typical Properties

Physical Property (Test Method)	**Typical Value** US units (metric)
Color	Black
Density (ASTM D792)	0.64 oz/cu in (1,11 g/cu.cm.)
Hardness (ASTM D2240)	84 Shore D
Tensile Strength (ASTM D412)	4900 psi (33.8 MPa)
Elongation (ASTM D412)	4%
Glass Transition Temperature (ASTM E1356-03)	129°F (54°C)
Maximum Exotherm (100g) (ASTM D2471-99)	338°F (170°C)
Gel Time @ 73°F (23°C) (ASTM D2471-99)	16 minutes
Moisture Absorption @ 73°F (23°C)	2.6% wt. gain in 168 hrs
Adhesion to Metals (lb/in^2) (3M TM456)	
Copper	93.6
Brass	50.7
Steel	167.4
Aluminum	30.9
Adhesion to Cable Jackets (lb/in^2) (3M TM457)	
Vinyl	99.5
Neoprene	>150
Nylon	>95
XLPE	>218

Electrical Property (Test Method)	**Typical Value**
Dielectric Strength (ASTM D149)	500 v/mil
Dielectric Constant @ 60Hz (ASTM D150)	
73°F (23°C)	3.1
140°F (60°C)	3.9
194°F (90°C)	6.0
Dissipation Factor @ 60Hz (ASTM D150)	
73°F (23°C)	0.5%
140°F (60°C)	5.1%
194°F (90°C)	>20%

Note: this data is not to be used for specifications. Values listed are typical and should not be considered minimum or maximum.

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Specifications - Product	The material must be supplied in a two-part polyethylene bag with a barrier separating an epoxy and hardener. The barrier must be capable of being broken to permit mixing the two parts without opening the bag.
Specifications – Engineering/ Architectural	The material must be 3M™ Scotchcast™ Electrical Insulating Resin 4. It must be packaged in the 3M two-part, closed mixing pouch. The resin must be mixed within the mixing pouch simply by separating the barrier between the two parts of the bag and working the contents back and forth within the bag.

⚠ CAUTION

If there is any evidence of moisture in the cable, it must be removed and the substrate dried before applying the resin.

Installation Techniques

Thoroughly clean and dry the surface of the substrate, to which the resin will be bonded. In the case of synthetic cable jackets, the resin must be poured immediately after the surface is prepared to help create a bond.

Remove the closed mixing bag by tearing the protective envelope.

Premix the darker side of the resin to a smooth consistency, by squeezing, before breaking the barrier. 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. Strip the resin from the corners of the bag. Mix until the color is uniform (30 to 40 squeezes). Approximately one to two minutes.

Clip off a corner of the closed mixing pouch and pour into the mold fill spout, maintaining a half-inch head. For the 4D-NZ delivery, break the second seal and pour through the nozzle.

Typical Cure Times:

Temp	Cure Time
70°F (21°C)	1 to 2 hours
50°F (10°C)	4 to 8 hours

NOTE: 3M™ Scotchcast™ Electrical Insulating Resin 4 is not impaired by freezing; however, it should be warmed to at least 60°F (16°C) before being mixed or poured.

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

Shelf-Life & Storage	3M™ Scotchcast™ Electrical Insulating Resin 4 is stable for a period of three years from date of manufacture when stored at 50-80°F (10-27°C) and below 75% relative humidity. **Notes:** 1. If the guard bag is removed, the shelf life could be reduced to as little as two hours under conditions of high humidity. 2. The appearance of fine crystals or hazy appearance on clear side in the liquid resin will not affect product performance.
Availability	3M Scotchcast Resin 4 is available from your electrical distributor. Check 3M.com/electrical "Where to Buy" for names and locations.

Important Notice	All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product, which are not contained in 3M's current publications, or any contrary statements contained on your purchase order, shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.
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