



Designation: C 1488 – 01

Standard Practice for Simulated Aging of Loose-Fill Insulation¹

This standard is issued under the fixed designation C 1488; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice covers a procedure to simulate the aging process of loose-fill insulation by subjecting it to controlled laboratory conditions of temperature and humidity so that the insulation can be further evaluated in a state that simulates the aging process.

1.2 It is not the intent of this practice to establish aging conditions that represent all possible exposures.

1.3 The values stated in SI units are to be regarded as the standard. The values in parentheses are provided for information only.

1.4 *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.*

2. Referenced Documents

2.1 ASTM Standards:

- C 168 Terminology Relating to Thermal Insulation²
- C 687 Practice for Determination of Thermal Resistance of Loose-Fill Building Insulation²
- C 739 Specification for Cellulosic Fiber (Wood-Based) Loose-Fill Thermal Insulation²
- C 870 Practice for Conditioning of Thermal Insulating Materials²

3. Terminology

3.1 *Definitions*—Terminology C 168 shall be considered as applicable to the terms used in this practice.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *simulated aging, n*—condition resulting from exposing a specimen to a controlled cycle of temperature and humidity conditions.

4. Significance and Use

4.1 The purpose of this practice is to simulate the aging process of loose-fill insulation. By identifying any changes in

flame-resistance permanency due to the aging process, producers can design loose-fill insulations to meet or exceed material specifications throughout the product life cycle.

5. Procedure

5.1 Apparatus:

5.1.1 Air oven, humidity cabinet, or appropriate conditioning chamber capable of temperature and humidity conditions allowing for successfully completing the prescribed procedure.

5.1.2 Material specimens to be tested after simulated aging shall be prepared and placed in the appropriate test container in accordance with the applicable material specification or Practice C 687. For specimen to be tested using the electric radiant panel referenced in Specification C 739, Appendix A, the specimen container shall be a watertight stainless steel tray that measures 600 mm (24 in.) long, 150 mm (6 in.) wide and 50 mm (2 in.) in depth. Three specimen trays allow for repeat testing if necessary.

5.2 *Conditioning*—Condition the specimen in the selected chamber under the following conditions and chronological sequence:

- 23.4 ± 1.7°C (75 ± 3°F) and 50 ± 3 % RH until constant weight is achieved (constant weight is achieved when weight changes less than 1 % in 24 h)
- 24 h at 82.2 ± 1.7°C (180 ± 3°F) and 90 ± 3 % Relative Humidity (RH)
- 24 h at 23.4 ± 1.7°C (75 ± 3°F) and 50 ± 3 % RH
- 24 h at 82.2 ± 1.7°C (180 ± 3°F) and 90 ± 3 % RH
- 24 h at 23.4 ± 1.7°C (75 ± 3°F) and 50 ± 3 % RH
- 96 h at 60.0 ± 1.7°C (140 ± 3°F) Air Oven
- 23.4 ± 1.7°C (75 ± 3°F) and 50 ± 3 % RH until constant weight is achieved

6. Calculation

6.1 *Change in Weight*—Calculate the percentage change in weight after the conditioning treatment as follows:

$$C = [(W_1 - W_3) / (W_1 - W_2)] \times 100 \quad (1)$$

where:

C = Percentage change in weight after conditioning treatment

W_1 = weight of specimen and specimen holder before the conditioning treatment, grams,

W_2 = weight of empty specimen holder/tray, grams, and

W_3 = weight of specimen and specimen holder after the conditioning treatment, grams.

¹ This practice is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.31 on Chemical and Physical Properties.

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² Annual Book of ASTM Standards, Vol 04.06.

7. Report

7.1 Report the following information:

7.1.1 Conditioning treatment followed,

7.1.2 Percentage change in weight,

7.1.3 Any visible changes in the specimen after the conditioning treatment, particularly when changes are not uniform.

8. Precision and Bias

8.1 *Precision*—The precision of the procedure in a new test method for measuring a change in weight is being determined

and will be available on or before November 2005. It is not feasible to specify the precision at this time, because this is a new standard.

8.2 No information can be presented on the bias of the procedure in this practice because no material having an accepted reference value is available.

9. Keywords

9.1 aging; conditioning; humidity/temperature cycling; loose-fill; thermal insulation

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