

# Scotch® 2228

## Rubber Mastic Tape

### 1. Product description

Scotch® 2228 is a conformable self-fusing rubber electrical insulating and sealing tape. Scotch® 2228 consists of an ethylene propylene rubber (EPR) backing coated with an aggressive, temperature-stable mastic adhesive. The tape is 1.65 mm thick for quick application build-up.

It is designed for electrical insulating and moisture sealing applications. Scotch® 2228 can be used on copper or aluminium conductors rated at 90°C, with an emergency overload rating of 130°C. It offers high resistance to moisture and ultraviolet exposure and is intended for both indoor and weather exposed outdoor applications.

- ▶ Conformable for application over irregular surfaces
- ▶ Compatible with solid dielectric cable insulations
- ▶ Self-fusing tape
- ▶ Flexible over wide temperature range
- ▶ High weather and moisture resistance
- ▶ High adhesion and sealing characteristics with copper, aluminium and power cable jacket materials
- ▶ Thick construction allows quick application buildup and padding over irregular connections

### 2. Applications

- ▶ Primary electrical insulation for cable and wire connections rated up to 1000 volts
- ▶ Electrical insulation and vibration padding for motor leads rated up to 1000 volts
- ▶ Primary electrical insulation for bus bar connections rated up to 35 kV (3M drawing 2047B-106)
- ▶ Padding for irregular shaped bus bar bolted connections
- ▶ Moisture seal for cable and wire connections
- ▶ Moisture seal for service drops
- ▶ Moisture seal for ground wire and rod connections
- ▶ Jacket seal on power cable applications

### 3. Typical properties

Physical properties	Typical value
Temperature Rating ASTM D4388	90°C
Colour	Black
Thickness ASTM D4325	1.65 mm
Adhesion ASTM D1000	
Steel	26.2 N/10 mm
PE	17.5 N/10 mm
Fusion ASTM D4388, Type I	Pass
Tensile Strength ASTM D4325	1.03 N/mm <sup>2</sup>
Elongation ASTM D4325	1000%
Dielectric Breakdown ASTM D4325	
Dry	19.7 kV/mm
Wet	19.7 kV/mm
Dielectric Constant ASTM D4325	3,5
Dissipation Factor ASTM D4325	1.0%
Water Absorption ASTM 570	0.15%
Water Vapour Transmission Rate ASTM D3833	0.1 g/64.5 cm <sup>2</sup> /24hr
Ozone Resistance ASTM D3833	Pass
Heat Resistance ASTM D4388	Pass, 130°C
UV Resistance ASTM D4388	Pass

Properties measured at room temperature 23°C unless otherwise stated.

Note: These are typical values and should not be used for specification purposes.

### 3.1 3M Water Seal Test

Samples were constructed using 2228 tape as a seal between PVC cable jackets and connecting ground wires (3M Cable Grounding Kit 2252). The specimens were thermal cycled in water baths at 25°C and 90°C. The total test time of 336 hours revealed no significant change in insulation resistance. The results exceed requirements listed in UL486D “Standard for Insulated Wire Connectors for Use With Underground Connectors” for insulation resistance (6.0 megohms, section 7.1) and dielectric voltage withstand (2.2 kV, 1 minute, section 8.1).

## 4. User information

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### 4.1 Specifications

The tape is 1.65 mm thick. It's ethylene propylene rubber based and coated with a rubber mastic pressure sensitive adhesive and is classified for normal service temperatures up to 90°C, with allowable short-term exposure up to 130°C.

The tape is applicable at temperatures of 0°C to 38°C without any loss of physical properties. It is also classified for use in both indoor and weather exposed outdoor environments.

The tape does not split or crack when exposed to normal operating temperatures and environments. It's compatible with synthetic cable wire insulations and is not corrosive to aluminium or copper conductors.

### 4.2 Installation Techniques

Scotch® 2228 should be applied in half-lapped layers until desired insulation build up is reached. Stretch the tape to ¾ of its original width during application for good conformability and to obtain a moisture tight seal.

Scotch® 2228 should be over wrapped for mechanical protection with two half-lapped layers of Scotch® Brand vinyl electrical tape.

### 4.3 Shelf Life

Scotch® 2228 tape has a 5-year 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 21°C and 40-50% relative humidity. Good stock rotation is recommended.

### 4.4 Availability

Please contact your local distributor.

#### Important notice

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluates the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application.

Values presented have been determined by standard test methods and are average values not meant to be used for specification purposes.

All questions of warranty and liability relating to 3M products are governed by the terms of the respective sale subject, where applicable, to the prevailing law.

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