



Standard Practice for Specimen Preparation and Mounting of Flexible Fibrous Glass Insulation for Metal Buildings to Assess Surface Burning Characteristics¹

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1. Scope

1.1 This practice describes a procedure for specimen preparation and mounting when testing Flexible Fibrous Glass Insulation for Metal Buildings to assess flame spread and smoke development as surface burning characteristics using Test Method E84.

1.2 This practice applies to products described in Specification C991.

1.3 This practice provides instructions for the testing of both un-faced insulation (Specification C991 Type I) and face insulation (Specification C991 Type II).

1.4 This practice does not provide pass/fail criteria that can be used as a regulatory tool.

1.5 Use the values stated in inch-pound units as the standard in referee decisions. The values in the SI system of units are given in parentheses, for information only; see IEEE/ASTM SI-10 for further details.

1.6 This fire standard cannot be used to provide quantitative measures.

1.7 Fire testing of products and materials is inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting these tests. Fire testing involves hazardous materials, operations and equipment.

1.8 This practice gives instructions on specimen preparation and mounting but the fire-test-response method shall be conducted in accordance with Test Method E84. See also Section 8 for information on operator safety.

1.9 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

¹ This practice is under the jurisdiction of ASTM Committee E05 on Fire Standards and is the direct responsibility of Subcommittee E05.22 on Surface Burning.

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2. Referenced Documents

2.1 *ASTM Standards*:²

C168 Terminology Relating to Thermal Insulation

C991 Specification for Flexible Fibrous Glass Insulation for Metal Buildings

E84 Test Method for Surface Burning Characteristics of Building Materials

E176 Terminology of Fire Standards

IEEE/ASTM SI-10 American National Standard for Use of the International System of Units (SI): The Modern Metric System

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice and associated with insulation issues, refer to terminology contained in Terminology C168 or Specification C991. For definitions of terms used in this practice and associated with fire issues, refer to Terminology E176.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *metal rods, n*—as related to fire testing, steel rods, ¼ in. (6.3 mm) diameter and between 23 and 24 in. (0.58 and 0.61 m) long.

4. Summary of Practice

4.1 This practice describes a procedure for specimen preparation and mounting when testing flexible fibrous glass insulation for metal buildings to assess flame spread and smoke development as surface burning characteristics using Test Method E84.

4.2 Flexible fibrous glass insulation for metal buildings is a fibrous glass insulation, furnished in two types as described in Specification C991. Type I is an un-faced insulation blanket. Type II is a Type I blanket that is post-processed by a laminating process that applies an adhesive bonded facing to one surface.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4.3 Flexible fibrous glass insulation for metal buildings shall be tested in accordance with the specimen preparation and mounting procedures described in this practice, using Test Method **E84**.

5. Significance and Use

5.1 Flexible fibrous glass insulation for metal buildings is evaluated in accordance with Test Method **E84** to comply with building code requirements. This practice describes, in detail, specimen mounting procedures for Type I and Type II metal building insulation materials.

5.2 The material to be tested shall be representative of the glass fiber blanket, facing and bonding adhesive used in actual field installations.

5.3 The limitations for this procedure are those associated with Test Method **E84**.

6. Specimen Preparation and Mounting

6.1 Test specimens shall consist of 24.5 ± 0.5 ft (7.47 ± 0.152 m) continuous, unbroken lengths or broken, butted end-to-end lengths of the blanket insulation. The width shall be between 20 and 24 in. (0.50 and 0.60 m) with a thickness between 2.0 and 4.0 in. (50 and 100 mm).

6.2 The specimens shall be supported by nominally straight metal rods inserted through the material and positioned such that the bottom of the rod is approximately $\frac{1}{4}$ in. (6.3 mm) from the surface to be exposed to the flame. The steel rods shall be $\frac{1}{4}$ in. (6.3 mm) diameter, span the width of the tunnel and be spaced at approximately 2 ft (0.6 m) intervals down the length of the tunnel, including a rod at each end of the specimen.

6.2.1 When testing butted end-to-end, each test specimen shall have a rod inserted 3 in. (76 mm) from each butted end, and evenly spaced rods shall be added to the section to maintain the test specimen in a relatively flat position.

6.3 For Type I materials, the un-faced surface shall be the surface exposed to the flame.

6.4 For Type II materials, the faced surface shall be the surface exposed to the flame.

6.4.1 For Type II material, a minimum of two specimens shall be tested. One specimen shall be tested with a longitudinal slit down the length of the sample oriented between the burners. The slit is to be of such depth as to expose the bonding adhesive and glass fiber insulation. The other specimen shall be tested with the facing without a slit.

6.5 When lowering the tunnel lid, care shall be taken to achieve contact with the specimen but to not compress the specimen unduly.

7. Testing of Specimens

7.1 All testing shall be conducted using the procedure described in Test Method **E84**.

8. Operator Safety

8.1 The primary concerns for operator safety are associated with the fire-test-response procedure, which is described in Test Method **E84**, and not with the specimen preparation procedure. Safety recommendations are included in Test Method **E84**.

9. Report

9.1 Report the following information regarding the specific mounting procedure used:

9.2 Which specimens were tested with the facing slit and which ones were tested with the facing without a slit.

9.3 Report all the information required in the reporting section of Test Method **E84**, including all observations, graphical results and the values of the flame spread index and of the smoke developed index in each test.

10. Keywords

10.1 facing; fire; fire test; flame spread index; metal building insulation; smoke developed index; slit; tunnel

APPENDIX

(Nonmandatory Information)

X1. COMMENTARY

X1.1 Introduction—It has been shown that the careful replication of realistic fire scenarios is the most appropriate means of fire testing of products and systems. However, this is not always achievable within the confines of a standard test method.

X1.2 The use of any standard fire test method intrinsically carries some limitations, including the source of heat or flame, the specimen size and orientation, the specimen location and the fire-test-response characteristics measured.

X1.3 Fire tests on flexible fibrous glass insulation for metal buildings are often conducted by using Test Method **E84**.

X1.3.1 The source of heat and flame in Test Method **E84** are two gas burners supplying approximately 300 000 BTU/h (87.9 kW) onto the test specimen from underneath for a period of 10 min.

X1.3.2 The approximate specimen sizes in Test Method **E84** are 24 ft (7.3 m) long by 20 to 24 in. (508 to 610 mm) wide. the recommended specimen thickness height is up to 4 in. (102 mm).

X1.3.3 The test specimen is placed below the lid of the test chamber at a specified location.

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