



UL 790

STANDARD FOR SAFETY

Standard Test Methods for Fire Tests of Roof Coverings

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UL Standard for Safety for Standard Test Methods for Fire Tests of Roof Coverings, UL 790

Eighth Edition, Dated April 22, 2004

Summary of Topics

These revisions to ANSI/UL 790 include the following changes in requirements:

- 1. Revisions to the Scope to clarify that the standard covers relative fire characteristics, so as not to be confused with the term “fire resistance”.***
- 2. Revisions to several sections covering a) the required number of assemblies to be tested and b) that the requirements shall be applied in sequence.***
- 3. Revisions that clarify sample preparation.***
- 4. Addition of a new requirement covering conditioning of the self-sealing shingle test decks at a temperature of 135 to 140°F (57 to 60°C) for a continuous period of 16 hours.***
- 5. Minor clarifications and formatting revisions.***
- 6. Revisions to clarify that the spread of flame observations are made during the test, not after the test has ended.***
- 7. Revisions of the burning-brand test covering the placement of the Class A and Class B brands.***
- 8. Revisions to the test report to require that the climactic conditions for the weathering exposure shall be reported.***

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. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated September 27, 2013 and May 16, 2014.

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APRIL 22, 2004
(Title Page Reprinted: July 29, 2014)



ANSI/UL 790-2014

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UL 790

Standard for Standard Test Methods for Fire Tests of Roof Coverings

The first through seventh editions were titled Tests for Fire Resistance of Roof Covering Materials.

First Edition – September, 1958
Second Edition – April, 1969
Third Edition – May, 1973
Fourth Edition – December, 1978
Fifth Edition – October, 1983
Sixth Edition – October, 1995
Seventh Edition – September, 1997

Eighth Edition

April 22, 2004

This ANSI/UL Standard for Safety consists of the Eighth Edition including revisions through July 29, 2014.

The most recent designation of ANSI/UL 790 as an American National Standard (ANSI) occurred on July 29, 2014. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

The Department of Defense (DoD) has adopted UL 790 on March 21, 1984. 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 <http://csds.ul.com>.

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INTRODUCTION

1 Scope

1.1 These requirements cover the measurement of the relative fire characteristics of roof coverings exposed to simulated fire sources originating from outside a building on which the coverings are installed. They are applicable to roof coverings intended for installation on either combustible or noncombustible roof decks (see 1.7) when the roof coverings are applied as intended.

1.1 revised July 29, 2014

1.2 Three classes of fire exposure are described.

1.3 Class A roof coverings are effective against severe fire test exposures. Under such exposures, roof coverings of this class afford a 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 roof coverings are effective against moderate fire test exposures. Under such exposures, roof coverings of this class 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 roof coverings are effective against light fire test exposures. Under such exposures, roof coverings of this class afford a light degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

1.6 Tests conducted in accordance with these requirements are intended to demonstrate the performance of roof coverings during the types and periods of fire exposure involved, but are not intended to determine the acceptability of roof coverings for use after exposure to fire. These fire test methods do not provide a basis to compare expected performance under all actual fire conditions but they do provide a basis for comparison of the response of roof coverings when subjected to fire sources that are described herein.

1.7 A combustible deck is formed of wood sheathing boards, oriented strand boards (OSB), or plywood. A noncombustible deck is formed of metal, concrete, or poured gypsum.

1.7 revised July 29, 2014

2 Units of Measurement

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

PERFORMANCE

3 General

3.1 Representative samples of a roof covering material, assembled to test decks as described in Section 4, are to be subjected to the applicable tests described in Sections 6 – 11 as specified in Table 3.1.

Table 3.1
Required tests and test assemblies

Material to be tested	Required number of test assemblies ^a					
	Intermittent-flame test, Section 6	Spread-of-flame test, Section 7	Burning-brand test, Section 8	Flying-brand test, Section 9	Rain test, Section 10	Weathering test, Section 11
Other than wood shakes or shingles, for installation on:						
A. Combustible decks:						
1. Class A	2	2	4	NA	NA	NA
2. Class B or C	2	2	2	NA	NA	NA
B. Noncombustible decks only	NA	2	NA	NA	NA	NA
Wood shakes and shingles ^b :						
A. Class A	3 (2) [5]	3	6 (2) [5]	3 (2) [5]	6	15
B. Class B or C	3 (2) [5]	3	3 (2) [5]	3 (2) [5]	6	15
^a NA – Test is not required.						
^b Number in parentheses is number of samples from Rain Test, Section 10, to be tested. Number in brackets is number of samples from Weathering Test, Section 11, to be tested.						

4 Preparation of Samples

4.1 General

4.1.1 Representative samples of a roof covering material are to be applied, as described in 4.4, to test decks constructed in accordance with the applicable requirements of 4.2.1 – 4.3.2. The assemblies are to be conditioned in accordance with 4.5 prior to testing.

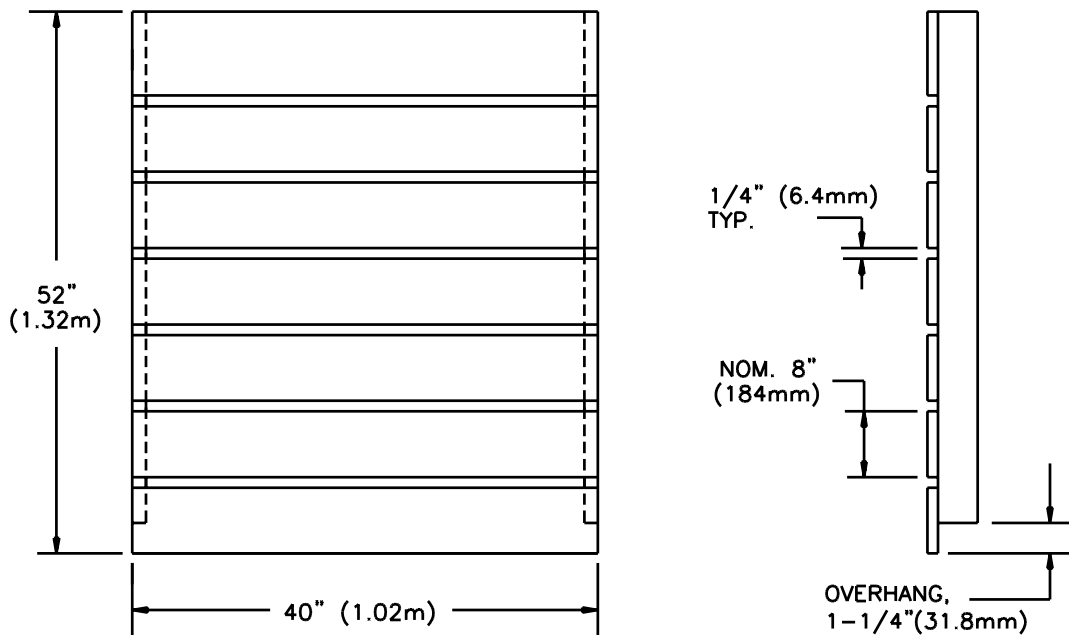
4.1.1 revised July 29, 2014

4.2 Intermittent-flame, burning-brand, and flying-brand test decks

4.2.1 Except as indicated in 4.2.2 – 4.2.5, the test deck for the Intermittent-Flame Test, Section 6, and the Burning-Brand Test, Section 8, is to be 3-1/3 feet (1 m) wide by 4-1/3 feet (1.3 m) long and is to be made of kiln-dried No. 1 white pine lumber with not less than 8 nor more than 12 percent moisture content. The lumber is to be free from large or loose knots, sapwood, rot, or pitch pockets, and is to contain no edge knots. Individual deck boards are to be of nominal 1 by 8 inch (19.1 by 184 mm) lumber (dressed on four sides). If used for the Class C burning brand test, see 8.4.3.1 – 8.4.5.1, the width of the deck board is to be such that the brands will be located directly over the spaces between the boards. The deck boards are to be laid across the shorter dimension of the test deck, spaced 1/4 inch (6.4 mm) apart, and securely nailed to two nominal 2 by 4 inch (38 by 89 mm) wood battens located under and flush with the outer edges of the deck. Decks so constructed are to be even and uniform. Figures 4.1 and 4.2 illustrate the construction details of these decks.

4.2.1 revised July 29, 2014

Figure 4.1
Intermittent-flame and burning-brand pine board deck

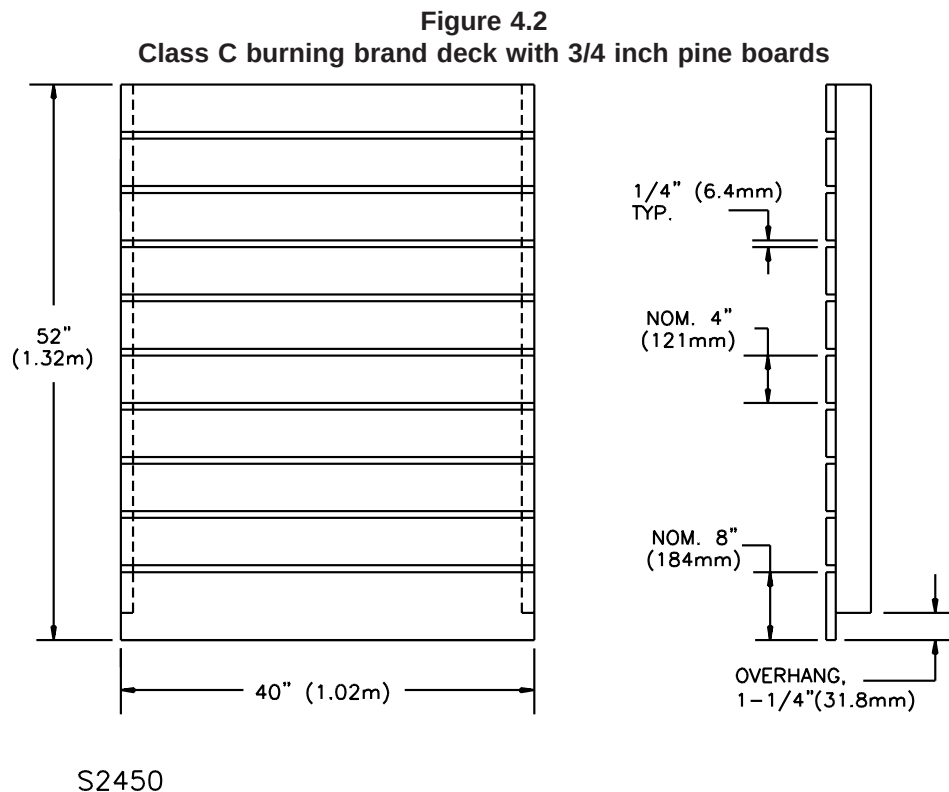


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4.2.2 For the Intermittent-Flame Test, Section 6, Burning-Brand Test, Section 8, and Flying-Brand Test, Section 9, on treated wood shingles and shakes, the test decks are to be constructed of nominal 1 by 4 inch (19.1 by 89 mm) lumber (dressed on four sides), spaced 1-1/2 inches (38.1 mm) apart, and securely nailed to two nominal 2 by 4 inch (38 by 89 mm) wood battens. The lumber is to be of the quality specified in 4.1.1. Figure 4.3 illustrates the construction details of this deck.

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