

3M™ Cold Shrink Joint, SC145-II/SS145-II

Data Sheet

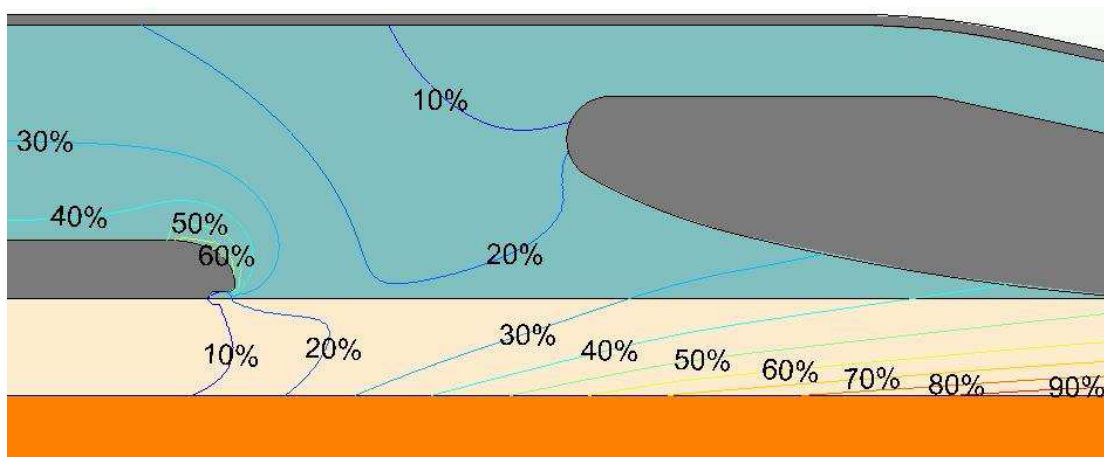
June 2011

Description 3M™ Cold Shrink Joint, SC145-II/SS145-II meets requirements of IEC60840-2004 and GB11017.3 standards.

- Features**
- Ideal electrode design
 - High quality insulation and semi-conductive materials for joint body
 - Reliable insulation thickness and interface length
 - Good waterproof performance
 - Cold shrink technology
 - Easy to install
 - No special tools needed
 - Adapts to a wide range of cable sizes and types
 - 100% AC&PD inspection of joint body

- Applications** For making shielded power cable joints on polymeric cables rated at voltages up to 145 kV:
- For in-line and crossbond/shield break jointing
 - For transmission circuits
 - For Jacketed Concentric Neutral (JCN), Tape Shield (TS), Longitudinally Corrugated (LC) shield, Tape-Over-Wire (TOW), Wire-Over-Tape (WOT) or Lead Shield (LS)
 - For copper or aluminum conductors
 - For direct burial installations
 - For submerged locations
 - Link Boxes available

Stress Distribution



3M™ Cold Shrink Joint, SC145-II/SS145-II

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.

Insulating Silicone Rubber

Properties (Test Method)	Typical Value US units (metric)
Elongation at Break (ISO 37)	540%
Tensile Strength (ISO 37)	8.9 N/mm ²
Dielectric Strength (IEC 60243)	28 kV/mm
Dielectric Constant @ 50 Hz (IEC 60250)	2.7
Volume Resistivity (IEC60093)	5 x 10 ¹⁵ Ω·cm

Semi-conductive Silicone Rubber

Properties (Test Method)	Typical Value US units (metric)
Elongation (DIN 53 504 S2)	640%
Tear Strength (DIN 53 504 S2)	6.9 N/mm ²
Volume Resistivity (DIN 53482)	50 Ω·cm

Specifications

Description	Value US units (metric)
Rated Voltage U _o /U/Um	64/110/123 kV, 76/132/145 kV
Maximum Rating Permissible Voltage U _m	145 kV
Current Carrying Capability	According to cable
Permissible Short-circuit Current I _s	Max. 100 kA, according to cable
Maximum Conductor Temperature Operation Short-Circuit, 5 _s .	194°F (90°C). 482°F (250°C)
Power Frequency Withstand Voltage Test	192 kV, 6h, No breakdown
Lightning Impulse Withstand Voltage U _{ps} 1.2/50μs	650 kV
Type Test (according to IEC 60840-2004)	Pass
Conductor Connection Technique	Compression/mechanical

Selection Table for SC145-II/SS145-II

Size	Typical Conductor Size kcmil (mm ²)		Insulation O.D.* in (mm)
	For 115 kV, 650-800 mil Cables	For 138 kV, 700-850 mil Cables	
1	<500 (<240)	<500 (<240)	2.44 – 2.73 (57 – 67)
2	500 – 1750 (240 – 850)	500 – 1250 (240 – 630)	2.64 – 3.11 (67 – 79)

*Insulation O.D. cannot be less than the range minimum following cable preparation (semi-con removal and sanding).

3M™ Cold Shrink Joint, SC145-II/SS145-II

Product Specification

Open Specification

The joint is designed to be compatible with the cable construction. This joint shall meet the cable voltage rating, but not exceed 145 kV. The joint will be tested in accordance with the requirements of IEC Std. 60840.

The joint will be rated by the manufacturer for use on transmission class cable systems. It must be rated for continuous operation at 194°F (90°C), with an emergency overload temperature rating of 266°F (130°C).

This joint is capable of splicing cables with copper or aluminum conductors. The joint body is a cold shrink design, which does not require any additional heat source for installation. The body is a molded design made of silicone rubber.

The joint kit includes materials needed to fit the application, consisting of cold shrink, heat shrink, a housing containing resin or a combination of previous materials. The color of the completed joint insulator shall be gray or black.

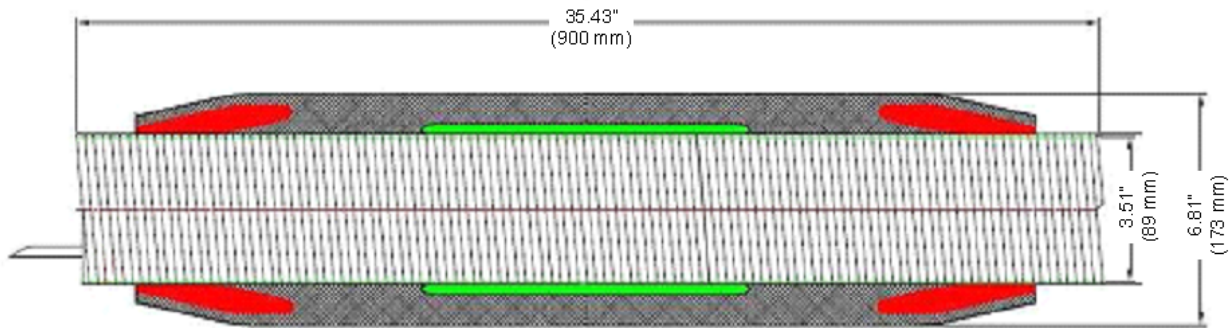
Engineering. Architectural Specifications

Closed Specification

The 3M™ Cold Shrink Joint, SC145-II/SS145-II is designed for polymeric type power cables and is rated 69 kV to 145 kV. The joint kit will contain all of the materials required to complete one joint, excluding cable preparation tools and supplies.

The joint shall be capable of splicing cables with copper or aluminum conductors and shall be installed in accordance with the instructions/drawing provided with the 3M SC145-II/SS145-II kits.

Loaded joint body structure dimension (Typical Data)



3M™ Cold Shrink Joint, SC145-II/SS145-II

Performance Tests

Test Standard: GB/T 11017.3/ IEC68040-2004

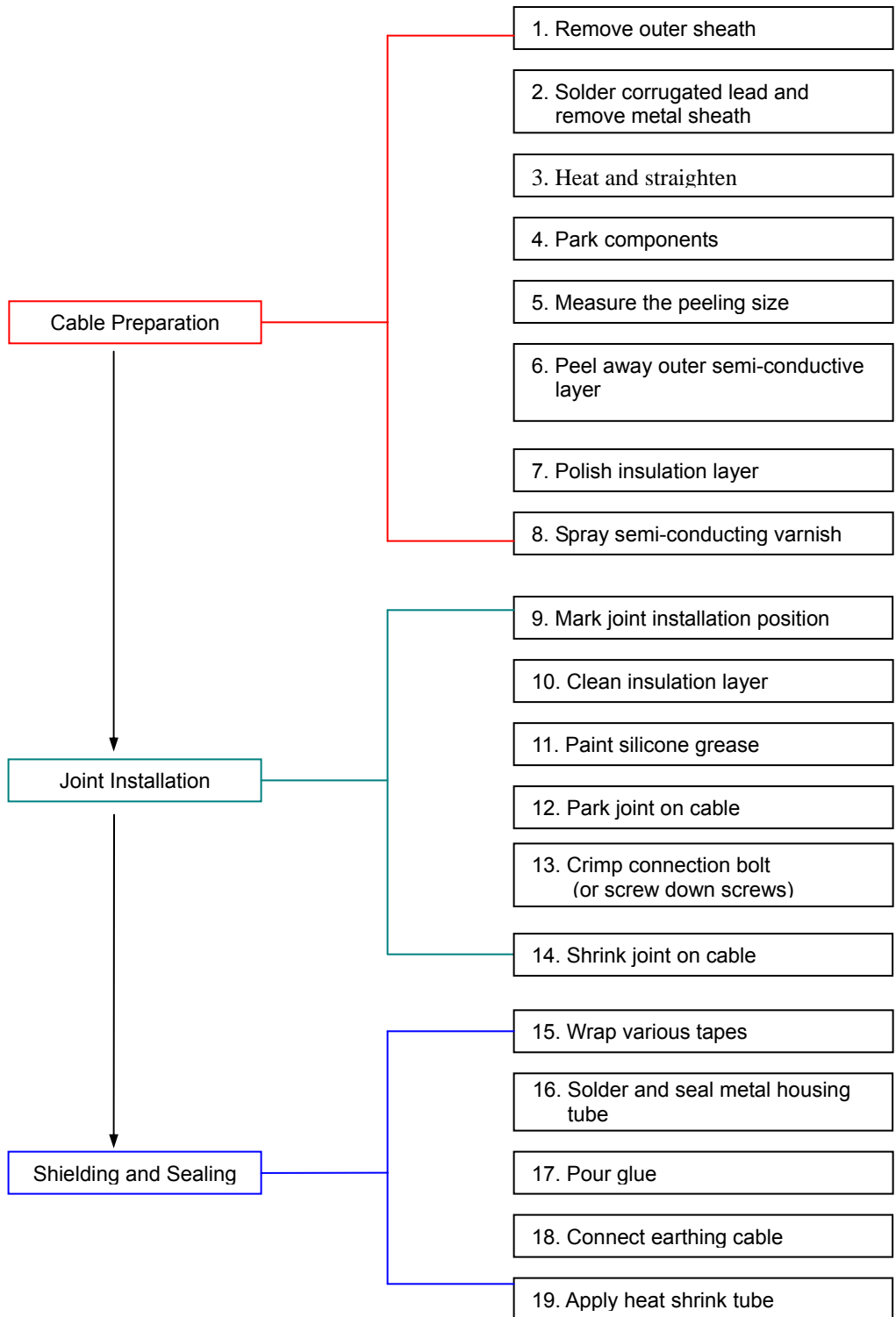
Test Item	Test Requirement	Test Result
Partial Discharge at Ambient Temperature	96 kV	1.4 pC
Heating Cycle Voltage Test	20 cycles at 128 kV [Conductor temperature 41°F-50°F (5°C-10°C) above the maximum cable conductor temperature in normal operation. The heating shall be applied for at least 8 hours. The conductor temperature shall be maintained within the stated temperature limits for at least 2 hours of each heating period. This shall be followed by at least 16 hours of natural cooling.]	Subject to heating cycle voltage test, and heating cycle had been carried out 20 times
Partial Discharge Test at High Temperature	96 kV, <5 pC	1.4 pC
Partial Discharge Test at Ambient Temperature	96 kV, <5 pC	1.4 pC
Hot Lightning Impulse Withstand Test	No breakdown or flashover should occur at 10 positive and 10 negative impulses of 550 kV	Pass
Power Frequency voltage Test After Impulse Voltage Test	No breakdown or flashover should occur at 160 kV for 15 min.	Pass
Tests of Outer Protection for Buried Joints	As per clause 3.4 of typical test report	Before the tests, the joint to be tested has undergone three thermal cycles without voltage, as specified in 12.3.7 of IEC760840. A total 20 heating cycles were applied to the test assembly in water. Then the DC voltage test and the impulse voltage test were carried out successfully and the test assembly was examined. There is no visible internal void, displacement of compound loss during examination.

Remark: PD background noise is 1.4 pC during the whole test.

3M™ Cold Shrink Joint, SC145-II/SS145-II

Installation

The installation drawing is in the package. Workflow shows as below: (For a more detailed process, please see the *Instruction Sheet*)



3M™ Cold Shrink Joint, SC145-II/SS145-II

Shelf Life & Storage	3M™ Cold Shrink Joint, SC145-II/SS145-II has a shelf life of 2 years, based on majority kit components, from date of manufacture when stored in a humidity-controlled storage (10°C/50°F to 27°C/80°F and <75% relative humidity.)
Availability	Please contact your local distributor; available from 3M.com/electrical [Where to Buy] or call 1.800.245.3573.

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.
Warranty; Limited Remedy; Limited Liability	This product will be free from defects in material and manufacture at the time of purchase. 3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.

3M is a trademark of 3M Company.



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

Please recycle
© 3M 2011 All rights reserved
78-8141-4770-4 A