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An American National Standard

Standard Test Method for Measurement of Mass Loss and Ignitability for Screening Purposes Using a Conical Radiant Heater[1]

This standard is issued under the fixed designation E 2102; 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

The screening fire-test-response method described in this standard uses a radiant energy source similar to that used in the cone calorimeter, Test Method E 1354. However, the test method apparatus is much simpler, because it excludes measurements of oxygen consumption or of smoke obscuration, which are incorporated into the cone calorimeter to measure heat and smoke release. A fire-test-response standard describes a test method from which one or more fire-test-response characteristics can be measured, as a result of exposure to a prescribed source of heat or flame, under controlled conditions. There are many occasions, typically for initial research and development, when there is a need for screening samples of materials, products, or assemblies, using a simple test. This allows the user to verify whether certain fire-test-response characteristics of the sample fall within the expected margins. Screening tests, as related to fire, are described in fire terminology as fire-response tests performed to determine whether a material, product, or assembly (a) exhibits any unusual fire-related characteristics, (b) has certain expected fire-related characteristics, or (c) is capable of being preliminarily categorized according to the fire characteristic in question. Screening tests addressing fire properties should be chosen so that the energy input (as heat or flame) is representative of that in the fire test method for which screening is desired.

1. Scope

1.1 This fire-test-response standard provides a means of measuring mass loss and ignitability, for screening purposes, from essentially planar materials, products, or assemblies (including surface finishes), exposed to controlled levels of radiant heating, with or without an external ignitor. This test method is intended for screening purposes only.

1.2 The principal fire-test-response characteristics obtained from this test method are those associated with mass loss from the specimens tested, as a function of time. Time to sustained flaming is also determined. Heat release is, optionally, determined using thermopile measurements detailed in Annex A2.

1.2.1 The fire-test-response characteristics obtained from this test are best used for comparisons between materials with some similarities in composition or structure.

1.3 The relationship between mass loss and heat release depends on the material, product, or assembly tested, and no universal formula exists for calculation of heat release using mass loss measurements (see also additional limitations in 5.7).

1.4 The fire-test-response characteristics obtained from this test method are also obtainable with the apparatus used in Test Method E 1354 (the cone calorimeter) or in an applications standards of that equipment (see also 5.4). The referenced test methods permit measurements of added fire-test-response characteristics.

1.5 The fire-test-response characteristics obtained by this test method are specific to the specimen tested, in the form and thickness tested, and are not an inherent property of the material, product, or assembly.

1.6 This fire-test-response method does not provide information on the fire performance of the test specimens under fire conditions other than those conditions specified in this test method. For additional limitations of this test method, see 5.7.

1.7 Use the SI system of units in referee decisions; see IEEE/ASTM SI-10. The units given in parentheses are for information only.

1.8 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

[1] This test method is under the jurisdiction of ASTM Committee E05 on Fire Standards and is the direct responsibility of Subcommittee E05.21 on Smoke and Combustion Products.

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