

**CAN/ULC-S107:2010-R2016
(Reaffirmed 2016)**

**STANDARD METHODS OF FIRE TESTS OF ROOF
COVERINGS**

Prepared and Published by:



Approved by:



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The intended primary application of this standard is stated in its scope. It is important to note that it remains the responsibility of the user of the standard to judge its suitability for this particular application.

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STANDARD METHODS OF FIRE TESTS OF ROOF COVERINGS

ICS 13.220.50; 91.060.20

Prepared and Published by:



Approved by:



First Edition May 1987
Second Edition March 2003
Third Edition June 2010
REAFFIRMED APRIL 2016

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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 FIRE TESTS OF ROOF COVERINGS

PREFACE

This is the Reaffirmation of the Third Edition of the Standard Methods of Fire Tests of Roof Coverings, CAN/ULC-S107.

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.

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.

The Third Edition of this National Standard of Canada has 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 The test methods described in this Standard are applicable to roof covering materials and are intended to measure the relative fire-performance characteristics of roof coverings when exposed to fire originating from sources outside a building on which they may be installed. They are applicable to roof coverings intended for installation on either combustible or non-combustible decks when applied as intended for use. The following test methods are included:

- A Intermittent-Flame Test;
- B Spread-of-Flame Test;
- C Burning-Brand Test;
- D Flying-Brand Test;
- E Rain Test; and
- F Weathering Test.

1.2 Three classes of fire test exposure are described in Clauses 1.3 through 1.5.

1.3 Class A Tests are applicable to roof coverings that are effective against severe fire exposures, are not readily flammable, afford a fairly high degree of fire protection to the roof deck, do not slip from position and are not expected to produce flying brands.

1.4 Class B Tests are applicable to roof coverings that are effective against moderate fire exposures, are not readily flammable, afford a moderate degree of fire protection to the roof deck, do not slip from position and are not expected to produce flying brands.

1.5 Class C Tests are applicable to roof coverings that are effective against light fire exposures, are not readily flammable, afford a measurable degree of fire protection to the roof deck, do not slip from position and are not expected to produce flying brands.

1.6 It is the intent that the classifications indicate performance during tests of the types of materials and periods of exposure involved, and should not be construed as having any significance with respect to the suitability for use after fire exposure

1.7 Roof covering materials are required to comply also with other requirements for construction, material specifications, and performance as applicable to specific types, designs, sizes and arrangements. All such additional requirements are not considered to be within the scope of these requirements for fire tests.

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.

Document published by the American Society for Testing and Materials International (ASTM)
100 Barr Harbor Drive, PO BOX C700, West Conshohocken, PA 19428-2959 U.S.A
Telephone: (610) 832-9585
www.astm.org

- ASTM D2898-09, Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing

3 TEST APPARATUS

3.1 Figure 1 illustrates the essential elements of the fire-test apparatus. It consists of a test deck (A) an adjustable framework (B) on which the test deck is mounted at the desired incline, a gas burner (C) as a source of flame for intermittent-flame, spread-of-flame, and flying-brand tests, an air duct (D) and non-combustible boards (E) extending from the sides and bottom of the air duct to the simulated eaves or cornice of the adjustable framework that supports the test deck. Additional equipment consists of gas burners for pre-igniting the burning brands, a gas pressure gauge, an adjustable air supply, an air velocity meter, a gas control valve and a stopwatch.

3.2 The tests are to be conducted in a room vented to the outer air in such a manner that the outside weather cannot affect the test results. Tests are not to be conducted if the room temperature is below 10 °C or above 32 °C.

3.3 Figure 2 illustrates the essential elements of the rain-test apparatus.

4 CALIBRATION

4.1 AIR CURRENT

4.1.1 The test apparatus is to be set up for the intermittent flame test and a smooth, non-combustible calibration deck, 1320 mm long is to be positioned on the framework at an incline of 0.416:1.

4.1.2 The air velocity is to be measured¹ midway up the slope of the calibration deck, at its centre and 76 mm from each edge.

4.1.3 The centre of the air-measuring device is to be positioned 95 ± 3 mm above the surface. The air flow through and around the instrument is to be as free and undisturbed as possible.

4.1.4 The air supply system is to be adjusted to produce a 1 min time average velocity of 5.3 ± 0.2 m/s.

4.2 FLAME TEMPERATURE

4.2.1 Set up the test apparatus for the intermittent flame test as in Clause 4.1.1 and adjust the air velocity as in Clause 4.1.4.

4.2.2 The temperature is to be measured with a 1.6 mm diameter Type K wire thermocouple located 25 mm above the surface and 13 mm toward the source of the flame from the lower front edge of the calibration deck.

4.2.3 The gas flow is to be adjusted to produce a 2 min average flame temperature of 760 ± 28 °C for Class A and Class B and 704 ± 28 °C for Class C tests. The response of the thermocouple to the test flame is to be allowed to stabilize before the 2 min average flame temperature is measured. The average is to be based on readings taken at 5 s intervals.

Note: The gas flow should be arranged to produce a heat release of 369 - 387 kW for Class A or B samples and 316 - 334 kW for Class C samples.

¹Any direct reading instrument with scale graduated in increments of not more than 0.1 m/s or any timed instrument with scale graduated (for 1 min timed reading) in increments of not more than .025 m/s will be suitable.