

3M™ Scotchcast™ Multi-Mold Resin Splice Kits 85 Series

Data Sheet

November 2014

Product Description

3M™ Scotchcast™ Multi-Mold Resin Splice Kits 85 Series are a group of versatile splice kits for insulating and waterproofing odd-sized and odd-shaped splices in underground applications, up to 1000 volts. Splices may be inline, wye, X, butt and dead-end splice configurations (for non-shielded cable) using split bolts, H tap or C tap compression connectors.

Six kits cover a range of cable conductor sizes from 8 AWG to 2000 kcmil.

3M™ Scotchcast™ Multi-Mold Resin Splice Kits 85 Series are comprised of a flexible film plastic mold with a built-in porous spacer web (to ensure the proper thickness of insulating compound around the connection). The plastic mold is filled with a pliable polyurethane compound, 3M™ Scotchcast™ Electrical Insulating Resin 2104.

Agency Approvals

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

Kit Contents

Each kit contains sufficient quantities of the following materials to make one (1) splice, excluding the connector(s):

- 1- flexible film plastic mold with built-in spacer web and sealing strips along the adjacent edges
- 3M™ Scotchcast™ Electrical Insulating Resin 2104 in a convenient closed mixing pouch
- 1- pressure-sensitive adhesive film sealing strip
- 1- comprehensive instruction booklet showing installation techniques for typical splice configurations, in both the horizontal and vertical positions.

Splice Features

- Versatility designed into each kit accommodates a wide range of cable sizes.
 - Convenient kits simplify ordering and stocking.
 - All material provided (with the exception of the connector) to insulate and waterproof one splice.
 - Compound has low viscosity for fast, complete filling of splice.
 - Compound has low exotherm which will not damage plastic insulated cable. (Can be used for small gauge signal/control and telecommunication cable splicing.)
 - Convenient closed mixing pouch permits clean, easy resin handling.
 - Wrap-around polyester film mold contains porous webbing which assures proper insulation spacing around splice and connector.
 - No special tools required.
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Applications

To splice cables rated up to 1000 volts:

- For inline, wye or 4-way splicing of non-shielded cable
 - For use on plastic or rubber-insulated cables
 - For use in direct burial applications
 - For use with underground systems:
 - Secondary distribution
 - Plant grounds
 - Parking lots
 - Airport runway lighting
 - Electric sprinkling systems
 - Sheath repair
 - Remodel wiring
 - Sealing anode leads
 - Solar farm applications
 - For joining of cable reel ends
 - For cable failures and dig-ins
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Specifications - Product

The multi-mold cable splices must be capable of normal continuous operation at 1000 volts. The splices must consist of a flexible film plastic mold with built-in spacer web to automatically provide for cable and connector centering and proper compound coverage. The applied mold shall be filled with a flexible polyurethane electrical compound capable of continuous operation at 194°F (90°C), with an emergency overload temperature rating of 266°F (130°C). Splices must have provisions for inline, wye or 4-way splicing of non-shielded, plastic or rubber insulated cables. The splices shall be suited for direct burial applications.

Engineering/ Architectural

Splicing of cables rated at 1000 volts or less with conductor sizes ranging from 8 AWG to 2000 kcmil. Splices are to use inline compression, split bolt or H or C tap connectors shall be performed in accordance with instructions provided with 3M™ Scotchcast™ Multi-Mold Splice Kits 85-10, 85-12, 85-14, 85-16, 85-18 and 85-20.

Installation Techniques

The instructions for constructing a splice are packed in each kit. The following summarizes these instructions:

- a. Scrape each cable exterior clean for a distance from connector as specified in the instructions. If cable is sheathed, pencil insulation 3/4" (19,1 mm).
 - b. Connection should be completed according to connector manufacture's instructions.
 - c. Center mold body along connector and wrap around connection. Starting at bottom of mold, seal and compress sealing putty around and between each cable to form a resin-tight seal.
 - d. Position splice so bottom of mold is not in contact with any surface. Mix resin and pour into mold.
 - e. Remove liner from film strip supplied with kit. Tape strip over mold.
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Performance Test

Moisture Resistance

Thermo cycling submerged in water pressurized to simulate a 6-foot head:
85 Series splices exceed 1.0×10^6 ohms insulation resistance after ten temperature cycles at 35°F (2°C) to 75°F (24°C).

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Typical Physical and Electrical Properties

For 3M™ Scotchcast™ Electrical Insulating Resin 2104

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 Property (Test Method)	Typical Value US units (metric)
Color	Green
Density (ASTM D792)	0.596 oz/cu.in. (1,03 g/cu.cm.)
Hardness (ASTM D2240)	70 Shore A
Tensile Strength (ASTM D412)	444 psi (3.06 MPa)
Elongation (ASTM D412)	98%
Glass Transition Temperature (ASTM E1356-03)	-94°F (-70°C)
Maximum Exotherm (100g) (ASTM D2471-99)	150°F (65°C)
Gel Time (ASTM D2471-99)	18 minutes
Moisture Absorption	0.28% wt. gain in 168 hrs.
Adhesion to Metals (lb/in ²) (3M TM456)	
Copper	411.6
Brass	285.1
Steel	558
Aluminum	207.3
Adhesion to Cable Jackets (lb/in ²) (3M TM457)	
Vinyl	101.5
Neoprene	140.6
Nylon	>25.5
XLPE	221.5

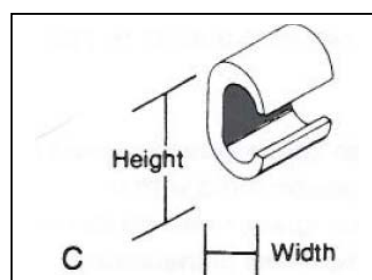
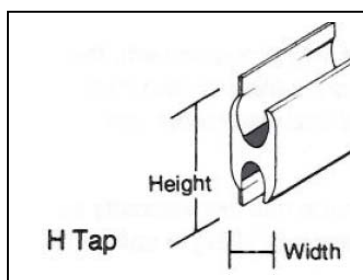
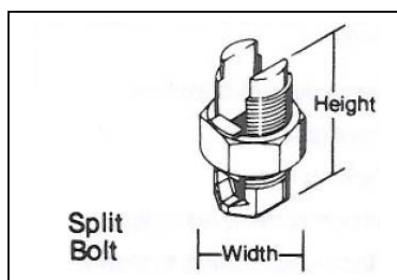
Electrical Property (Test Method)	Typical Value
Dielectric Strength (ASTM D149)	524 V/mil
Dielectric Constant @ 60Hz (ASTM D150)	
73°F (23°C)	4.59 pf
194°F (90°C)	6.8 pf
Dissipation Factor @ 60Hz (ASTM D150)	
73°F (23°C)	9.1%
194°F (90°C)	>200%

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A. Splice Selection Table for Kits 85-10 thru 85-16

Kit No.	Connector Type	Maximum Conductor Size*	Max. Connector Size (Height plus Width (inches/mm))	Max. Sheath Opening (Inches/mm)	Maximum Cable O.D. (Inches/mm) Wye or 4-Way
85-10	Split Bolt	8 AWG	1 3/4" (44,5)	1 1/2" (38,1)	Run & Tap
	H Tap or C Compression	4 AWG	1 3/4" (44,5)		7/16" (11,1)
85-12	Split Bolt	1 AWG	2 3/4" (69,9)	1 1/2" (38,1)	Run & Tap
	H Tap or C Compression	2/0 AWG	2 3/4" (69,9)		3/4" (19,1)
85-14	Split Bolt	2/0 AWG	3 1/4" (82,6)	4 1/2" (114,3)	Run & Tap
	H Tap or C Compression	4/0 AWG	3 1/4" (82,6)		7/8" (22,2)
85-16	Inline Compression	750 kcmil	N/A	6 (152,4)	Inline
	Split Bolt	250 kcmil (Run) 2/0 AWG (Tap)	3 3/4" (95,3)		Run & Tap
	H Tap or C Compression	500 kcmil (Run) 4/0 AWG (Tap)	6 (152,4)		

*Assuming wye or 4-way connection using same cable splices. For other combinations and configurations, refer to instruction sheet.



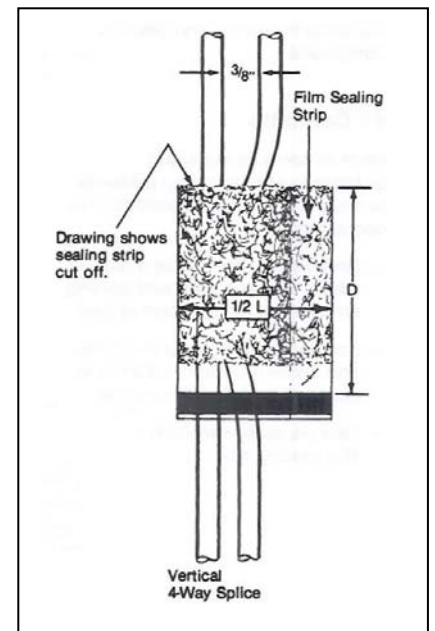
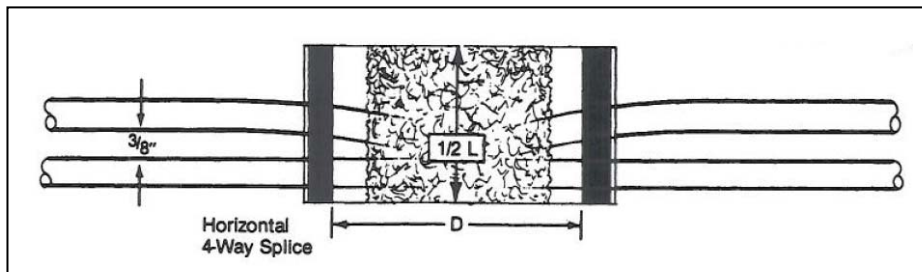
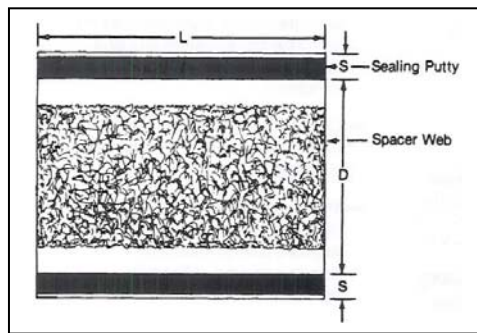
B. Splice Selection Table for 85-18 and 85-20 Kits

Kit No.	Max. Cable Size Using Single Conductor	Maximum Cables	Connector Type	Max. Sheath Opening (Inches/mm)
85-18	2000 kcmil	1 x 4-Conductor 3/0 or 4 x 1-Conductor 4/0	IPC or Other	15" (381)
85-20	N/A	1 x 4-Conductor 350 kcmil or 4 x 1-Conductor 350 kcmil	IPC or Other	19" (483)

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C. Typical Dimensions

Kit No.	Dimension – Inches (mm)		
	L	D	S
85-10	5.0 (127,0)	4.25 (108,0)	0.85 (21,5)
85-12	7.0 (177,8)	4.75 (120,7)	0.85 (21,5)
85-14	8.0 (203,2)	7.75 (196,8)	0.85 (21,5)
85-16	8.0 (203,2)	10.25 (160,4)	0.85 (21,5)
85-18	15.5 (393,7)	16.25 (412,8)	0.85 (21,5)
85-20	18.0 (457,2)	20.25 (514,4)	0.85 (21,5)



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Handling & Safety Precautions

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.

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.

Shelf-Life & Storage

3M™ Scotchcast™ Multi-Mold Resin Splice Kits 85 Series are stable for a period of 2 years from date of manufacture when stored at 50-80°F (10-27°C) and below 75% relative humidity.

Availability

3M™ Scotchcast™ Multi-Mold Resin Splice Kits 85 Series Kits are available in six sizes and will accommodate inline, wye and 4-way splicing of cables using split bolts, and H or C tap compression connectors. They are available from your electrical distributor. Check 3M.com/electrical "Where to Buy" for names and locations.

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