

**Electrical Semi-Conducting Tape**

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**1. Product Description**

The soft, black rubber tape is a highly conformable, semi-conducting EPR (Ethylene Propylene Rubber) based high-voltage splicing tape. It is non-vulcanizing and shelf stable, with stable conductivity over a wide temperature range. Its conductivity is not affected, except by low-viscosity oils. The conductivity of cable semi-conducting jackets is not affected by Scotch™ 13 Tape.

**Tape Features:**

- Ethylene propylene rubber (EPR)
- Semi-conducting (low-resistivity)
- Retains conductivity with stretch
- Elongates easily to conform to irregular shapes
- Stable at elevated temperatures (130°C)
- Compatible with all solid electric cable insulations and conductors
- Exceptional resistance to cracking or checking from solvents, UV, or moisture
- Compatible with high-voltage splicing and terminating materials
- Usable for indoor or outdoor applications
- Meets requirement of ASTM D-4388, Tape IV

**2. Applications**

- To electrically round out high-voltage connectors and to bond to insulating materials to minimize electrical stresses
- Continue semi-conducting strand shielding found in solid electric (polyethylene, XLP, EPR, etc.) cables at 5 kV and above
- Provide shielding for cable joints on solid electric insulated power cables (shielded or concentric neutral)

- Replace semi-conducting layer beneath metallic shield of similar cables in case of damage (screening)
- Make conductive portion of stress cone of power cable termination on solid electric insulated power cables
- Maintain positive connection between concentric neutral semi-conducting jackets of power cables and semi-conducting surfaces of plug-in units
- Establish a more positive contact between concentric neutral wires and pre-molded devices already installed with too much of jacket exposed
- Round out bolted connections on insulated bus bars

**3. Typical Properties\***

<b>Thickness<sup>1</sup></b>	0,76 mm
<b>Tensile Strength<sup>1</sup></b>	10.5 N/10 mm
<b>Elongation at break<sup>1</sup></b>	800%
<b>Fusion<sup>2</sup></b>	PASS
<b>Temperature Rating<sup>3</sup></b>	
Normal	90°C
Emergency Cable	130°C
<b>Volume Resistivity<sup>4</sup></b>	10 <sup>3</sup> Ωcm
<b>Field Test Resistance</b> (See Below)	10,000 Ωs

\*There are typical properties and should not be used for specification purposes.

<sup>1</sup> IEC 60454-2

<sup>2</sup> ASTM D-4388

<sup>3</sup> IEC 60085, 60216

<sup>4</sup> IEC 60093

## 4. Field Test

Scotch™ 13 Tape can be checked for resistance with an ohmmeter. After elongating the tape 25% of its original width, probe points placed 25 mm apart on the tape should measure 10,000 ohm s or less. Figure 1 illustrates the type of results which may be expected in the field.

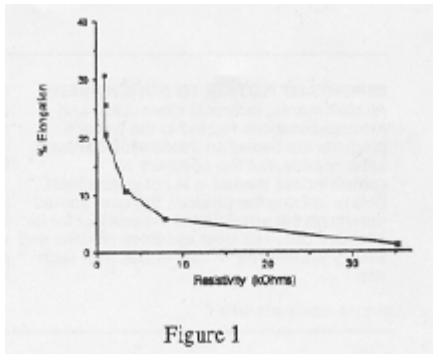


Figure 1

## 5. Specification

### Product

The conducting rubber tape must be based on ethylene propylene rubber and be capable of operation at the emergency cable temperature of 130°C. It must be usable without covering, both indoors and outdoors, in a highly stretching condition without splitting or cracking. It must not split when heated to 130°C; it must be compatible with all common solvents, adhesives, and high-voltage splicing and terminating insulations and must not adversely affect semi-conductive cable jacket.

### Engineering / Architectural

Jointing (splicing) and terminating shall be done according to engineering print supplied by manufacturer of jointing or termination materials for specific cable and approved by specifying engineer.

Alternate: Jointing and terminating engineering drawing shall be compatible with specific cable or cables approved by specifying engineer.

## 6. Characteristics and Test Data

Effects of Scotch™ 13 Tape on resistivity of semi-conductive cable shield.

The Insulated Conductor Committee (ICC) has set a standard for compatibility of materials placed on shielded cables. When tested according to ICC Guide P1026, products in contact with semi-conductive cable shield shall have a resistance measurement below 10 Ωm.

Scotch™ 13 Tape complies with the requirements of ICC Guide P1026.

Resistivity of cable semi-conductive shield overwrapped with Scotch™ 13 Tape remained the same as, or lower than, that of the exposed shield (control). This test shows Scotch™ 13 Tape does not significantly affect semi-conductive cable shields.

## 7. Installation Techniques

Scotch™ 13 Tape is usually wrapped in half-lapped layers. Highly elongate tape when overwrapping connectors, terminal lugs, and near edges of cable metallic shield, semi-conducting cable tape and semi-conducting jackets.

**Note:** Stretching Scotch™ 13 Tape increases its conductance and will not harm it in any way.

**Caution:** Scotch™ 13 Tape is not oil resistant. It should not be used in splicing and terminating cables which contain oil or slippery compounds as part of electric such as PILC or VCLC.

Techniques for proper use of this conductive tape are contained in standard and special prints available through 3M Systems for Splicing and Terminating. Ask your local 3M Electrical Products representative.

## 8. Shelf Life

Scotch™ 13 Tape has a 5 years shelf life (from date of manufacture) when stored under the following recommended storage conditions. Store behind present stock in a clean dry place at a temperature of 23°C +/-2 and 50% +/-5 relative humidity. Good stock rotation is recommended.

## 9. Availability

Scotch™ 13 Tape is available in a 19 mm x 4.6 m roll from your local authorized 3M electrical distributor.

Complete Product and Use Specifications are available through the Electrical Product Division, 3M Company.

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