



Standard Test Method for Cigarette Ignition Resistance of Mock-Up Upholstered Furniture Assemblies¹

This standard is issued under the fixed designation E1352; 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 is designed for the assessment of the resistance of upholstered furniture mock-up assemblies to combustion after exposure to smoldering cigarettes under specified conditions.

1.3 Mock-up testing is useful in assessing the relative resistance of combustion of materials used in upholstered furniture such as cover materials, cushioning materials, welts, etc., in representative combinations disregarding the geometric arrangement of the seating surfaces, backs, and sides of furniture items.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *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.*

1.6 *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 hazard statements, see Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*²

E176 Terminology of Fire 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 Furnishings and Contents.

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² 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.

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

2.2 *NFPA Standard:*³

NFPA 261 Standard Method of Test for Determining Resistance of Mock-up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology E176.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *bolster*—pillow or similarly shaped unit containing upholstery material covered by upholstery cover material that may or may not be attached to the upholstered furniture item but is sold and delivered with it.

3.2.2 *deck*—the upholstered support under the seat cushion in a loose-seat construction.

3.2.3 *furniture mock-up or assembly*—a representation of production furniture that uses the same upholstery cover material and upholstery material, constructed in the same manner as in production furniture, but with straight, vertical sides.

3.2.4 *quilted*—fused or stitched with thread through the upholstery cover material and one or more layers of upholstery material.

3.2.5 *tufted*—buttoned or laced through the upholstery cover material and upholstery material.

3.2.6 *upholstered furniture*—for the purpose of this test method, a unit of interior furnishing that (1) contains any surface that is covered, in whole or in part, with a fabric or related upholstery cover material, (2) contains upholstery material, and (3) is intended or promoted for sitting or reclining upon.

3.2.7 *upholstery cover material*—the outermost layer of fabric or related material used to enclose the main support system or upholstery materials, or both, used in the furniture item.

³ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, <http://www.nfpa.org>.

*A Summary of Changes section appears at the end of this standard

3.2.8 *upholstery material*—the padding, stuffing, or filling material used in a furniture item, which may be either loose or attached, enclosed by an upholstery cover material, or located between the upholstery cover material and support system, if present.

3.2.8.1 *Discussion*—This includes, but is not limited to, material such as foams, cotton batting, polyester fiberfill, bonded cellulose, or down.

3.2.9 *welt*—the piping effect produced when welt cord and cover fabrics are sewn together for ornamental purposes to finish the edges between intersecting surfaces of upholstered furniture cushions, pillows, arms, or backs.

3.2.10 *welt cord*—the continuous small-diameter cylindrical material that is wrapped in fabric and sewn as part of the cover to make a welt edge on upholstered furniture.

4. Summary of Test Method

4.1 This test method is used to evaluate the cigarette ignition resistance of upholstered furniture by exposing mock-up upholstered furniture assemblies to lighted cigarettes as an ignition source.

5. Significance and Use

5.1 This test method is intended to measure the performance of upholstered furniture material assemblies under conditions of exposure to smoldering cigarettes. This is accomplished by testing furniture assemblies.

5.2 This test method is recommended for upholstered furniture used in facilities such as hospitals, nursing homes, residential-custodial care and supervisory facilities, or in the public area of facilities such as educational, assembly, or residential occupancies.

5.3 This test method is not intended to measure the performance of upholstered furniture material assemblies under conditions of open-flame exposure, and does not indicate whether the assemblies will resist the propagation of flame under severe fire exposure or when tested in a manner that differs substantially from the test method.

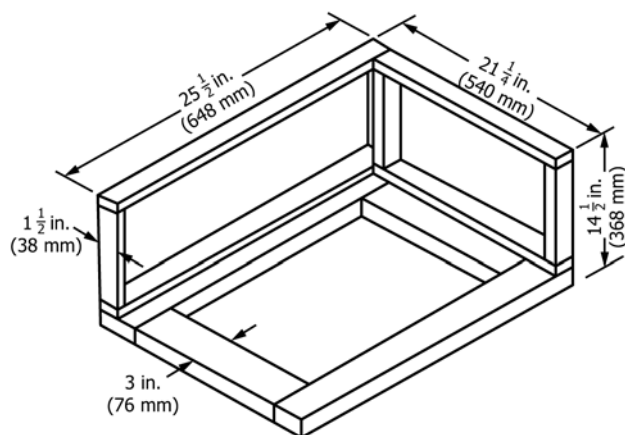
5.4 The results obtained with a material assembly tested in mock-up in accordance with this test method do not necessarily indicate the performance of the same material assembly in other geometric configurations, such as in production furniture.

6. Apparatus and Materials

6.1 *Mock-up*—Elements of the mock-up test jigs are illustrated in Figs. 1 and 2. Fig. 3 shows the completed mock-up assemblies.

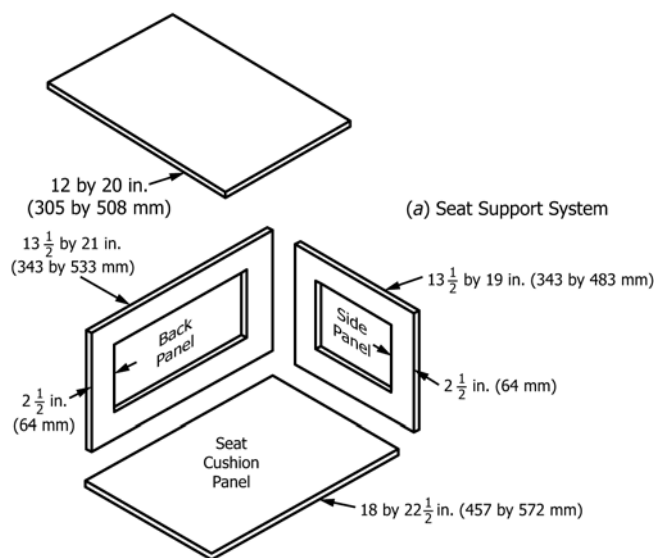
6.2 The ignition source shall consist of SRM 1196 cigarettes without filter tips, made from natural tobacco 3.3 ± 0.1 in. (83 ± 2 mm) long with a tobacco packing density of 0.156 ± 0.012 oz/in.³ (0.270 ± 0.020 g/cm³) and a total weight of 0.039 ± 0.004 oz (1.1 ± 0.1 g). Standard Reference Material SRM 1196 is obtained from the National Institute of Standards and Technology.

6.3 *Sheeting Material*—The sheeting material to cover the test cigarettes shall be 50 % cotton/50 % polyester or 100 %



Material: Nominal 1 in. Frame Stock

FIG. 1 Frame for Upholstered Furniture Mock-Up Test



Material: Nominal $\frac{1}{2}$ in.-thick Plywood

(b) Panel for Seat Cushion, Side, and Back

FIG. 2 Panels for Upholstered Furniture Mock-Up Test

cotton bed sheeting material weighing 3.7 ± 0.8 oz/yd² (125 ± 28 g/m²). The material shall be laundered in an automatic home clothes washing machine and dried in a tumble drier at least once before use. For testing, the sheeting material shall be cut into pieces approximately 5 by 5 in. (12.5 by 12.5 cm).

6.4 *Test Area*, equipped with a suitable system for exhausting smoke and noxious gases produced during testing. The test shall be carried out in a draft protected area. The maximum airflow across the sample face shall be less than 50 ft (15.2 m)/min.

6.5 *Extinguishing Equipment*:

6.5.1 *Pressurized-Water Fire Extinguisher*, or other suitable fire-extinguishing equipment, immediately available.

6.5.2 *Water Botte*, fitted with a spray nozzle to extinguish any ignited portions of the mock-up.