



Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes¹

This standard is issued under the fixed designation D 4388; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers nonmetallic semi-conducting and electrical insulating tapes designed for the splicing and repair of electrical wire and cables operating at voltages up to 325 kV, phase to phase.

1.2 The values stated in inch-pound units, except for °C, are the standard. The SI values given in parentheses are for information purposes only.

2. Referenced Documents

2.1 ASTM Standards:

D 4325 Test Methods for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes²

3. Classification

3.1 Types:

3.1.1 *Type I*—A low voltage rubber insulating tape designed for use on wires and cables operating up to 2000 V phase to phase in dry locations with conductor temperatures up to 80°C (176°F) for continuous operation, up to 95°C (203°F) for emergency overload conditions, and up to 150°C (302°F) for short-circuit conditions. For outdoor use, protect the tape from ozone attack and ultraviolet radiation by the use of a suitable overwrap. Apply the tape to the wire or cable within an ambient temperature range of – 10 and 40°C (14 and 104°F).

3.1.2 *Type II*—A medium voltage, ozone-resistant, rubber insulating tape designed for use with wires and cables operating up to 35 000 V phase to phase in either wet or dry locations with conductor temperatures up to 90°C (194°F) for continuous operation, up to 130°C (266°F) for emergency overload conditions, and up to 250°C (482°F) for short-circuit conditions when installed in accordance with the manufacturer's instruction. For wet or dry outdoor use, protect the tape from ultraviolet radiation by the use of a suitable overwrap. Apply the tape to the wire or cable within an ambient temperature range of – 10 and 40°C (14 and 104°F).

3.1.3 *Type III*—A high voltage, ozone-resistant, rubber insulating tape designed for use with wires and cables operating up to 138 000 V phase to phase in either wet or dry locations with conductor temperatures up to 90°C (194°F) for continuous operation, up to 130°C (266°F) for emergency overload conditions, and up to 250°C (482°F) for short-circuit conditions when installed in accordance with the manufacturer's instructions. This tape is suitable for wet or dry outdoor use. Apply the tape to the wire or cable within an ambient temperature range of – 10 and 40°C (14 and 104°F).

3.1.4 *Type IV*—A nonmetallic semi-conducting tape designed for shielding various portions of joints and terminations in electrical wires and cables operating at any voltage under wet or dry conditions with conductor temperatures up to 90°C (194°F) for continuous operation, or up to 130°C (266°F) for emergency overload conditions. This tape is suitable for wet or dry outdoor use. Apply the tape to the wire or cable within an ambient temperature range of – 10 and 40°C (14 and 104°F).

3.1.5 *Type V*—A higher voltage, ozone-resistant, rubber insulating tape designed for use with wires and cables operating up to 325 000 V phase to phase in either wet or dry locations with conductor temperatures up to 90°C (194°F) for continuous operation, up to 130°C (266°F) for emergency overload, and up to 250°C (482°F) short-circuit conditions when installed in accordance with the manufacturer's instructions. This tape is suitable for wet or dry outdoor use. Apply the tape to the wire or cable within an ambient temperature of – 10 and 40°C (14 and 104°F).

4. Physical Properties

4.1 The tape shall consist of a non-crosslinked or partially crosslinked rubber nonmetallic semi-conducting or insulating compound. The compound shall be well, evenly, and smoothly processed, cut to the specified widths, and tightly wound in rolls with a separator between layers. Where a non-removable separator is used, the separator will be considered an integral part of the tape.

4.2 The separator shall be parchment paper, glazed or plastic sheeting, or any suitable material interposed between adjacent layers. The removable or non-removable separator shall not interfere with the use of the roll during application. Where a removable separator is used, the separator shall be

¹ This specification is under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.07 on Flexible and Rigid Insulation Materials.

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² *Annual Book of ASTM Standards*, Vol 10.02.