Designation: E535 – 23

An American National Standard

Standard Practice for Preparation of Fire-Test-Response Standards[1]

This standard is issued under the fixed designation E535; 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.

INTRODUCTION

This standard has been developed to assist ASTM Committees in the writing of fire-test-response standards that comply with the ASTM policy on fire standards (see Annex A1).

The policy on fire standards describes the types of ASTM fire standards and their required caveats. Committee E05 has the responsibility of helping other committees developing fire standards by providing the information and assistance required by all committees for writing standards which contain testing procedures for the response of materials, products, or assemblies to fire.

Fire-test-response standards are standards for, or based on, one or more fire-test-response characteristics. A fire-test-response characteristic provides a means of measuring the response of materials, products, or assemblies to a prescribed source of heat alone or to one of heat and flame under controlled test conditions.

1. Scope

1.1 This practice is a supplement to *Form and Style for ASTM Standards*,[2] which shall be consulted in writing all ASTM standards.

1.2 This practice contains, directly or by reference, all of the information required to comply with the policy on fire standards and the additional guidelines recommended by Committee E05.

1.3 This practice, intended to assist ASTM Committees, establishes guidelines and criteria for the preparation of fire-test-response standards (that is, standards for response to heat or flame under prescribed conditions).

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

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[3]

E176 Terminology of Fire Standards

E456 Terminology Relating to Quality and Statistics

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

E2536 Guide for Assessment of Measurement Uncertainty in Fire Tests

E2655 Guide for Reporting Uncertainty of Test Results and Use of the Term Measurement Uncertainty in ASTM Test Methods

2.2 *ISO Standards:*[4]

ISO 13943 – Fire Safety – Vocabulary

3. Terminology

3.1 *Definitions:*

3.1.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology E176 and ISO 13943. In case of conflict, the definitions given in Terminology E176 shall prevail.

[1] This practice is under the jurisdiction of ASTM Committee E05 on Fire Standards and is the direct responsibility of Subcommittee E05.31 on Terminology and Services / Functions.

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[2] Available on request from ASTM Headquarters, 100 Barr Harbor Drive, West Conshohocken, PA, 19428-2959.

[3] 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] Available from International Organization for Standardization (ISO), ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, http://www.iso.org.

3.1.2 *fire-test-response characteristic, n*—a response characteristic of a material, product, or assembly, to a prescribed source of heat or flame, under controlled fire conditions; such response characteristics may include but are not limited to ease of ignition, flame spread, heat release, mass loss, smoke generation, fire resistance, and toxic potency of smoke.

3.1.2.1 *Discussion*—A fire-test-response characteristic can be influenced by variable characteristics of the heat source, such as its intensity, or of the burning environment, such as ventilation, geometry of item or enclosure, humidity or oxygen concentration. It is not an intrinsic property such as specific heat, thermal conductivity, or heat of combustion, where the value is independent of test variables. A fire-test-response characteristic may be described in one of several terms. Smoke generation, for example, may be described as smoke opacity, change of opacity with time, or smoke weight. No quantitative correlation need exist between values of a fire-test-response characteristic for different materials, products, or assemblies, as measured by different methods or tested under different sets of conditions for a given method.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *measurand, n*—quantity subject to measurement.

3.2.2 *uncertainty of measurement, n*—parameter, associated with the result of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand.

4. Significance and Use

4.1 This standard is to be used by those concerned with the development of fire-test-response standards.

4.2 The resultant fire-test-response standards are intended to be useful in one or more of the following areas, among others: product development, quality control, product comparisons, screening, information to be used as part of a fire hazard or a fire risk assessment, and regulatory purposes.

4.3 This practice is intended to be useful to users and developers of fire-test-response standards (Section 5) because it provides much of the general rationale for the development and use of such standards.

4.4 This practice is not intended to provide guidance for the preparation of fire hazard assessment standards or fire risk assessment standards.

4.5 This practice is not intended to provide guidance for the preparation of standards not related to fire-test responses of materials, products or assemblies.

5. Preparation of Fire-Test-Response Standards

5.1 Refer to *Form and Style of ASTM Standards*[2], Section A and other appropriate sections, for general requirements applicable to standard tests.

5.1.1 Fire-test-response standards shall not use conditional language.

5.2 Fire-test-response standards shall, as applicable, contain the sections described in 5.3 – 5.21 of this practice.

5.3 *Title:*

5.3.1 The title of the test method shall specify the intended specific application, clearly and as concisely as is practicable.

5.3.2 The title of the test method shall not contain the phrases “fire hazard” or “fire risk”.

5.4 *Scope:*

5.4.1 The scope shall clearly:

5.4.1.1 Identify the standard as a “fire-test-response standard,”

5.4.1.2 State the purpose of the standard,

5.4.1.3 Specify the known limitations of the standard,

5.4.1.4 Specify the significance of the data that are generated (including relevance to human life and property, where appropriate),

5.4.1.5 Specify what the standard is and is not intended to accomplish,

5.4.1.6 Identify the class of materials, products or assemblies to which it is to be applied,

5.4.1.7 Identify the heat flux or other test input characteristics involved,

5.4.1.8 Identify the fire-test-response characteristic(s) to be measured, and

5.4.1.9 Identify the system of units of measurement applied within the standard and to be used in referee decisions; parenthetical measures in a different system of units are permitted when identified to be for information only.

5.4.2 The scope shall include the caveat for fire-test-response standards required by the ASTM policy on fire standards, and contained in F2.2.2.1 of *Form and Style for ASTM Standards*. This is referred to as the fire-test-response standards caveat. No alterations are to be made to the caveat as follows:

> *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.*

5.4.3 The scope shall contain the standard safety hazards caveat specified in F2.1 of *Form and Style for ASTM Standards*. No alterations are to be made to the caveat as follows:

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

5.4.4 The scope of all fire test methods shall contain the following safety caveat:

> *Fire testing is inherently hazardous. Adequate safeguards for personnel and property shall be employed in conducting these tests.*

5.4.5 The scope shall contain information with respect to any known limitations of the test method with respect to its application, and inappropriate uses of the standard.

5.4.6 It is appropriate to include reference to alternative, companion or related standards in the scope. The title and designation of such standards shall be included in the referenced documents section.

5.5 *Referenced Documents:*

5.5.1 The list of referenced documents shall include:

5.5.1.1 All ASTM standards, proposals, and adjuncts that are cited in the text,

5.5.1.2 E176, Terminology Relating to Fire Standards,