



Standard Test Method for Determination of Fire-Test-Response Characteristics of Components or Composites of Mattresses or Furniture for Use in Correctional Facilities after Exposure to Vandalism, by Employing a Bench Scale Oxygen Consumption Calorimeter¹

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INTRODUCTION

In correctional occupancies, vandalism of mattresses or furniture occurs with significant frequency. After such vandalism, it is possible that the filling material (foam or other padding) of the mattress or furniture becomes exposed. If the mattress or furniture filling material is exposed, it is possible for a product which meets prescribed fire-test-response characteristics in its intact state to perform in a decidedly less satisfactory manner. This standard test method provides a means for measuring, in bench scale, fire-test-response characteristics of composite upholstered components of mattresses or furniture, for use in correctional facilities, after having been vandalized in a prescribed manner so as to expose the filling material, using an oxygen consumption calorimeter.

1. Scope

1.1 This fire-test-response standard is designed for use to determine various fire-test-response characteristics, including ignitability and heat release rate, from composites of mattresses or furniture, or correctional facilities, which have been vandalized in a prescribed manner to expose the filling material, by using a bench scale oxygen consumption calorimeter.

1.2 This test method provides for measurements of the time to sustained flaming, heat release rate, peak and total heat release, and effective heat of combustion at a constant radiant heat flux of 35 kW/m². See 5.7 for limitations.

1.3 The apparatus used in this test method is also capable of determining heat release data at different heat fluxes.

1.4 The specimen is oriented horizontally and a spark ignition source is used.

1.5 All fire-test-response characteristics are determined using the apparatus and the procedures described in Test Method E 1354.

1.6 The tests are done on bench-scale specimens combining the mattress or furniture outer layer components. Frame elements are not included.

1.7 The vandalism is simulated by causing a prescribed cut on the outer layer of the composite, deep enough to expose the filling material to the incident radiation.

1.8 The values stated in SI units are to be regarded as the standard.

1.9 *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.*

1.10 *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. For specific safety precautions, see Section 7.*

2. Referenced Documents

2.1 ASTM Standards:

D 123 Terminology Relating to Textiles²

E 176 Terminology of Fire Standards³

E 1354 Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter³

¹ This test method is under the jurisdiction of ASTM Committee F33 on Detention and Correctional Facilities and is the direct responsibility of Subcommittee F33.05 on Furnishings and Equipment.

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² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 04.07.