



RoHS  
2002/95/EC

# Scotchcast<sup>TM</sup>

## Electrical Insulating Resin 4

Data Sheet

April 2008

### Product Description

3M<sup>TM</sup> 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 splices through 69 kV. It is used in 3M Splice Kit Series 82 and 90-B1.

Scotchcast Resin 4 is packaged in the following sizes:

Size	g	cc	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	30.8	47.3
E	288	255	10.2	15.6

### 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
- RoHS compliant 2002/95/EU\*

### Applications

- Replace or repair the jacket on both single and multi-core power cables
- Insulate between conductors of multi-core splices operating up to 8,000 volts
- Seal the crotch or sheath when terminating multi-core cables.

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**Note: This data is not to be used for specifications.**

Values listed are typical and should not be considered minimum or maximum.

## Typical Properties

		<b>ASTM Standard</b>	
<b>Physical</b>	<b>Color</b>	Black	
	<b>Density</b>	0.65 oz/cu in (1,13 g/cc)	D792
	<b>Hardness</b>	80 Shore D	D2240
	<b>Tensile Strength</b>	4900 psi (33.8 MPa)	D412
	<b>Elongation</b>	4%	D412
	<b>Glass Transition Temperature</b>	118°F (48°C)	E1356-03
	<b>Maximum Exotherm (100g)</b>	338°F (170°C)	D2471-99
	<b>Gel Time @ 73°F (23°C)</b>	16 minutes	D2471-99
	<b>Moisture Absorption @ 73°F</b>	2.6% wt. gain in 168 hrs	
<b>Electrical</b>	<b>Dielectric Strength</b>	500 v/mil	D149
	<b>Dielectric Constant @ 60 Hz</b>		D150
	73°F (23°C)	3.1	
	140°F (60°C)	3.9	
	194°F (90°C)	6.0	
	<b>Dissipation Factor @ 60 Hz</b>		D150
73°F (23°C)	0.5%		
140°F (60°C)	5.1%		
194°F (90°C)	>20%		
<b>Specifications - Product</b>	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.		
<b>Specifications - Engineering/Architectural</b>	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.		

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**⚠ 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:**

<u>Temp</u>	<u>Cure Time</u>
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.

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**⚠ Danger**

Causes burns. May cause allergic skin reaction. Inhalation of vapors may cause respiratory tract irritation and central nervous system depression.

Contains a chemical(s) which can cause cancer and birth defects or other reproductive harm.

**Precautions**

Do not get in eyes, on skin, or on clothing. Wear suitable protective clothing, gloves, and eye and face protection. Do not ingest. When using, do not eat, drink or smoke. Avoid breathing vapors. Use only in well ventilated areas. Wash thoroughly after handling. For industrial or professional use only.

**First Aid Information**

**Eye Contact:** Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention. **Skin Contact:** Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water for at least 15 minutes. Get immediate medical attention. Wash contaminated clothing and clean shoes before reuse. **Inhalation:** Remove person to fresh air. If signs/symptoms develop, get medical attention. **If Swallowed:** Do not induce vomiting. Give person two glasses of water. Never give anything by mouth to an unconscious person. Get immediate medical attention.

Refer to Material Safety Data sheet for additional precautionary information.

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**Shelf-Life & Storage**

3M™ Scotchcast™ Electrical Insulating Resin 4 is stable for a period of two 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 crystals in the liquid resin will not affect product performance.
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**Availability**

3M Scotchcast Resin 4 is available from your electrical distributor. Check 3M.com/electrical “Where to Buy” for names and locations.

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**RoHS Definition**

\*“RoHS Compliant 2002/95/EC” means that the product or part (“Product”) does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2002/618/EC, unless the substance is in an application that is exempt under RoHS. 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.

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