Designation: E 1590 – 02

An American National Standard

Standard Test Method for Fire Testing of Mattresses[1]

This standard is issued under the fixed designation E 1590; 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 reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This is a fire-test-response standard.

1.2 This test method provides a means of determining the burning behavior of mattresses used in public occupancies by measuring specific fire test responses when the test specimen, a mattress or mattress with foundation, is subjected to a specified flaming ignition source under well ventilated conditions.

1.3 This is a test method for mattresses or mattresses with foundations.

1.4 Test data are obtained describing the burning behavior, following application of a specific ignition source, from ignition until all burning has ceased, a period of 1 h has elapsed, or flashover appears inevitable.

1.5 This test method does not provide information on the fire performance of mattresses under fire conditions other than those specified in this test method. In particular, this test method does not apply to smoldering ignition by cigarettes. See 5.12 for further information.

1.6 The rate of heat release of burning test specimen is measured by an oxygen consumption method. See 5.12.4 for further information.

1.7 Other measurements are the production of light-obscuring smoke and the concentrations of certain toxic gas species in the combustion gases. See 5.12.5 for further information.

1.8 The burning behavior is documented visually by photographic or video recordings.

1.9 Use the SI system of units in referee decisions; see Practice E 380. The units given in parentheses are for information only.

1.10 *This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire hazard or fire risk assessment of the materials, products or assemblies under actual fire conditions..*

1.11 *Fire testing of products and materials is inherently hazardous, and adequate safeguards for personnel and property shall be employed in conducting these tests. This test method may involve hazardous materials, operations, and equipment.*

1.12 *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:*

D 123 Terminology Relating to Textiles [2]

E 84 Test Method for Surface Burning Characteristics of Building Materials[3]

E 176 Terminology of Fire Standards[3]

E 380 Practice for Use of the International System of Units (SI) (the Modernized Metric System)[4]

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method[5]

E 800 Guide for Measurement of Gases Present or Generated During Fires[3]

E 1354 Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter[3]

E 1474 Test Method for Determining the Heat Release Rate of Upholstered Furniture and Mattress Components or Composites Using a Bench Scale Oxygen Consumption Calorimeter[3]

E 1537 Test Method for Fire Testing of Seating Upholstered Furniture[3]

2.2 *ISO Standards:*

ISO 3261 Fire Tests—Vocabulary[6]

ISO 4880 Burning Behaviour of Textiles and Textile Products—Vocabulary[6]

ISO 9705 Fire Tests—Full Scale Room Test for Surface Products[6]

2.3 *UL Standards:*

[1] This test method is under the jurisdiction of ASTM Committee E05 on Fire Standards and is the direct responsibility of Subcommittee E05.15 on Furnishing and Contents.

Current edition approved Sept. 10, 2002. Published November 2002. Originally published as E 1590 – 94. Last previous edition E 1590 – 01.

[2] *Annual Book of ASTM Standards*, Vol 07.01.

[3] *Annual Book of ASTM Standards*, Vol 04.07.

[4] Discontinued 1997; Replaced by IEEE/ASTM SI-10.

[5] *Annual Book of ASTM Standards*, Vol 14.02.

[6] Available from International Standardization Organization, P.O. Box 56, CH-1211, Geneva 20, Switzerland.

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