



UL 510

STANDARD FOR SAFETY

Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape

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UL Standard for Safety for Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape, UL 510

Ninth Edition, Dated May 12, 2017

Summary of Topics

This revision of UL 510 includes an update to the ASTM Test Method reference for the Storage Test.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated June 22, 2018.

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MAY 12, 2017

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UL 510

Standard for Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape

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Fourth Edition – August, 1976
Fifth Edition – January, 1982
Sixth Edition – October, 1986
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Ninth Edition

May 12, 2017

This UL Standard for Safety consists of the Ninth Edition including revisions through July 30, 2018.

The Department of Defense (DoD) has adopted UL 510 on October 10, 1979. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

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INTRODUCTION

1 Scope

1.1 This Standard covers thermoplastic and rubber tapes for use as electrical insulation at not more than 600 V and at 80°C (176°F) and lower temperatures on joints and splices in wires and cables in accordance with the National Electrical Code, NFPA 70. It is intended that rubber tape on a joint or splice be mechanically protected by a covering such as friction tape. Thermoplastic tape is acceptable without the additional mechanical protection.

1.2 The characteristic constituent of the thermoplastic tape covered in this Standard is either PVC (polyvinyl chloride or a copolymer of vinyl chloride and vinyl acetate), or PE (thermoplastic polyethylene). For the characteristic constituent(s) of rubber tape, see 18.1.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components used in the products covered by this standard.

2.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

2.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

4 Referenced Publications

4.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard. For dated references to standards, such reference shall be considered to refer to the date edition and all revisions published to that edition up to the time the standard was approved.

ALL TAPES

5 General

5.1 The requirements in Sections 5 – 7 and 24 apply to all of the tapes covered in this Standard and are supplemented by requirements in Sections 8 – 17 covering thermoplastic tape and in Sections 18 – 23 covering rubber tape.

5.2 Lengths of tape for use as specimens in any of the tests specified in this Standard are to be taken from sample rolls of finished tape fitted snugly onto a horizontal rod or tube that is free to turn in its supports without wobbling or other extraneous motion whenever the tape is unrolled. The tape is to be in thermal equilibrium with the surrounding air at a temperature of $23.0 \pm 5.0^{\circ}\text{C}$ ($73.4 \pm 9^{\circ}\text{F}$) whenever being unrolled. The tape is always to be unrolled at an even rate of approximately 2 in/s (50 mm/s) – that is, rather slowly. The first three layers of tape are to be discarded. Each length of tape intended as a specimen or from which a specimen is prepared is to be protected from dust and is to be placed adhesive side up on a smooth, clean surface or is to be suspended in air for 1 h under the conditions specified in 5.3 after removal from a roll and before being used in a test.

5.3 Unless otherwise specified, all testing, except flammability, shall be conducted at $23 \pm 5^{\circ}\text{C}$ ($73 \pm 9^{\circ}\text{F}$) and a relative humidity of $50 \pm 10\%$. Flammability testing shall be conducted in still air at a temperature of $15 - 35^{\circ}\text{C}$ ($59 - 95^{\circ}\text{F}$) and a relative humidity of $< 75\%$. All samples shall be preconditioned at $23 \pm 5^{\circ}\text{C}$ ($73 \pm 9^{\circ}\text{F}$) and a relative humidity of $50 \pm 10\%$ for a minimum of 30 min prior to test.

6 Flame Test

6.1 Insulating tape marked "Flame Retardant" in accordance with 24.2 shall not flame longer than 60 s following any of five, 15-s applications of the test flame, the period between applications being:

- a) 15 s if the specimen flaming ceases within 15 s; or
- b) The duration of the specimen flaming if the specimen flaming persists longer than 15 s.

6.2 With reference to 6.1, the tape shall not ignite combustible materials in its vicinity or damage more than 25% of the indicator flag during, between, or after the five applications of the test flame. The test is to be conducted as described in 6.4 – 6.15.

6.3 The testing of the 3/4 in (19 mm) specimen width is considered representative of the performance of all sizes (widths) of the tape.