



CAN/ULC-S110-13-R2018 (Reaffirmed 2018)

STANDARD METHODS OF TEST FOR AIR DUCTS



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Standard Methods of Test for Air Ducts, CAN/ULC-S110-13-R2018

Third Edition, Dated July 2013

Summary of Topics

This revision of CAN/ULC-S110 is being issued to update the title page to reflect the reaffirmation of this Third Edition National Standard of Canada. No changes in requirements are involved.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated November 28, 2017.

PLEASE NOTE THAT CERTAIN CODES MAY REFER TO A SUPERSEDED VERSION OF THIS STANDARD. IN THOSE INSTANCES, THE RELEVANT VERSIONS ARE AVAILABLE FOR PURCHASE.

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

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STANDARD METHODS OF TEST FOR AIR DUCTS

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TABLE OF CONTENTS

ULC STANDARDS COMMITTEE ON FIRE TESTS	.I
PREFACE	.II
1 SCOPE	1
2 REFERENCE PUBLICATIONS	1
3 SIGNIFICANCE	2
4 INSTRUCTIONS	2
5 PERFORMANCE	2
5.1 GENERAL	2
5.2 SURFACE BURNING CHARACTERISTICS	2
5.3 FLAME RESISTANCE	3
5.4 FLAME PENETRATION	3
5.5 BURNING	5
5.6 CORROSION	6
5.6.1 General	6
5.6.2 Test for Zinc-Coated Steel	6
5.6.3 Tests for Coated Steel (Other than Zinc-Coated Steel)	7
5.6.3.1 General	7
5.6.3.2 Salt-Spray Test	7
5.6.3.3 Industrial-Atmosphere Test	7
5.6.3.4 High-Temperature and Humidity Test	7
5.7 MOULD GROWTH AND HUMIDITY	8
5.8 TEMPERATURE	8
5.9 PUNCTURE	9
5.10 STATIC LOAD	9
5.11 IMPACT	11
5.12 EROSION	11
5.13 PRESSURE	12
5.14 COLLAPSE	13
5.15 TENSION	13
5.16 TORSION	14
5.17 BENDING	14
5.18 LEAKAGE	15
6 TEST REPORT	15
TABLES	16
FIGURES	17
APPENDIX A (NORMATIVE)	29

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This list represents the membership at the time the Committee balloted on the final text of this edition. Since that time, changes in the membership may have occurred.

STANDARD METHODS OF TEST FOR AIR DUCTS

PREFACE

This is the Third Edition of the Standard Methods of Test for Air Ducts, CAN/ULC-S110.

This Edition of the Standard has been formally approved by the ULC Standards Committee on Fire Tests.

This Standard has been developed in compliance with the requirements of SCC for accreditation of a Standards Development Organization.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

Appendix A identified as normative, forms a mandatory part of this Standard.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

This Third Edition National Standard of Canada was based on the Second Edition, and has now been reaffirmed.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. ULC Standards shall not be held responsible for identifying any or all such patent rights.

Requests for interpretation of this Standard should be sent to ULC Standards. The requests should be worded in such a manner as to permit a “yes” or “no” answer based on the literal text of the requirement concerned.

The review and action to revise or reaffirm this Standard will not exceed 5 years from the date of publication, unless the Standard is identified as fitting within a stabilized category, whereby the review will commence within the appropriate time frame set out by ULC Standards.

This Standard is intended to be used for conformity assessment.

1 SCOPE

1.1 These requirements apply to materials for the fabrication of air duct systems for use in accordance with the requirements in the National Building Code of Canada. The materials covered by these requirements include preformed lengths of flexible or rigid ducts, materials in the form of boards for field fabrication of lengths of rigid ducts, and preformed flexible connectors.

2 REFERENCE PUBLICATIONS

2.1 The documents shown below are referenced in the text of this Standard. Unless otherwise stated elsewhere in this Standard such reference shall be considered to indicate the edition and/or revisions of the document available at the date on which the Committee approved this ULC Standard.

Documents Published by the American Society for Testing and Materials (ASTM)
100 Barr Harbour Drive, PO Box C700, West Conshohocken, PA 19428-2959 U.S.A.
Telephone: (610) 832-9585
www.astm.org

- ASTM A90/A90M-11, Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
- ASTM B117-11, Standard Practice for Operating Salt Spray (Fog) Apparatus
- ASTM C27-98 (2008), Standard Classification of Fireclay and High-Alumina Refractory Brick

Document Published by the National Research Council Canada (NRCC)
1200 Montreal Road, Bldg. M-58, Ottawa, ON K1A 0R6 Canada
Telephone: (613) 993-9101 or 1-877-672-2672
www.nrc-cnrc.gc.ca

- National Building Code of Canada, 2010

Document Published by Underwriters Laboratories of Canada (ULC)
7 Underwriters Road, Toronto, ON M1R 3A9 Canada
Telephone: (416) 757-3611, ext. 61744; FAX (613) 231-5977, "ATTN: Publications"
E-mail: publications@ulc.ca
www.ulc.ca

- CAN/ULC-S109-03, Standard for Flame Tests of Flame-Resistant Fabrics and Films

Documents Published by ULC Standards
171 Nepean Street, Suite 400, Ottawa, ON K2P 0B4 Canada
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- CAN/ULC-S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

- CAN/ULC-S102.2-10, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies

3 SIGNIFICANCE

3.1 These requirements define relative performance characteristics of materials for the fabrication of air duct systems under specific test conditions.

3.2 For the purpose of these requirements, materials are classified as follows:

Connectors – flexible, for use between ducts and air outlets or air outlet units in single lengths only (no splices) and are limited to 4 m in length. Connectors shall conform to the requirements of tests in accordance with Clause 5.1.1.

Rigid Duct – a material or assembly of materials not having the capability to bend, curve or turn for use as supply and return ducts and making connections between ducts and air terminal units and conforming to the requirements when tested in accordance with Clause 5.1.1.

Flexible duct – a material or assembly of materials having the capability to bend, curve or turn for use as supply and return ducts and making connections between ducts and air terminal units and conforming to the requirements when tested in accordance with Clause 5.1.1.

3.3 Test results may not reflect the performance characteristics under all actual conditions.

4 INSTRUCTIONS

4.1 Installation instructions shall be available from the manufacturer for air ducts and connectors. Instructions shall include directions and information for attaining proper installation of the product. Instructions for making joints shall be included on the air duct or with each package of air ducts. Instructions for making terminal end connections shall be included on the air duct or connector or with each package of air ducts or connectors. Instruction for the fabrication of material furnished in the form of boards shall be included with each package of board material.

4.2 Joining instructions are not required for connectors as joints are not permitted, except in the case where sealing materials are used, in which case, such materials shall conform to the requirements for Class 0, 1 or 2 connectors (see Clause 5.2.7), as appropriate.

5 PERFORMANCE

5.1 GENERAL

5.1.1 Table 1 indicates the tests requirements applicable to the specific forms of air ducts, connectors and joining materials.

5.2 SURFACE BURNING CHARACTERISTICS

5.2.1 Materials for ducts and connectors shall be tested for surface burning characteristics and shall conform to Clauses 5.2.2 through 5.2.9.

5.2.2 Class 0 material shall have a flame spread rating of zero and a smoke developed classification of zero.

5.2.3 Class 1 material shall have a flame spread rating of not over 25 without evidence of continued progressive combustion and a smoke developed classification of not over 50.

5.2.4 Class 2 material shall have a flame spread rating of not over 50 without evidence of continued progressive combustion and a smoke developed classification of not over 50 for the inside surface material and not over 100 for the outside surface material.

5.2.5 Surface burning characteristic tests are to be determined by CAN/ULC-S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies, or CAN/ULC-S102.2, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies, as appropriate.

5.2.6 If the inside and outside surfaces of a duct or connector are of different composition, surface burning characteristic tests are to be conducted, exposing first one side and then the other to the test conditions, using different samples for each exposure.

5.2.7 Fabrics, tapes, or other joining materials field-applied to or forming part of a factory-made duct, connector, or part are considered as components of the product and are to be in place during the tests for surface burning characteristics. If, however, the application of the fabric, tape, or other joining material to the sample is likely to affect the various surface burning characteristic classifications, samples are to be tested with and without longitudinal seams or joints, and the higher rating(s) taken.

5.2.8 Surface burning characteristic tests are to be conducted on the complete air duct or connector construction, including insulation and jacketing materials (if used).

5.2.9 If the air duct or connector is of circular cross-section, the sample shall be cut longitudinally and flattened prior to testing.

5.2.10 The mounting of test samples for the surface burning characteristics test shall comply with Appendix A of this Standard.

5.3 FLAME RESISTANCE

5.3.1 Fabrics, tapes, or other joining materials shall be classified as flame resistant if, as applied to a duct, the material is exposed to the internal air stream.

5.3.2 Tests of fabrics, tapes, or other joining materials to determine conformance to Clause 5.3.1 are to be made in accordance with the method described in CAN/ULC-S109, Standard for Flame Tests of Flame-Resistant Fabrics and Films.

5.4 FLAME PENETRATION

5.4.1 The test series shall consist of a set of three samples.

5.4.2 Materials for the fabrication of Class 0 and Class 1 air ducts shall retard the passage of flame for a period of at least 30 min and for Class 2 air ducts shall retard the passage of flame for at least 15 min when tested in accordance with the method described in Clauses 5.4.3 through 5.4.13.

5.4.3 Flame-penetration tests are to be conducted using a refractory-lined gas-fired combustion chamber open at the top. The sample to be tested is to form the top of the chamber, thus forming a test furnace as shown in Figure 1.

5.4.4 The furnace is to be equipped with a dual-outlet gas burner composed of pipe fittings as shown in Figure 1. The gas burner is not to have any means for premixing of gas and combustion air.