



UL 181A

STANDARD FOR SAFETY

Closure Systems for Use With Rigid Air Ducts

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UL Standard for Safety for Closure Systems for Use With Rigid Air Ducts, UL 181A

Fourth Edition, Dated January 8, 2013

Summary of Topics

This new edition of ANSI/UL 181A includes the following changes in requirements:

Add references to major Codes that reference UL 181A

Editorial change

The revised requirements are substantially in accordance with Proposal(s) on this subject dated September 7, 2012.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

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JANUARY 8, 2013

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ANSI/UL 181A-2013

UL 181A

Standard for Closure Systems for Use With Rigid Air Ducts

Prior to the first edition, the requirements for the products covered by this standard were included in the Outline of Investigation for Closure Systems for Use With Air Ducts and Connectors, Subject 181A.

The first and second editions were titled "Factory-Made Air Ducts and Air Connectors."

First Edition – June, 1991

Second Edition – November, 1994

Third Edition – May, 2005

Fourth Edition

January 8, 2013

The most recent designation of ANSI/UL 181A as an American National Standard (ANSI) occurred on January 8, 2013. The ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

This ANSI/UL Standard for Safety consists of the Fourth 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 <http://csds.ul.com>.

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INTRODUCTION

1 Scope

1.1 These requirements cover closure systems for use with factory-made rigid air ducts or air connectors complying with the Standard for Factory-Made Air Ducts and Air Connectors, UL 181. Closure systems consist of pressure sensitive tapes, heat-activated tapes, and mastics.

1.2 Closure systems are intended for use with rigid air ducts installed in accordance with the International Mechanical Code (IMC), International Residential Code (IRC), International Energy Conservation Code (IECC), Uniform Mechanical Code (UMC), Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A, and the Standard for the Installation of Warm Air Heating and Air Conditioning Systems, NFPA 90B; and/or other Model codes.

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.

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 Undated References

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.

5 Referenced Standards

5.1 Standards referenced in these requirements include those specified below.

ASTM D3759,
Standard Test Method for Breaking Strength and Elongation of Pressure-Sensitive Tape

ASTM D3330,
Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape

ASTM D3654,
Standard Test Method for Shear Adhesion of Pressure-Sensitive Tapes

ASTM C794,
Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants

UL 181
Standard for Factory-Made Air Ducts and Air Connectors

PART I – PRESSURE SENSITIVE ALUMINUM TAPES FOR USE WITH RIGID FIBERGLASS AIR DUCTS

CONSTRUCTION

6 Materials

6.1 Aluminum tape shall consist of an aluminum or aluminum alloy foil 2-1/2 inches (63.5 mm) wide minimum, covered on one side with adhesive. The adhesive surface shall be protected by a release liner intended to be removed at the time of tape installation.

PERFORMANCE

7 Tensile Strength Test

7.1 The average tensile strength in both the machine and cross-machine directions of each roll of aluminum tape shall be not less than 25 pounds per inch (4.37 N/mm) of width, with no individual specimen having a value of less than 21 pounds per inch (3.67 N/mm) of width, determined in accordance with the Standard Test Method for Breaking Strength and Elongation of Pressure-Sensitive Tape, ASTM D3759. All cross-direction specimens are to be cut from special 6 inch (142.4 mm) wide rolls of tape.

7.2 Three specimens from each of three separate rolls of tape shall be prepared with a laboratory specimen cutter for both machine and cross directions. (A JDC Precision Sample Cutter is acceptable for this purpose. Other cutters having equivalent or comparable characteristics are also acceptable.)

8 Peel Adhesion Test at 180 Degree Angle

8.1 The average peel adhesion strength of aluminum tape shall be not less than 3.75 pounds per inch (0.66 N/mm) of width of tape when tested in accordance with 8.2 and 8.3. No individual specimen shall have a value of less than 3.20 pounds per inch (0.56 N/mm) of width.

8.2 The peel adhesion strength of aluminum tape is to be determined in accordance with the Standard Test Methods for Peel Adhesion of Pressure-Sensitive Tape at 180 Degree Angle, ASTM D3330, except as modified in 8.3. Tests are to be conducted in accordance with Method A – Single-Coated Tapes.

8.3 Three specimens from each of three separate rolls of tape are to be tested. Specimens are to be cut in 1 inch (25.4 mm) wide by 12 inch (305 mm) long strips. The tape is to be applied as specified in Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape, ASTM D3330 to the specified stainless steel panel with a steel roller 5 inches (127 mm) in diameter and 1-3/4 inches (44.5 mm) wide, weighing 10 pounds-mass (4.53 kg). The roller is to pass back and forth over each specimen five times at a rate of 12 inches (304.8 mm) per minute. The test load is to be applied 15 minutes after completion of the rolling.

9 Shear Adhesion Test

9.1 The shear adhesion strength of tape shall be such that the tape is able to maintain the test loads specified in Table 9.1 for the indicated test durations without evidence of separation or slippage in excess of 1/32 inch (0.8 mm).

9.2 The shear adhesion strength of aluminum tape is to be determined in accordance with Procedure A of the Standard Test Method for Shear Adhesion of Pressure-Sensitive Tapes, ASTM D3654, except as modified in 9.3 – 9.7.

9.3 One specimen from each of four separate rolls of tape are to be tested. Specimens are to be cut in 1 inch (25.4 mm) wide by 6-inch (152-mm) long strips. The cut specimens and stainless steel panels are to be maintained at the application conditions specified in Table 9.1 for a minimum of 1 hour prior to applying the specimens to the panels.