



UL 510A

STANDARD FOR SAFETY Component Tapes

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UL Standard for Safety for Component Tapes, UL 510A

First Edition, Dated May 3, 2017

Summary of Topics

The first edition of the Standard for Component Tapes, UL 510A, has been published. This standard covers test procedures used in the evaluation of adhesive and non-adhesive backed tapes intended for use with finished electro-mechanical products.

The new requirements are substantially in accordance with Proposal(s) on this subject dated December 19, 2016 and March 31, 2017.

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MAY 3, 2017

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UL 510A

Standard for Component Tapes

First Edition

May 3, 2017

This UL Standard for Safety consists of the First Edition.

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 adhesive and non-adhesive backed tapes intended for use with finished electro-mechanical products.

1.2 Results obtained provide data with respect to the physical, electrical, flammability, thermal, adhesion and other properties of the tapes under consideration and are intended to provide guidance for tape manufacturers, end-product manufacturers, safety engineers, and other interested parties.

1.3 This standard also covers tapes which have only been subjected to thickness and flammability tests in accordance with Thickness, Section 9 and Flame Test, Section 20, respectively. Tapes subjected only to flammability tests in accordance with Section 20 may employ a conductive backing.

1.4 This standard does not cover adhesive coated polyvinyl chloride (PVC), adhesive coated polyethylene (PE) and rubber tapes intended for use on joints and splices in wires and cables in accordance with the National Electrical Code, NFPA 70 at not more than 80°C (176°F) and 600 V. These types of tapes are covered by the Standard for Polyvinyl, Polyethylene, and Rubber Insulating Tape, UL 510.

2 Units of Measurement

2.1 Values stated without parentheses are the requirement in SI units, unless otherwise noted. Values in parentheses are explanatory or approximate information.

3 Referenced Publications

3.1 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.

4 Use of Tapes

4.1 The safety of electrical equipment often depends upon the correct selection of tapes, design, as well as the assembly, mounting, and relative positions of these parts.

4.2 The properties needed by individual applications are defined by the function or functions of the tape. A tape used as interwinding insulation in a transformer, for example, must ordinarily be designed to withstand electrical stress at elevated use temperatures. Accordingly, a tape known to have suitable thermal endurance and substantial dielectric strength would normally be used although a material of lower dielectric strength used in multiple layers may also be satisfactory.

4.3 End products may employ many tapes that usually have divergent properties. The ability to match the demands of the application with the attributes of a tape as well as the ability to compare the properties of one tape with those of another can lead to the selection of an acceptable tape.

4.4 The information gained from the data obtained from these tests can be used as an aid in the evaluation of end products using tapes. Knowledge of a tape's performance can be obtained from an analysis of data from standard tests conducted on small specimens.

5 Tape Tests Based on Functional Use

5.1 According to the functional uses in the end product, each tape shall comply with the tests specified in Table 5.1. See also 8.1.

Table 5.1
Tape tests based on functional use¹⁾

Functional Use	Test	Section	Requirement
Tape is used as a dielectric insulator (in dry locations)	Tensile Strength (before/after oven)	11	Oven conditioned value $\geq$ 50% of the unconditioned value
	Dielectric Breakdown (before/after oven)	12	Oven conditioned value $\geq$ 50% of the unconditioned value
Tape is used as a dielectric insulator (in damp locations) ²⁾	Dielectric Breakdown (before/after humidity) (Moisture Absorption)	12	Humidity conditioned value $\geq$ 90% of the unconditioned value
	Insulation Resistance	13	$\geq 1.0 \times 10^{12} \Omega/\text{in width}$
	Exposure to Heat	17	Does not corrode conductor
Tape is required to demonstrate resistance to electrical surface tracking due to the combined effects of electric stress and surface contamination	Comparative Tracking Index	14	Requirements vary depending on degree of contamination, voltage, and creepage distances in the end product. See also Table 14.1
Tape to tape (backing) adhesion provides sole means of securement to maintain position and/or spacings	Adhesion Strength and/or Roll Storage	15, 16	$\geq 1.0 \text{ lb/in of width}$
Tape to steel adhesion provides sole means of securement to maintain position and/or spacings			
Tape is required to be conformable and remain in complete contact with the surface to which it is applied (no lifting of the tape ends after application)	Exposure to Heat	17	No Flagging > 2 mm
The tape will be flexed or subject to bending			No cracking
Tape is used in such a fashion as to be subjected to tensile forces which may result in elongation of the tape	Elongation	18	Unconditioned elongation value is $\geq$ 50% and oven conditioned elongation is $\geq$ 50% of the unconditioned elongation value
Tape is used in applications where it will be subjected to compression forces	Deformation	19	$\leq$ 50% decrease in thickness
Tape is used in applications where flammability is a concern	Flame Test	20	$\leq$ 60-s burn time and Flag damage $\leq$ 25% and cotton not ignited

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Table 5.1 Continued on Next Page



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