Tab D

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PART 1634—STANDARD FOR THE FLAMMABILITY OF UPHOLSTERED FURNITURE AND UPHOLSTERED FURNITURE MATERIALS

Subpart A — General, Definitions, Performance Requirements

Sec.

Authority: 15 U.S.C. 1193

Graphs and Figures

Subpart A — General, Definitions, Performance Requirements

§ 1634.1 Purpose, scope, and applicability.

(a) *Purpose.* This Part 1634 establishes flammability limits that all upholstered furniture and upholstered furniture materials subject to this part must meet before sale or introduction into commerce. The purpose of these requirements is to reduce deaths and injuries associated with upholstered furniture fires.

(b) *Scope.* All upholstered furniture as defined in § 1634.2(a) produced or reupholstered on or after the effective

date of this standard and all upholstered furniture materials as defined in § 1634.2(b) produced on or after the effective date of this standard for use in an article of such upholstered furniture are subject to the requirements of this part.

(c) *Applicability.* The requirements of this Part 1634 apply to the "manufacturer" (as that term is defined in § 1634.2(g)) of upholstered furniture and/or upholstered furniture materials subject to this part that are produced for sale in commerce.

§ 1634.2 Definitions.

In addition to the definitions given in section 2 of the Flammable Fabrics Act as amended (15 U.S.C. 1191), the following definitions apply for purposes of this part 1634.

(a) *Upholstered furniture* means, for purposes of this part 1634, an article of seating furnishing intended for indoor use in a home or other residential occupancy, e.g., apartment, etc., that: (1) consists in whole or in part of resilient cushioning materials (such as foam, batting, or related materials) enclosed within a covering consisting of fabric or related materials such as leather, including unattached items, e.g. loose cushions or pillows, if such resilient cushioning materials are sold with

the item of upholstered furniture; and (2) is constructed with a contiguous upholstered seat and back and/or arms(s).

(1) Items included in the scope of paragraph (a) of this section include, but are not limited to, products that are intended or promoted for indoor residential use for sitting or reclining upon, such as: (i) chairs, (ii) sofas, (iii) motion furniture, (iv) sleep sofas, (v) home office furniture customarily offered for sale through retailers or otherwise available for residential use, and (vi) upholstered furniture intended for use in dormitories or other residential occupancies.

(2) Items excluded from the scope of paragraph (a) above consist of: (i) furniture, such as patio chairs and chaise lounges, intended solely for outdoor use; (ii) furniture without contiguous upholstered seating and backs and/or arm surfaces, such as ottomans; (iii) pillows or pads that are not sold with an article of furniture; (iv) commercial or industrial furniture not offered for sale through retailers or not otherwise available for residential use; (v) furniture intended or sold solely for use in hotels and other short-term lodging and hospitality establishments; and (vi) futons, flip chairs, the mattress portions of sleep sofas, or any other article

intended primarily for sleeping that is subject to the flammability standard for mattresses and mattress pads at 16 CFR Part 1632.

(b) *Upholstered furniture material* means “upholstery cover fabric,” "fibrous filling material," "loose filling material," "loose filling interliner fabric,” “resilient filling material,” “interior fire barrier material,” and “upholstery fabric fire barrier,” as each term is defined in this section.

(c) *Type I* upholstered furniture means upholstered furniture that is constructed with an interior fire barrier material that: (1) is located directly beneath the external covering material and; (2) completely encases the filling material used in the seating area of the item of upholstered furniture; and (3) is certified to meet the performance requirements of §§ 1634.9 and 1634.16.

(d) *Type II* upholstered furniture means upholstered furniture that is constructed with an upholstery fabric fire barrier that: (1) completely covers the seating area; and (2) is certified to meet the performance requirements of §§ 1634.4 and 1634.15.

(e) *Type III* upholstered furniture means upholstered furniture constructed so that any upholstery cover fabric

contained in the seating area is certified to meet the performance requirements of § 1634.4, any fibrous filling material contained in the seating area is certified to meet the performance requirements of §§ 1634.5 and 1634.11, any loose filling material contained in the seating area is certified to meet the performance requirements of §§ 1634.6 and 1634.12 or is completely surrounded by loose filling interliner fabric certified to meet the performance requirements of §§ 1634.7 and 1634.13, and any resilient filling material contained in the seating area is certified to meet the performance requirements of §§ 1634.8 and 1634.14.

(i) *Type III-B* upholstered furniture means upholstered furniture constructed so that any upholstery cover fabric contained in the seating area is certified to meet the performance requirements of § 1634.4, any fibrous filling material contained in the seating area is certified to meet the performance requirements of §§ 1634.5 and 1634.11, any loose filling interliner fabric contained in the seating area is certified to meet the performance requirements of §§ 1634.7 and 1634.13 and any resilient filling material contained in the seating area is certified to meet the performance requirements of §§ 1634.8 and 1634.14.

(f) *Type IV* upholstered furniture means upholstered furniture the seating area of which contains only combinations of upholstery materials certified to meet the performance requirements of §§ 1634.10 and 1634.17 and assembled in the same configuration as tested successfully in accordance with the test procedures set forth in those sections.

(g) *Manufacturer* means any entity that produces or reupholsters upholstered furniture and/or produces upholstered furniture materials subject to this part 1634. For purposes of this Part 1634, the importer of the upholstered furniture is the manufacturer. See Subpart F of this Part for additional information on reupholstering.

(k) *Produced* means, for purposes of this Part 1634, manufactured or imported.

(l) *Upholstery cover fabric* means the outermost layer of attached fabric or related material such as leather used to enclose the seating area of the upholstered furniture item.

(m) *Crevice* means the location in the mockup formed by the intersection of the vertical and horizontal surfaces of the mockup.

(n) *Draft enclosure* means an enclosure used in smoldering ignition resistance tests to restrict airflow to convection only. See Subpart C of this Part.

(o) *Fibrous filling material* means a category of filling materials used in upholstered furniture construction including, but not limited to synthetic and natural textile filling materials that are carded, garneted, air-layered or otherwise formed into a continuous fiber web consisting of batting, pads, etc.

(p) *Fire barrier* means a fire-resistant material or composite which is interposed between a combustible material and a potential ignition source or other combustible material. A fire barrier may be the upholstery cover fabric or a material located directly beneath the upholstery cover fabric.

(q) *Fire resistant material* means a material capable of reducing the likelihood of ignition or delaying fire growth.

(r) *Flame-retardant* means having a chemical, coating or treatment added, or physical properties provided, that imparts greater fire resistance.

(s) *Ignition* (for open flame testing) means continuous, self-sustaining combustion. It is characterized by the presence of any visible flaming, glowing, or smoldering after removal of the ignition source.

(t) *Loose filling interliner fabric* means a fire-resistant interior fabric used to encase and act as a fire-barrier for loose filling material.

(u) *Interior fire barrier material* means a fire-resistant interior layer of material interposed between the upholstery cover fabric and the filling material.

(v) *Loose filling material* means a category of filling materials used in upholstered furniture construction that is not formed into batts or cellular pads. These materials include, but are not limited to shredded polyurethane and other cellular foams, feathers and down, loose synthetic/natural/synthetic-natural blends of fibers, polystyrene beads, and other resilient loose filling used in upholstered furniture construction.

(w) *Metal test frame* means the apparatus consisting of two rectangular metal frames used for assembly of seating area

mockups in open flame ignition resistance tests. See Subpart C of this Part.

(x) *Mockup assembly* means the seating area mockup consisting of the component(s) to be evaluated and all required standard test materials, fully assembled in the appropriate specimen holder or metal test frame.

(y) *Resilient filling material* means a category of filling materials used in upholstered furniture cushion construction that are resilient, cellular polymeric materials. These materials include, but are not limited to polyurethane foam, synthetic latex, rubber, and any other types of resilient cellular polymer or copolymer material used to provide resiliency. This definition does not include rigid plastics used as structural material.

(z) *Sample* means a material to be tested for use in upholstered furniture subject to this Part.

(aa) *Seating area* means those portions of an item of upholstered furniture which a person may sit upon, or rest against while sitting, including the seat and the inside of the back and arms of the item. The seating area includes such

surfaces of any loose pillows or cushions sold with the item of upholstered furniture.

(bb) *Self-extinguishment* means the unassisted termination of any visible combustion within a defined time period after ignition source removal and before the specimen is completely consumed.

(cc) *Sheeting material* means cotton sheeting fabric used to cover the cigarette ignition source in smoldering ignition resistance tests. See Subpart C of this Part.

(dd) *Small open flame* means a standardized flaming ignition source that simulates the heat output of a match, candle, or cigarette lighter. See § 1634.40.

(ee) *Smolder* means combustion characterized by smoke production, without visible flame or glowing.

(ff) *Specimen* means an individual piece of sample, as defined in paragraph (z) of this section, used in a mockup assembly for smoldering and open flame ignition testing.

(gg) *Specimen holder* means the two wooden panels used for assembly of seating area mockups in smoldering ignition resistance tests. See Subpart C of this part.

(hh) *Standard flame-retardant polyurethane foam (SFRPUF) substrate* means the standard substrate used for the assembly of seating area mockups to evaluate materials used in Type I, II, and III upholstered furniture construction with respect to smoldering ignition resistance; and materials used in Type III upholstered furniture with respect to open flame ignition resistance. See Subpart C of this Part.

(ii) *Standard polyurethane foam (SPUF) Substrate* means the standard substrate used for the assembly of seating area mockups to evaluate materials used in Type I and Type II upholstered furniture construction with respect to open-flame ignition resistance. See Subpart E of this Part.

(jj) *Substrate* means the innermost material of the tested seating area mockup representing the filling material used in upholstered furniture.

(kk) *Upholstery fabric fire barrier* means a fire-resistant upholstery cover fabric or material that complies with test requirements contained in §§ 1634.4 and 1634.15 of this Part.

(ll) *Warp* or *machine direction* of the fabric means the direction of yarns that run lengthwise, i.e., parallel to selvage, in woven fabrics.

(mm) *Certification family* means all the items of upholstered furniture of a specific "Type" subject to this Part that rely on the same basis for certification, such as guaranties or reasonable and representative tests. For example, a certification family might consist of a line of "Type I" couches and "Type I" chairs all employing the same interior fire barrier material, with certification supported by a guaranty from the barrier material manufacturer.

§ 1634.3 General requirements.

(a) Upholstered furniture. Each item of upholstered furniture manufactured or introduced into commerce on or after _____ [**insert effective date**] shall comply with the performance requirements of this Part applicable to the upholstered furniture materials required for that "Type" of upholstered furniture and all other applicable requirements of this Part.

(b) Guaranties. Each guaranty issued under this Part shall be in accordance with the applicable requirements of § 1634.26.

(c) Summary of § 1634.4 through § 1634.17 tests. The test methods set forth in §§ 1634.4 through 1634.17 measure the flammability performance (fire resistance characteristics due to smoldering and/or small open flame ignition) of upholstered furniture materials through a series of tests using small scale mockups representative of the typical construction of upholstered furniture.

(d) Standard Cover Fabric Cutting

(1) Smoldering Test: The vertical panel pieces shall be cut with the long dimension being in the warp direction and the top edge is defined such that the pile lays smooth when brushed from top to bottom. The horizontal panel pieces shall be cut with the long dimension being in the warp direction and the top edge is defined such that the pile lays smooth when brushed from top to bottom.

(2) Open Flame Test: The open flame test specimens shall be cut with the long dimension being in the warp direction and the top edge is defined such that the pile lays smooth when brushed from top to bottom.

§ 1634.4 Upholstery cover fabric smoldering ignition resistance test.

(a) *Scope.* This test method is intended to measure the cigarette ignition resistance of upholstery cover fabrics used in upholstered furniture. This test applies to all upholstery cover fabrics to be qualified in Type II or Type III furniture.

(b) *Summary of Test Method.* Three test specimens are required for the upholstery cover fabric sample. Vertical and horizontal panels of a standard foam substrate are covered, using the upholstery cover fabric to be tested. These panels are placed in the specimen holders, and a lighted cigarette is placed in each crevice formed by the intersection of vertical and horizontal panels of each test assembly. Each cigarette is covered with a piece of sheeting fabric. The cigarettes are allowed to burn their entire length. Test measurements and observations are recorded after the 30-minute test duration. The substrate must not exceed the mass loss limit or the mockup must not transition to flaming.

(c) *Significance and Use.* This test method is designed to measure the response of an upholstery cover fabric to a smoldering ignition source when placed over a standard flame-retardant polyurethane foam substrate.

(d) *Test Apparatus and Materials* – The test apparatus and materials used in this test are detailed in Subpart C of this Part.

(e) *Ignition source.* The ignition source is the standard cigarette specified in Subpart C of this Part.

(f) *Sheeting Material.* Sheeting material shall be used to cover the standard test cigarettes. For testing, the fabric shall be cut into squares 127 x 127 mm (5.0 x 5.0 in). Use the sheeting material specified in Subpart C of this Part.

(g) *Standard Flame-Retardant Polyurethane Foam Substrate.* Upholstery cover fabrics are tested in a specimen holder using a standard flame-retardant polyurethane foam (SFRPUF) substrate. Use the SFRPUF substrate specified in Subpart C of this Part.

(1) The SFRPUF substrate shall be cut into 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) pieces for vertical panels and 127 x 203 x 76 mm (5.0 x 8.0 x 3.0 in) pieces for horizontal panels.

(2) Each SFRPUF substrate piece shall be hand crushed before use by wadding or balling up one time in the fist.

(3) On the data sheet, record the initial mass of each horizontal and vertical SFRPUF substrate piece to the nearest 0.1 grams.

(h) *Specimen Holder.* The specimen holder shall consist of two wooden panels, each a nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge. A moveable horizontal panel support is positioned on a centrally located guide. See Subpart C and Figures 2 and 3.

(i) *Draft Enclosure.* A draft-preventive enclosure is required to restrict airflow to convection only. See Subpart C and Figure 1.

(j) *Test Facility and Hazards.* The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(k) *Conditioning.* All test specimens and standard test materials (including SFRPUF substrates, cigarettes, and sheeting material) shall be conditioned in accordance with Subpart C of this Part.

(l) *Test Specimens.*

(1) *Specimen Requirements.*

(i) From the upholstery cover fabric sample to be tested, three specimens shall be cut for vertical panels, each 203 x 432 mm (8.0 x 17.0 in), and three specimens for horizontal panels, each 203 x 280 mm (8.0 x 11.0 in).

(ii) The vertical and horizontal panel cover fabric specimens shall be cut with the long dimension in the warp

direction and such that the major areas of fabric variation will lie in the crevice of the mockup assembly.

(iii) The horizontal panel cover fabric specimens shall be mounted warp to warp with the vertical panel specimens such that the major areas of fabric variation will lie in the crevice of the mockup assembly.

(2) *Specimen Mounting.*

(i) For vertical panels, place the cover fabric specimens on the 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) SFRPUF substrate pieces, taking care that any areas of fabric variation mentioned in § 1634.4(l) above are positioned such that they will form the crevice of the assembled mockup. The warp or machine direction of the fabric should run front to back on the mockup assembly. Attach the cover fabric specimens to the SFRPUF substrate pieces with straight pins and pull the cover fabric smooth so that no air gaps exist between the fabric and SFRPUF substrate. Attach the cotton sheeting material to the vertical panels with straight pins so that the sheeting material will cover the cigarette when placed in the crevice, approximately 50 mm (2 in) from the top of the 203 mm (8.0 in) dimension.

(ii) For horizontal panels, place the cover fabric specimens on the 127 x 203 x 76 mm (5.0 x 8.0 x 3.0 in) SFRPUF

substrate pieces, taking care that any areas of fabric variation mentioned in § 1634.4(l) above are on the edge which will form the crevice of the assembled mockup. The warp direction of the cover fabric specimens should run front to back on the mockup assembly. Attach the cover fabric specimens to the SFRPUF substrate pieces with straight pins and pull the fabric smooth so that no air gaps exist between the fabric and foam substrate.

(iii) Place the assembled vertical and horizontal panels in the specimen holder. Press the horizontal panel against the vertical panel to create a straight-line crevice at the intersection. See Figure 6.

(m) *Test Procedure.*

(1) Place the three assembled mockups side by side with the crevice facing forward in the draft enclosure. No more than three mockups should be placed in the draft enclosure, and each should be equidistant from the other and from the enclosure end walls to avoid heat transfer between samples.

(2) Light three cigarettes so that no more than 4 mm (0.16 inch) is burned away and place one cigarette on each mockup crevice created by the intersection of the vertical and horizontal panels, such that the cigarette contacts both

surfaces and is equidistant from the side edges of the test panels.

(3) Cover cigarettes with cotton sheeting and run one finger over the sheet along the length of the covered cigarette to ensure good cover sheeting-to-cigarette contact and begin timer. If a test is inadvertently interrupted or a cigarette self-extinguishes on lighting, it must be repeated from the beginning with a new cigarette until the cigarette does not self-extinguish or until three cigarettes self-extinguish without burning their full length.

(4) Continue testing for 30 minutes.

(5) At 30 minutes, if the mockup assembly is smoldering, extinguish with appropriate means. See Subparts C and D of this Part.

(6) Remove cotton sheeting fabric and remains of upholstery fabric specimens from the substrate pieces.

(7) Carefully remove the SFRPUF substrate pieces, clean all carbonaceous char from panels by scraping with a brush.

(8) If the application of an extinguishing agent was not necessary or a gaseous extinguishing agent (e.g. carbon dioxide or nitrogen) was applied to the SFRPUF substrate, record the mass of the un-charred portions of the SFRPUF substrate pieces

to the nearest 0.1 grams within 15 minutes and proceed to § 1634.4(n).

(9) If a mass-adding extinguishing agent (e.g. water-based agent) was applied to the substrate, re-condition the SFRPUF substrate pieces as follows.

(i) Place the individual SFRPUF substrate pieces in the active flow of a laboratory air hood to dry for at least 24 hours.

(ii) Measure and record the mass of the SFRPUF substrate pieces to the nearest 0.1 grams.

(iii) Place the individual SFRPUF substrate pieces in the active flow of the laboratory air hood to dry for at least three additional hours.

(iv) Measure and record the mass of the SFRPUF substrate pieces to the nearest 0.1 grams and compare the measurement with the previous one.

(v) Repeat this procedure every three hours until the mass of the substrate pieces remains within a tolerance of 0.5% from the previous reading.

(vi) Re-condition the SFRPUF pieces according to § 1634.4(k) above.

(vii) Record the mass of the un-charred portions of the SFRPUF substrate pieces to the nearest 0.1 grams.

(n) *Pass/Fail Criteria.* The sample passes the requirements of this test procedure if the following criteria are met:

(1) No SFRPUF substrate of any specimen from a mockup assembly has more than 10% mass loss.

(2) No mockup assembly transitions to open flaming.

(o) *Test Report.* The test report shall include, at a minimum, the following information:

(1) Name and address of test laboratory.

(2) Date of the test(s).

(3) Name of the operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data on the SFRPUF substrate pieces from each. mockup including:

(i) pre-test mass;

(ii) post-test mass; and

(iii) the percent mass loss of the SFRPUF substrate of each mockup assembly.

(6) Statement of overall pass/fail results.

§ 1634.5 Fibrous filling material smoldering ignition resistance test.

(a) *Scope.* This test method is intended to measure the cigarette ignition resistance of fibrous filling materials used in upholstered furniture to be qualified as Type III furniture.

(b) Summary *of Test Method.* Three test specimens are required for the fibrous filling sample. Vertical and horizontal panels of the fibrous filling material to be tested are placed between a standard foam substrate and a standard cover fabric. The panels are placed in the specimen holders, and a lighted cigarette is placed in the crevice formed by the intersection of the vertical and horizontal panels in each test assembly. Each cigarette is covered with a piece of sheeting fabric. The cigarettes are allowed to burn their full length. Test measurements and observations are recorded after the 30-minute test duration. The sample must not exceed the mass loss limit and the mockup assembly transition to open flaming.

(c) *Significance and Use.* This test method is designed to measure the response of fibrous filling material to a smoldering ignition source when placed between a standard cover fabric and standard flame-retardant polyurethane foam substrate.

(d) *Test Apparatus and Materials.* The test apparatus and materials are detailed in Subpart C of this Part.

(e) *Ignition Source.* The ignition source is the standard cigarette specified in Subpart C of this Part.

(f) *Sheeting Material.* Sheeting material shall be used to cover the standard test cigarette. For testing, the fabric is cut into squares 127 x 127 mm (5.0 x 5.0 in). Use the sheeting material specified in Subpart C of this Part.

(g) *Standard Cover Fabric.* (1) The standard cover fabric represents a smolder-prone fabric. Use the standard cover fabric specified in Subpart C of this Part.

(2) From the standard cover fabric, three pieces shall be cut for vertical panels, each 203 x 432 mm (8.0 x 17.0 in), and three pieces for horizontal panels, each 203 x 280 mm (8.0 x 11.0 in).

(h) *Standard Flame-Retardant Polyurethane Foam Substrate.* (1) Fibrous filling materials are tested in a specimen holder using a standard flame-retardant polyurethane foam (SFRPUF) substrate. Use the SFRPUF substrate specified in Subpart C of this Part.

(2) The SFRPUF substrate shall be cut into pieces 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) for vertical panels and 127 x 203 x 76 mm (5.0 x 8.0 x 3.0 in) for horizontal panels.

(3) Each SFRPUF substrate piece shall be hand crushed before use by wadding or balling up one time in the fist.

(4) On the data sheet, record the initial mass of each vertical and horizontal SFRPUF substrate piece to the nearest 0.1 grams.

(i) *Specimen Holder.* The specimen holder shall consist of two wooden panels, each a nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge. A movable horizontal panel support is positioned on a centrally located guide. See Subpart C and Figures 2 and 3.

(j) *Draft Enclosure.* A draft-preventive enclosure is required to restrict airflow to convection only. See Subpart C and Figure 1.

(k) *Test Facility and Hazards.* The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(l) *Conditioning.* All test specimens and standard test materials (including SFRPUF substrates, cigarettes, and sheeting material) shall be conditioned in accordance with Subpart C of this Part.

(m) *Test Specimens.*

(1) *Specimen Requirements.* (i) From the fibrous filling material sample to be tested, three specimens shall be cut for

vertical panels each 203 x 356 mm (8.0 x 14.0 in) and three specimens for horizontal panels each 203 x 229 mm (8.0 x 9.0 in).

(ii) If the fibrous filling material is directional, the vertical panel specimens shall be cut with the long dimension being in the warp direction and the top edge is defined as appropriate. The horizontal panel specimens shall be cut such that the short dimension is in the warp direction and the top edge is defined as appropriate.

(2) *Specimen Mounting.* (i) For vertical panels, place the standard cover fabric over the fibrous filling specimens on the 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) SFRPUF substrate piece. The standard cover fabric and fibrous filling material should be oriented such that the top edges of these materials run from top to bottom. Attach with straight pins and pull smooth so that no air gaps exist. Attach the cotton sheeting material to the vertical panels with straight pins so that the sheeting material will cover the cigarette when placed in the crevice, approximately 50 mm (2 in) from the top of the 203 mm (8.0 in) dimension.

(ii) For horizontal panels, place the standard cover fabric over the fibrous filling specimens on the 127 x 203 x 76 mm (5.0

x 8.0 x 3.0 in) substrate piece. The standard cover fabric and fibrous filling material should be oriented such that the top edges of these materials run from the crevice to the front. Attach with straight pins and pull smooth so that no air gaps exist.

(iii) Place the assembled vertical and horizontal panels in the specimen holders. Press the horizontal panel against the vertical panel to create a straight-line crevice at the intersection. See Figure 7.

(n) *Test Procedure.*

(1) Place the three assembled mockups side by side with the crevice facing forward in the draft enclosure. No more than three mockups should be placed in the draft enclosure and each should be equidistant from the other and from enclosure end walls to avoid heat transfer between samples.

(2) Light three cigarettes so that no more than 4 mm (0.16 inch) is burned away and place one cigarette on each mockup crevice created by the intersection of the vertical and horizontal panels, such that the cigarette contacts both surfaces and is equidistant from the side edges of the test panels.

(3) Cover cigarettes with cotton sheeting and run one finger over the sheet along the length of the covered cigarette to ensure good cover sheeting-to-cigarette contact and begin timer. If a test is inadvertently interrupted or cigarette self-extinguishes on lighting, it must be repeated from the beginning with a new cigarette until the cigarette does not self-extinguish or until three cigarettes self-extinguish without burning their full length.

(4) Continue testing for 30 minutes.

(5) At 30 minutes, if the mockup assembly is smoldering, extinguish with appropriate means. See Subparts C and D of this Part.

(6) Remove cotton sheeting fabric, remains of standard cover fabric, and fibrous filling material specimens from the substrate pieces.

(7) Carefully remove the SFRPUF substrate pieces, clean all carbonaceous char from panels by scraping with a brush.

(8) If the application of an extinguishing agent was not necessary or a gaseous extinguishing agent (e.g. carbon dioxide or nitrogen) was applied to the SFRPUF substrate, record the mass of the un-charred portions of the SFRPUF substrate pieces

to the nearest 0.1 grams within 15 minutes and proceed to § 1634.5(o).

(9) If a mass-adding extinguishing agent (e.g. water-based agent) was applied to the substrate, re-condition the SFRPUF substrate pieces as follows.

(i) Place the individual SFRPUF substrate pieces in the active flow of a laboratory air hood to dry for at least 24 hours.

(ii) Measure and record the mass of the SFRPUF substrate pieces to the nearest 0.1 grams.

(iii) Place the individual SFRPUF substrate pieces in the active flow of the laboratory air hood to dry for at least three additional hours.

(iv) Measure and record the mass of the SFRPUF substrate pieces to the nearest 0.1 grams and compare the measurement with the previous one.

(v) Repeat this procedure every three hours until the mass of the substrate pieces remains within a tolerance of 0.5% from the previous reading.

(vi) Re-condition the SFRPUF pieces according to § 1634.5(l) above.

(vii) Record the mass of the un-charred portions of the SFRPUF substrate pieces to the nearest 0.1 grams.

(o) *Pass/Fail Criteria.* The fibrous filling passes the requirements of this test procedure if the following criteria are met:

(1) No SFRPUF substrate of any specimen from a mockup assembly has more than 10% mass loss.

(2) No mockup assembly transitions to open flaming.

(p) *Test Report.* The test report shall include, at a minimum, the following information:

(1) Name and address of test laboratory.

(2) Date of the test(s).

(3) Name of the operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the SFRPUF substrate pieces from each mockup including:

(i) pre-test mass;

(ii) post-test mass; and

(iii) percent mass loss of the SFRPUF substrate of each mockup assembly.

(6) Statement of overall pass/fail results.

§ 1634.6 Loose filling material smoldering ignition resistance test.

(a) *Scope.* This test method is intended to measure the cigarette ignition resistance of loose filling materials used in upholstered furniture to be qualified as Type III furniture.

(b) *Summary of Test Method.* Three test specimens are required for the loose filling sample. Vertical and horizontal panels of loose filling materials to be tested are placed in two plywood panels with attached metal rod frames under a standard cover fabric. The panels are assembled on the specimen holders and a lighted cigarette is placed in the crevice formed by the intersection of the vertical and horizontal panels in each test assembly. Each cigarette is covered with a piece of sheeting fabric. The cigarettes are allowed to burn their full length. Test measurements and observations are recorded after the 30-minute test duration. The sample must not exceed the mass loss limit and the mockup assembly must not transition to open flaming.

(c) *Significance and Use.* This test method is designed to measure the response of loose filling materials to a smoldering ignition source when placed under a standard cover fabric.

(d) *Test Apparatus and Materials.* The test apparatus and materials are described in Subpart C of this Part.

(e) *Ignition Source*. The ignition source is the standard cigarette specified in Subpart C of this Part.

(f) *Sheeting Material.* Sheeting material shall be used to cover the standard test cigarettes. For testing, the fabric is cut into squares 127 x 127 mm (5.0 x 5.0 in). Use the sheeting material specified in Subpart C of this Part.

(g) *Standard Cover Fabric.* (1) The standard cover fabric represents a smolder-prone fabric. Use the standard cover fabric specified in Subpart C of this Part.

(2) From the standard cover fabric, three specimens shall be cut for the vertical panels, each 432 x 407 mm (17.0 x 16.0 in), and three specimens for the horizontal panels, each 356 x 407 mm (14.0 x 16.0 in).

(h) *Loose Fill Test Panels.* For these tests, vertical and horizontal test panels are used to contain the loose filling materials during the test. The loose fill test panels are detailed in Subpart C and Figures 4 and 5.

(i) *Specimen Holder.* The specimen holder shall consist of two wooden panels, each nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge.

A movable horizontal panel support is positioned on a centrally located guide. See Subpart C and Figures 2 and 3.

(j) *Draft Enclosure.* A draft-preventive enclosure is required to restrict airflow to convection. See Subpart C and Figure 1.

(k) *Test Facility and Hazards.* The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(l) *Conditioning.* All test specimens and standard test materials (including cigarettes and sheeting material) shall be conditioned in accordance with Subpart C of this Part.

(m) *Test Specimens.* From the loose filling sample to be tested, use the amount of loose filling required to assemble the mockups in accordance with section (n) Specimen Mounting.

(n) *Specimen Mounting.* (1) Vertical panels mounting.

(i) Lay the standard cover fabric face down on a table so that the top edge of the standard cover fabric is facing away from the operator. Center the vertical test panel over the standard cover fabric with the plywood facing up. Fold the lower edge of the standard cover fabric up so that there is approximately 25 mm (1.0 in) of standard cover fabric overlapping the back face of the plywood and staple to the back of the plywood. Repeat with the left and right sides so that

there is approximately 12 mm (0.5 in) of standard cover fabric overlapping the back face of the plywood, making diagonal folds at the corners. The folded corner of the standard cover fabric should be attached on the side edges, not the top or bottom edges. Leave the top edge open for filling.

(ii) If the loose fill material is polyester fiber fill or a material having a density and loft similar to polyester fiber fill, evenly fill the vertical panel with 60 ± 2 grams of loose fill material to achieve a reasonably smooth and flat surface. Record the mass of the loose fill material to the nearest 0.1 gram on the data sheet.

(iii) For a loose fill material with a density largely different from polyester fiber fill, place each panel on a scale. Tare the panel and standard cover fabric combination and fill the panel to the top with the loose fill material and shake to settle the material. Add enough additional loose fill material to again fill the panel to the top. Record the reading on the scale to the nearest 0.1 gram on the data sheet. This is the mass of the fill material.

(iv) To complete the test panel, pull the remaining edge of standard cover fabric over the back of the test panel snugly so there is approximately 25 mm (1.0 in) of standard cover fabric

overlapping the back face of the plywood. Staple the standard cover fabric to the plywood and make diagonal folds at the corners. The folded corner of the standard cover fabric should be attached on the side edges, not the top edge.

(2) Horizontal panels mounting. (i) For the horizontal panel, lay the standard cover fabric face down on a table so that the top edge of the standard cover fabric is facing away from the operator. Center the horizontal test panel over the standard cover fabric with the plywood facing up and the crevice side facing away from the operator. Fold the top edge of the standard cover fabric over the back face of the test panel so that there is approximately 25 mm(1.0 in) of standard cover fabric overlapping the face of the plywood and staple the standard cover fabric to the back of the plywood. Repeat with the left and right sides so that there is approximately 12 mm (0.5 in) of standard cover fabric overlapping the back face of the plywood, making diagonal folds at the corners. The folded corner of the standard cover fabric should be attached on the side edges, not the crevice or front edges. Leave the front edge open for filling.

(ii) If the loose fill material is polyester fiber fill or a material having a density and loft similar to polyester fiber

fill, evenly fill the horizontal panel with 40 ± 1 grams of loose fill material to achieve a reasonably smooth and flat surface. Record the mass of the loose fill material to the nearest 0.1 gram on the data sheet.

(iii) For a loose fill material with a density largely different from polyester fiber fill, place each panel on a scale. Tare the panel and fabric combination and fill the panel to the top with the loose fill material and shake to settle the material. Add enough additional loose fill material to again fill the panel to the top. Record the reading on the scale to the nearest 0.1 gram on the data sheet. This is the mass of the fill material.

(iv) To complete the test panel, pull the remaining edge of standard cover fabric over the back of the test panel snugly so there is approximately 25 mm (1.0 in) of standard cover fabric overlapping the back face of the plywood. Staple the standard cover fabric to the plywood and make diagonal folds at the corners. The folded corner of the standard cover fabric should be attached on the side edges, not the front edge.

(3) Attach the cotton sheeting to the vertical panels with straight pins so that the sheeting material will cover the

cigarette when placed in the crevice, approximately 50 mm (2.0 in) from the top of the panel.

(4) Place each assembled vertical and horizontal panel in the specimen holders. Press the horizontal panel against the vertical panel to create a straight-line crevice at the intersection. See Figure 8.

(o) *Test Procedure.*

(1) Place the three assembled mockups side by side with the crevice facing forward in the draft enclosure. No more than three mockups should be placed in the draft enclosure and each should be equidistant from the other and from enclosure end walls to avoid heat transfer between samples.

(2) Light three cigarettes so that no more than 4 mm (0.16 inch) is burned away and place one cigarette on each mockup crevice created by the intersection of the vertical and horizontal panels, such that the cigarette contacts both surfaces and is equidistant from the side edges of the test panels.

(3) Cover cigarettes with cotton sheeting and run one finger over the sheet along the length of the covered cigarette to ensure good cover sheeting-to-cigarette contact and begin timer. If a test is inadvertently interrupted or cigarette self-

extinguishes on lighting, it must be repeated from the beginning with a new cigarette until the cigarette does not self-extinguish or until three cigarettes self-extinguish without burning their full length.

(4) Continue testing for 30 minutes.

(5) At 30 minutes, if the mockup assembly is smoldering, extinguish with appropriate means. See Subparts C and D of this Part.

(6) Carefully remove the loose fill test specimens from each panel. Using appropriate tools (e.g. catch tray, razor, scissors, tweezers and/or tongs) remove the charred portion of the loose fill material.

(7) If the application of an extinguishing agent was not necessary or a gaseous extinguishing agent (e.g. carbon dioxide or nitrogen) was applied to the loose filling test specimen, record the mass of the un-charred portions of the loose filling test specimens to the nearest 0.1 grams within 15 minutes and proceed to § 1634.6(p).

(8) If a mass-adding extinguishing agent (e.g. water-based agent) was applied to the loose filling test specimen, re-condition the loose filling test specimen as follows.

(i) Place the loose filling test specimen in the active flow of a laboratory air hood to dry for at least 24 hours.

(ii) Measure and record the mass of the loose filling test specimen to the nearest 0.1 grams.

(iii) Place the loose filling test specimen in the active flow of the laboratory air hood to dry for at least three additional hours.

(iv) Measure and record the mass of the loose filling test specimen to the nearest 0.1 grams and compare the measurement with the previous one.

(v) Repeat this procedure every three hours until the mass of the loose filling test specimen remains within a tolerance of 0.5% from the previous reading.

(vi) Re-condition the loose filling test specimen according to § 1634.6(l) above.

(vii) Record the mass of the un-charred portions of the loose filling test specimen nearest 0.1 grams.

(p) *Pass/Fail Criteria.* The loose filling material passes the requirements of this test procedure if the following criteria are met:

(1) No loose filling material of any specimen from a mockup assembly has more than 10% mass loss.

(2) No mockup assembly transitions to open flaming.

(q) Test Report – The test report shall include, at a minimum, the following information:

(1) Name and address of test laboratory.

(2) Date of the test(s).

(3) Name of the operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data on each loose filling test specimen from each mockup including:

(i) pre-test mass;

(ii) post-test mass; and

(iii) percent mass loss of the loose filling specimen from each mockup assembly.

(6) Statement of overall pass/fail results.

§ 1634.7 Loose filling interliner fabric smoldering ignition resistance test.

(a) *Scope.* This test method is intended to measure the cigarette ignition resistance of interliner fabrics used to encase loose filling materials in Type III-B furniture. Such materials are commonly used as protective lining for loose filling commonly found in unattached or semi-attached backs, arms, or throw pillows. This test applies to protective

interliners including, but not limited to fire-resistant ticking or non-woven fabrics.

(b) *Summary of Test Method.* Three test specimens are required for the loose filling interliner fabric sample. Vertical and horizontal panels of loose filling interliner fabrics to be tested are filled with standard polyester fiber fill substrate and placed under a standard cover fabric. The panels are assembled on the specimen holders and a lighted cigarette is placed in the crevice formed by the intersection of the vertical and horizontal panels in each test assembly. Each cigarette is covered with a piece of sheeting fabric. The cigarettes are allowed to burn their full lengths. Test measurements and observations are recorded after the 30-minute test duration. The substrate must not exceed the mass loss limit and the mockup must not transition to open flaming.

(c) *Significance and Use.* This test method is designed to measure the response of protective interliner fabrics to a smoldering ignition source when placed between a standard cover fabric and a specified loose filling substrate.

(d) *Test Apparatus and Materials.* The test apparatus and materials are detailed in Subpart C of this Part.

(e) *Ignition Source.* The ignition source is the standard cigarette specified in Subpart C of this Part.

(f) *Sheeting Material.* Sheeting material shall be used to cover the standard test cigarettes. For testing, the fabric is cut into squares 127 x 127 mm (5.0 x 5.0 in). Use the sheeting material specified in Subpart C of this Part.

(g) *Standard Cover Fabric.* (1) The standard cover fabric represents a smolder-prone fabric. Use the standard cover fabric specified in Subpart C of this Part.

(2) From the standard cover fabric, three specimens shall be cut for the vertical panels, each 432 x 407 mm (17.0 x 16.0 in), and three specimens for the horizontal panels, each 356 x 407 mm (14.0 x 16.0 in).

(h) *Standard Polyester Fiber Fill Substrate.* (1) Loose filling interliner fabrics are tested in a specimen holder filled with standard polyester fiber fill substrate in the vertical and horizontal panels. Use the standard polyester fiber fill substrate specified in Subpart C of this Part.

(2) Approximately 60 ± 2 grams are needed for filling vertical panels and approximately 40 ± 1 grams for horizontal panels to achieve a reasonably smooth and flat surface.

(i) *Loose Fill Test Panels.* 1) For these tests, vertical and horizontal test panels are used to contain the polyester fiber fill during the test. The loose fill test panels are detailed in Subpart C of this Part.

(j) *Specimen Holder.* The specimen holder shall consist of two wooden panels, each nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge. A movable horizontal panel support is positioned on a centrally located guide. See Subpart C and Figures 2 and 3.

(k) Draft Enclosure - A draft-preventive enclosure is required to restrict airflow to convection only. See Subpart C and Figure 1.

(l) *Test Facility and Hazards.* The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(m) *Conditioning.* All test specimens and standard test materials (including cigarettes, polyester fiber fill, and sheeting material) shall be conditioned in accordance with Subpart C of this Part.

(n) *Test Specimens.*

(1) *Specimen Requirements.* (1) From the interliner fabric sample to be tested, three specimens shall be cut for the vertical panels each 432 x 407 mm (17.0 x 16.0 in) and three

specimens for the horizontal panels each 356 x 407 mm (14.0 x 16.0 in).

(2) If the interliner fabric is directional, the vertical panel specimens shall be cut with the long dimension being in the warp or machine direction and the top edge is defined as appropriate.

(3) If the interliner fabric is directional, the horizontal panel specimens shall be cut with the short dimension being in the warp or machine direction and the top edge is defined as appropriate.

(o) *Specimen Mounting.* (1) Vertical panels mounting.

(i) Lay the standard cover fabric face down on a table so that the top edge of the standard cover fabric is facing away from the operator. Then lay the interliner fabric specimen face down on top of the standard cover fabric in the appropriate orientation. Center the vertical test panel over the fabrics with the plywood facing up. Fold the lower edges of the fabrics up so that there is approximately 25 mm (1.0 in) of the fabrics overlapping the back face of the plywood and staple to the back of the plywood. Repeat with the left and right sides so that there is approximately 12 mm (0.5 in) of the fabrics overlapping the back face of the plywood, making diagonal folds at the

corners. The folded corners of the fabrics should be attached on the side edges, not the top or bottom edges. Leave the top edge open for filling.

(ii) Evenly fill the vertical panel with 60 ± 2 grams of standard polyester fiber fill to achieve a reasonably smooth and flat surface. Record the mass of the polyester fiber fill to the nearest 0.1 gram on the data sheet.

(iii) To complete the test panel, pull the remaining edge of fabrics over the back of the test panel snugly so there is approximately 25 mm (1.0 in) of each fabric overlapping the back face of the plywood. Staple the fabrics to the plywood and make diagonal folds at the corners. The folded corners of the fabrics should be attached on the side edges, not the top edge.

(2) Horizontal panels mounting.

(i) Lay the standard cover fabric face down on a table so that the top edge of the fabric is facing away from the operator. Then lay the interliner fabric specimen face down on top of the standard cover fabric in the appropriate orientation. Center the horizontal test panel over the fabrics with the plywood facing up and the crevice side facing away from the operator. Fold the top edge of the fabrics over the back face of the test panel so that there is approximately 25 mm (1.0 in)

of fabric overlapping the face of the plywood and staple the fabric to the back of the plywood. Repeat with the left and right sides so that there is approximately 12 mm (0.5 in) of fabric overlapping the back face of the plywood, making diagonal folds at the corners. The folded corners of the fabrics should be attached on the side edges, not the crevice or front edges. Leave the front edge open for filling.

(ii) Evenly fill the horizontal panel with 40 ± 1 grams of standard polyester fiber fill to achieve a reasonably smooth and flat surface. Record the mass of the loose fill material to the nearest 0.1 gram on the data sheet.

(iii) To complete the test panel, pull the remaining edge of fabric over the back of the test panel snugly so there is approximately 25 mm (1.0 in) of fabric overlapping the back face of the plywood. Staple the fabric to the plywood and make diagonal folds at the corners. The folded corners of the fabrics should be attached on the side edges, not the front edge.

(3) Attach the cotton sheeting to the vertical panels with straight pins so that the sheeting material will cover the cigarette when placed in the crevice, approximately 50 mm (2.0 in) from the top of the panel.

(4) Place each assembled vertical and horizontal panel in the specimen holders. Press the horizontal panel against the vertical panel to create a straight-line crevice at the intersection. See Figure 9.

(p) *Test Procedure.*

(1) Place the three assembled mockups side by side with the crevice facing forward in the draft enclosure. No more than three mockups should be placed in the draft enclosure and each should be equidistant from the other and from enclosure end walls to avoid heat transfer between samples.

(2) Light three cigarettes so that no more than 4 mm (0.16 inch) is burned away and place one cigarette on each mockup crevice created by the intersection of the vertical and horizontal panels, such that the cigarette contacts both surfaces and is equidistant from the side edges of the test panels.

(3) Cover cigarettes with cotton sheeting and run one finger over the sheet along the length of the covered cigarette to ensure good cover sheeting-to-cigarette contact and begin timer. If a test is inadvertently interrupted or cigarette self-extinguishes on lighting, it must be repeated from the beginning with a new cigarette until the cigarette does not self-

extinguish or until three cigarettes self-extinguish without burning their full length.

(4) Continue testing for 30 minutes.

(5) After 30 minutes, if the mockup is smoldering, extinguish with appropriate means. See Subparts C and D of this Part.

(6) Carefully remove the standard polyester fiber fill substrate from each panel. Using appropriate tools (e.g. catch tray, razor, scissors, tweezers and/or tongs) remove the charred portions of the standard polyester fiber fill substrate.

(7) If the application of an extinguishing agent was not necessary or a gaseous extinguishing agent (e.g. carbon dioxide or nitrogen) was applied to the standard polyester fiber fill substrate, record the mass of the un-charred portions of the standard polyester fiber fill substrate to the nearest 0.1 grams within 15 minutes and proceed to § 1634.7(q).

(8) If a mass-adding extinguishing agent (e.g. water-based agent) was applied to the standard polyester fiber fill substrate, re-condition the standard polyester fiber fill substrate as follows.

(i) Place the standard polyester fiber fill substrate in the active flow of a laboratory air hood to dry for at least 24 hours.

(ii) Measure and record the mass of the standard polyester fiber fill substrate to the nearest 0.1 grams.

(iii) Place the standard polyester fiber fill substrate in the active flow of the laboratory air hood to dry for at least three additional hours.

(iv) Measure and record the mass of the standard polyester fiber fill substrate pieces to the nearest 0.1 grams and compare the measurement with the previous one.

(v) Repeat this procedure every three hours until the mass of the standard polyester fiber fill substrate remains within a tolerance of 0.5% from the previous reading.

(vi) Re-condition the standard polyester fiber fill substrate according to § 1634.7(m) above.

(vii) Record the mass of the un-charred portions of the standard polyester fiber fill substrate to the nearest 0.1 grams.

(q) *Pass/Fail Criteria.* The loose filling interliner passes the requirements of this test procedure if the following criteria are met:

(1) No standard polyester fiber fill substrate of any specimen from a mockup assembly has more than 10% mass loss.

(2) No mockup assembly transitions to open flaming.

(r) *Test Report.* The test report shall contain, as a minimum, the following information:

(1) Name and address of test laboratory

(2) Date of the test(s)

(3) Name of the operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for each standard polyester fiber fill substrate used in the interliner fabric test specimen panels including:

(i) pre-test mass;

(ii) post-test mass; and

(iii) percent mass loss of that standard polyester fiber fill substrate from each mockup assembly.

(6) Statement of overall pass/fail results.

§ 1634.8 Resilient filling material smoldering ignition resistance test.

(a) *Scope.* This test method is intended to measure the cigarette ignition resistance of resilient filling materials

used in upholstered furniture to be qualified as Type III furniture.

(b) *Summary of Test Method.* Three test specimens are required for the resilient filling sample. Vertical and horizontal panels of the resilient filling material sample to be tested are placed under a standard cover fabric. The panels are placed in the specimen holders and a lighted cigarette is placed in each crevice formed by the intersection of the vertical and horizontal panels in each test assembly. Each cigarette is covered with a piece of sheeting fabric. The cigarettes are allowed to burn their entire length. Test measurements and observations are recorded after the 30-minute test duration. The sample must not exceed the mass loss limit and the mockup assembly must not transition to open flaming.

(c) *Significance and Use.* This test method is designed to measure the response of resilient filling material to a smoldering ignition source when placed under a standard cover fabric.

(d) *Test Apparatus and Materials.* The test apparatus and materials are detailed in Subpart C of this Part.

(e) *Ignition Source.* The ignition source is the standard cigarette specified in Subpart C of this Part.

(f) *Sheeting Material.* Sheeting material shall be used to cover the standard test cigarettes. For testing, the fabric is cut into squares 127 x 127 mm (5.0 x 5.0 in). Use the sheeting material specified in Subpart C of this Part.

(g) *Standard Cover Fabric.* (1) The standard cover fabric represents a smolder-prone fabric. Use the standard cover fabric specified in Subpart C of this Part.

(2) From the standard cover fabric, three pieces shall be cut for vertical panels, each 203 x 432 mm (8.0 x 17.0 in) and three pieces for horizontal panels, each 203 x 280 mm (8.0 x 11.0 in).

(h) *Specimen Holder.* The specimen holder shall consist of two wooden panels, each a nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge. A moveable horizontal panel support is positioned on a centrally located guide. See Subpart C and Figures 2 and 3.

(i) *Draft Enclosure.* A draft-preventive enclosure is required to restrict airflow to convection only. See Subpart C and Figure 1.

(j) *Test Facility and Hazards.* The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(k) *Conditioning.* All test specimens and standard test materials (including cigarettes and sheeting material) shall be conditioned in accordance with Subpart C of this Part.

(l) *Test Specimens.*

(1) *Specimen Requirements.* The resilient filling material to be tested shall be cut into three pieces 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) for the vertical panels and three pieces 127 x 203 x 76 mm (5.0 x 8.0 x 3.0 in) for the horizontal panels.

(2) Each resilient filling material specimen shall be hand crushed before use by wadding or balling up one time in the fist.

(3) Record the initial mass of each horizontal and vertical resilient filling material test specimen to the nearest 0.1 grams in the data sheet.

(m) *Specimen Mounting.* (1) For vertical panels, place the 203 x 432 mm (8.0 x 17.0 in) standard cover fabric pieces on the 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) resilient filling pieces. The standard cover fabric should be oriented such that the top edge runs from top to bottom. Attach with straight pins and pull smooth so that no air gaps exist. Attach cotton sheeting material to the vertical panels with straight pins so that the

sheeting material will cover the cigarette when placed in the crevice, approximately 50 mm (2.0 in) from the top of the panel.

(2) For horizontal panels, place the 203 x 280 mm (8.0 x 11.0 in) standard cover fabric pieces on the 127 x 203 x 76 mm (5.0 x 8.0 x 3.0 in) resilient filling pieces. Attach with straight pins and pull smooth so that no air gaps exist.

(3) Place the assembled vertical and horizontal panels in the specimen holders. Press the horizontal panel against the vertical panel to create a straight-line crevice at the intersection. See Figure 10.

(n) *Test Procedure.*

(1) Place the three assembled mockups side by side with the crevice facing forward in the draft enclosure. No more than three mockups should be placed in the draft enclosure and each should be equidistant from the other and from enclosure end walls to avoid heat transfer between samples.

(2) Light three cigarettes so that no more than 4 mm (0.16 inch) is burned away and place one cigarette on each mockup crevice created by the intersection of the vertical and horizontal panels, such that the cigarette contacts both surfaces and is equidistant from the side edges of the test panels.

(3) Cover cigarettes with cotton sheeting and run one finger over the sheet along the length of the covered cigarette to ensure good cover sheeting-to-cigarette contact. If a test is inadvertently interrupted or cigarette self-extinguishes on lighting, it must be repeated from the beginning with a new cigarette until the cigarette does not self-extinguish or until three cigarettes self-extinguish without burning their full length.

(4) Continue testing for 30 minutes.

(5) After 30 minutes, if the mockup assembly is smoldering, extinguish with appropriate means. See Subparts C and D of this Part.

(6) Remove cover sheeting fabric and remains of the standard cover fabric.

(7) Carefully remove resilient filling test specimens and clean all carbonaceous char from panels by scraping with a brush.

(8) If the application of an extinguishing agent was not necessary or a gaseous extinguishing agent (e.g. carbon dioxide or nitrogen) was applied to the resilient filling test specimen, record the mass of the un-charred portions of the resilient

filling test specimen pieces to the nearest 0.1 grams within 15 minutes and proceed to § 1634.8(o).

(9) If a mass-adding extinguishing agent (e.g. water-based agent) was applied to the resilient filling test specimen, re-condition the resilient filling test specimen pieces as follows.

(i) Place the resilient filling test specimen pieces in the active flow of a laboratory air hood to dry for at least 24 hours.

(ii) Measure and record the mass of the resilient filling test specimen pieces to the nearest 0.1 grams.

(iii) Place the resilient filling test specimen pieces in the active flow of the laboratory air hood to dry for at least three additional hours.

(iv) Measure and record the mass of the resilient filling test specimen pieces to the nearest 0.1 grams and compare the measurement with the previous one.

(v) Repeat this procedure every three hours until the mass of the resilient filling test specimen pieces remains within a tolerance of 0.5% from the previous reading.

(vi) Re-condition the resilient filling test specimen pieces according to § 1634.8(k) above.

(vii) Record the mass of the un-charred portions of the resilient filling test specimen pieces to the nearest 0.1 grams.

(o) *Pass/Fail Criteria.* The resilient filling passes the requirements of this test procedure if the following criteria are met:

(1) No resilient filling of any specimen from a mockup assembly has more than 10% mass loss.

(2) No mockup assembly transitions to open flaming.

(p) Test Report - The test report shall contain, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of the operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the resilient filling pieces from each mockup including:

(i) pre-test mass;

(ii) post-test mass; and

(iii)percent mass loss of the resilient filling pieces of each mockup assembly.

(6) Statement of overall pass/fail results.

§ 1634.9 Interior fire-barrier material smoldering ignition resistance test.

(a) *Scope.* This test method is intended to measure the cigarette ignition resistance of interior fire-barrier materials used in upholstered furniture to be qualified as Type I furniture. This test method applies to fire-resistant materials including, but not limited to all interior fabrics or high loft battings to be qualified as fire barriers.

(b) *Summary of Test Method.* Three test specimens are required for the interior fire-barrier sample. Vertical and horizontal panels of the interior fire-barrier material to be tested are placed between a standard foam substrate and a standard cover fabric. The panels are placed in the specimen holders and a lighted cigarette is placed in the crevice formed by the intersection of the vertical and horizontal panels in each test assembly. Each cigarette is covered with a piece of sheeting fabric. The cigarettes are allowed to burn their full length. Test measurements and observations are recorded after the 30-minute test duration. The substrate must not exceed the mass loss limit and the mockup assembly must not transition to open flaming.

(c) *Significance and Use.* This test method is designed to measure the response of an interior fire-barrier material to a smoldering ignition source when placed between a standard cover fabric and specified foam substrate.

(d) *Test Apparatus and Materials.* The test apparatus and materials are detailed in Subpart C of this Part.

(e) *Ignition Source.* The ignition source is the standard cigarette specified in Subpart C of this Part.

(f) *Sheeting Material.* Sheeting material shall be used to cover the standard test cigarettes. For testing, the fabric is cut into squares 127 x 127 mm (5.0 x 5.0 in). Use the sheeting material specified in Subpart C of this Part.

(g) *Standard Cover Fabric.* (1) The standard cover fabric represents a smolder-prone fabric. Use the standard cover fabric specified in Subpart C of this Part.

(2) From the standard cover fabric, three pieces shall be cut for vertical panels each 203 x 432 mm (8.0.0 x 17.0 in) and three pieces for horizontal panels each 203 x 280 mm (8.0 x 11.0 in).

(h) *Standard Flame-Retardant Polyurethane Foam Substrate.* (1) Fire barrier materials are tested in a specimen holder using

standard flame-retardant polyurethane foam (SFRPUF) substrate. Use the SFRPUF substrate specified in Subpart C of this Part.

(2) The SFRPUF substrate shall be cut into pieces 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) for vertical panels and 127 x 203 x 76 mm (5.0 x 8.0 x 3.0 in) for horizontal panels.

(3) Each SFRPUF substrate piece shall be hand crushed before use by wadding or balling up one time in the fist.

(4) Record the initial mass to the nearest 0.1 grams of each horizontal and vertical SFRPUF substrate piece in the data sheet.

(i) *Specimen Holder.* The specimen holder shall consist of two wooden panels, each a nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge. A moveable horizontal panel support is positioned on a centrally located guide. See Subpart C and Figures 2 and 3.

(j) *Draft Enclosure*. A draft-preventive enclosure is required to restrict airflow to convection only. See Subpart C and Figure 1.

(k) *Test Facility and Hazards.* The test facility, exhaust system, and hazards are detailed in Subpart D of this Part.

(l) *Conditioning.* All test specimens and standard test materials (including polyurethane, cigarettes and sheeting

material) shall be conditioned in accordance with Subpart C of this Part.

(m) *Test Specimens.*

(1) *Test Specimen Requirements.* From the interior fire-barrier material sample to be tested, three specimens shall be cut for vertical panels each 203 x 356 mm (8.0 x 14.0 in) and three specimens for horizontal panels each 203 x 229 mm (8.0 x 9.0 in). If the interior fire-barrier material is directional, the vertical panel specimens shall be cut with the long dimension being in the warp direction and the top edge is defined as appropriate. The horizontal panel specimens shall be cut such that the short dimension is in the warp direction and the top edge is defined as appropriate.

(2) *Specimen Mounting.* (i) For vertical panels, place the 203 x 432 mm (8.0 x 17.0 in) standard cover fabric over the fire-barrier material specimens on a 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in) SFRPUF substrate piece. The standard cover fabric and interior fire-barrier specimen should be oriented such that the top edges of these materials run from top to bottom. Attach with straight pins and pull smooth so that no air gaps exist. Attach the cotton sheeting material to the vertical panels with straight pins so that the sheeting material will cover the

cigarette when placed in the crevice, approximately 50 mm (2.0 in) from the top of the panel.

(ii) For horizontal panels, place the 203 x 280 mm (8.0 x 11.0 in) standard cover fabric over the interior fire-barrier specimens on the 127 x 203 x 76 mm (5.0 x 8.0 x 3.0 in) SFRPUF substrate pieces. The standard cover fabric and interior fire-barrier specimen should be oriented such that the top edges of these materials run from the crevice to the front. Attach with straight pins and pull smooth so that no air gaps exist.

(iii) Place the assembled vertical and horizontal panels in the specimen holders. Press the horizontal panel against the vertical panel to create a straight-line crevice at the intersection. See Figure 11.

(n) *Test Procedure.*

(1) Place the three assembled mockups side by side with the crevice facing forward in the draft enclosure. No more than three mockups should be placed in the draft enclosure and each should be equidistant from the other and from enclosure end walls to avoid heat transfer between samples.

(2) Light three cigarettes so that no more than 4 mm (0.16 inch) is burned away and place one cigarette on each mockup crevice created by the intersection of the vertical and

horizontal panels, such that the cigarette contacts both surfaces and is equidistant from the side edges of the test panels.

(3) Cover cigarettes with cotton sheeting and run one finger over the sheet along the length of the covered cigarette to ensure good cover sheeting-to-cigarette contact and begin timer. If a test is inadvertently interrupted or cigarette self-extinguishes on lighting, it must be repeated from the beginning with a new cigarette until the cigarette does not self-extinguish or until three cigarettes self-extinguish without burning their full length.

(4) Continue testing for 30 minutes.

(5) At 30 minutes, if the mockup assembly is smoldering, extinguish with appropriate means. See Subparts C and D of this Part.

(6) Remove cotton sheeting fabric, remains of standard cover fabric, and interior fire-barrier material from the substrate panels.

(7) Carefully remove the SFRPUF substrate test panels and clean all carbonaceous char from panels by scraping with a brush.

(8) If the application of an extinguishing agent was not necessary or a gaseous extinguishing agent (e.g. carbon dioxide or nitrogen) was applied to the SFRPUF substrate, record the mass of the un-charred portions of the SFRPUF substrate pieces to the nearest 0.1 grams within 15 minutes and proceed to § 1634.9(o).

(9) If a mass-adding extinguishing agent(e.g. water-based agent) was applied to the substrate, re-condition the SFRPUF substrate pieces as follows.

(i) Place the SFRPUF substrate pieces in the active flow of a laboratory air hood to dry for at least 24 hours.

(ii) Measure and record the mass of the SFRPUF substrate pieces to the nearest 0.1 grams.

(iii) Place the SFRPUF substrate pieces in the active flow of the laboratory air hood to dry for at least three additional hours.

(iv) Measure and record the mass of the SFRPUF substrate pieces to the nearest 0.1 grams and compare the measurement with the previous one.

(v) Repeat this procedure every three hours until the mass of the substrate pieces remains within a tolerance of 0.5% from the previous reading.

(vi) Re-condition the SFRPUF pieces according to § 1634.9(l) above.

(vii) Record the mass of the un-charred portions of the SFRPUF substrate pieces to the nearest 0.1 grams.

(o) *Pass/Fail Criteria.* The interior fire barrier passes the requirements of this test procedure if the following criteria are met:

(1) No SFRPUF substrate of any specimen from a mockup assembly has more than 10% mass loss.

(2) No mockup assembly transitions to open flaming.

(p) *Test Report.* The test report shall include, at a minimum, the following information:

(1) Name and address of test laboratory.

(2) Date of the test(s).

(3) Name of the operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for each SFRPUF substrate piece from each mockup including:

(i) pre-test mass;

(ii) post-test mass; and

(iii) percent mass loss of each SFRPUF substrate piece from each mockup.

(6) Statement of overall pass/fail results.

§ 1634.10 End product material smoldering ignition resistance test.

(a) *Scope*. This test method is intended to measure the cigarette ignition resistance of actual combinations of materials used in the construction of a finished furniture item. This test applies to the cover fabric, interliner/fire barrier (if present), and any filling materials in the end product to be qualified as Type IV furniture.

(b) *Summary of Test Method.* Three test specimens are required for each end product combination. Vertical and horizontal panels of cover fabric, interliner/fire barrier (if present), and any filling materials intended to be used in the finished product are placed in the specimen holders and a lighted cigarette is placed in the crevice formed by the intersection of the vertical and horizontal panels in each test assembly. Each cigarette is covered with a piece of sheeting fabric. The cigarettes are allowed to burn their full length. Test measurements and observations are recorded after the 30-minute test duration. The resilient or loose filling material(s) must not exceed the mass loss limit or the mockup assembly must not transition to open flaming.

(c) *Significance and use.* This test method is designed to measure the response of combined assemblies of cover fabric, interliner/fire barrier (if present), and any filling materials intended for use in the finished product to a smoldering ignition source.

(d) *Test Apparatus and Materials*. The test apparatus and materials used in this test are detailed in Subpart C of this Part.

(e) *Ignition source*. The ignition source is the standard cigarette specified in Subpart C of this Part.

(f) *Sheeting Material*. Sheeting material shall be used to cover the standard test cigarettes. For testing, the fabric shall be cut into squares 127 x 127 mm (5.0 x 5.0 in). Use the sheeting material specified in Subpart C of this Part.

(g) *Specimen Holder*. The specimen holder shall consist of two wooden panels, each a nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge. A moveable horizontal panel support is positioned on a centrally located guide. See Subpart C and Figures 2 and 3.

(h) *Draft Enclosure*. A draft-preventive enclosure is required to restrict airflow to convection only. See Subpart C and Figure 1.

(i) *Test Facility and Hazards*. The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(j) *Conditioning*. All test specimens and standard test materials (including cigarettes and sheeting material) shall be conditioned in accordance with Subpart C of this part.

(k) *Test Specimens.*

(1) *Specimen Requirements.* From the cover fabric, interliner/fire barrier (if present), and any filling materials intended to be used in the finished product to be tested, prepare test specimens in accordance with the applicable *Specimen Requirements* in Sections 1634.4 to 1634.9.

(i) For cover fabrics, prepare test specimens in accordance with Section 1634.4(l)(1).

(ii) For interliner/fire barriers (if present), prepare test specimens in accordance with Section 1634.9(m)(1).

(iii) For fibrous filling materials, prepare test specimens in accordance with Section 1634.5(m)(1).

(iv) For loose filling materials, prepare test specimens in accordance with Section 1634.6(m).

(v) For loose filling interliner fabric (if present), prepare test specimens in accordance with Section 1634.7(n).

(vi) For resilient filling materials, prepare test specimens in accordance with Section 1634.8(l).

(2) *Specimens Mounting.* (i) Prepare vertical and horizontal panels and mount test specimens in each specimen holder using §§ 1634.4 through 1634.9 as guidance to assemble mockups using the combinations of materials used in the finished furniture item. The materials shall be assembled in the mockup in the order they appear and consist of the materials used in the first 76 mm (3.0 in) depth of the finished furniture item including the cover fabric.

(ii) If the finished article contains different combinations of materials in different locations in the seating area, each combination must be tested. For example, if the horizontal (seat) cushion contains resilient filling material and the vertical (back) cushion contains loose filling, the mockup shall be assembled so that the horizontal panel contains the resilient filling specimen and vertical panel contains the loose filling specimen in the prescribed specimen holder.

(iii) The mass of the combination of materials except for the cover fabric shall be recorded to the nearest 0.1 grams prior to the test.

(l) *Test Procedure*.

(1) Place the three assembled mockups side by side with the crevice facing forward in the draft enclosure. No more than three mockups should be placed in the draft enclosure, and each should be equidistant from the other and from the enclosure end walls to avoid heat transfer between samples.

(2) Light three cigarettes so that no more than 4 mm (0.16 in) is burned away and place one cigarette on each mockup crevice created by the intersection of the vertical and horizontal panels, such that the cigarette contacts both surfaces and is equidistant from the side edges of the test panels.

(3) Cover cigarettes with cotton sheeting and run one finger over the sheet along the length of the covered cigarette to ensure good cover sheeting-to-cigarette contact and begin timer. If a test is inadvertently interrupted or a cigarette self-extinguishes on lighting, it must be repeated from the beginning with a new cigarette until the cigarette does not self-extinguish or until three cigarettes self-extinguish without burning their full length.

(4) Continue testing for 30 minutes.

(5) At 30 minutes, if the mockup assembly is smoldering, extinguish with appropriate means. See Subparts C and D of this Part.

(6) Remove cotton sheeting fabric and remains of cover fabric from the mockup.

(7) Clean all carbonaceous char from the combination of materials remaining after the cover fabric remains have been removed in the vertical and horizontal panels by scraping with a brush. If the filling material is in loose form, carefully remove the loose fill test specimens from each panel. Using appropriate tools (e.g. catch tray, razor, scissors, tweezers and/or tongs) remove the charred portion of the loose fill material.

(8) If the application of an extinguishing agent was not necessary or a gaseous extinguishing agent (e.g. carbon dioxide or nitrogen) was applied to the mockup, record the mass of the un-charred portions of the filling pieces to the nearest 0.1 grams within 15 minutes and proceed to § 1634.10(n).

(9) If a mass-adding extinguishing agent (e.g. water-based agent) was applied to the mockup, re-condition the combination of materials as follows.

(i) Place the combinations of materials in the active flow of a laboratory air hood to dry for at least 24 hours.

(ii) Measure and record the mass of the combination of materials to the nearest 0.1 grams.

(iii) Place the combination of materials in the active flow of the laboratory air hood to dry for at least three additional hours.

(iv) Measure and record the mass of the combination of materials to the nearest 0.1 grams and compare the measurement with the previous one.

(v) Repeat this procedure every three hours until the mass of the combination of materials remains within a tolerance of 0.5% from the previous reading.

(vi) Re-condition the combination of materials according to § 1634.10(j) above.

(vii) Record the mass of the un-charred portions of the combination of materials to the nearest 0.1 grams.

(n) Pass/Fail Criteria. The end product assembly passes the requirements of this test procedure if the following criteria are met:

(1) The resilient or loose filling materials of any specimen from a mockup assembly has more than 10% mass loss.

(2) No mockup assembly transitions to open flaming.

(o) Test Report. The test report shall include, at a minimum, the following information:

(1) Name and address of test laboratory.

(2) Date of the test(s).

(3) Name of the operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data on the combinations of materials from each mockup including:

(i) pre-test mass;

(ii) post-test mass; and

(iii) the percent mass loss of the combination of materials of each mockup assembly.

(6) Statement of overall pass/fail results.

§ 1634.11 Fibrous filling material open flame ignition resistance test.

(a) *Scope.* This test method is intended to measure the open flame ignition resistance of fibrous filling materials used in upholstered furniture to be qualified as Type III furniture.

(b) *Summary of Test Method.* The fibrous filling material to be tested is placed between a standard fire retardant polyurethane foam substrate and standard cover fabric and

assembled on a metal test frame. A small open flame is applied to the crevice formed by the intersection of the seat/back surfaces of the mockup. Test measurements and observations are recorded during the 45-minute test duration. The mockup assembly must not exceed the mass loss. Three tests are performed in succession.

(c) *Significance and Use.* This test method is designed to measure the response of fibrous filling material to a small open-flame ignition source, representing that of a match, candle or cigarette lighter when placed between a standard cover fabric and standard foam substrate.

(d) *Test Apparatus and Materials*. The test apparatus and materials are detailed in Subpart E of this Part.

(e) *Ignition Source.* The ignition source is the nominal 35 mm butane gas flame described in Subpart E of this Part.

(f) *Standard Cover Fabric*. (1) The standard cover fabric is designed to simulate a moderately flammable upholstery cover fabric. Use the standard cover fabric specified in Subpart E of this Part.

(2) The standard cover fabric size needed for the test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 inches). From the standard cover fabric cut triangular cut-outs centered 575 mm (22.5

inches) from the top edge. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 inches) high. See Subpart E of this Part and Figure 12.

(g) *Standard Flame-Retardant Polyurethane Foam Substrate*.

(1) Fibrous filling materials are tested with a standard flame-retardant polyurethane foam (SFRPUF) substrate. Use the SFRPUF substrate specified in Subpart E of this Part.

(2) Two blocks of the SFRPUF substrate shall be used. The vertical (back) block shall be 457 x 305 ± 5 mm (18.0 x 12.0 ± 0.2 inches) x 76 ± 2 mm (3.0 ± 0.2 inches) thick. The horizontal (seat) block shall be 457 x 83 ± 5 mm (18.0 x 3.25 ± 0.2 inches x 76 ± 2 mm (3.0 ± 0.2 inches) thick.

(h) *Metal Test Frame*. The metal test frame shall consist of two rectangular metal frames locked at right angles to each other. A rod shall be continuous across the back of the metal test frame. See Subpart E of this Part and Figure 13.

(i) *Test Facility and Hazards*. The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(j) *Conditioning*. All test specimens and standard test materials shall be conditioned in accordance with Subpart E of this Part.

(k) *Test Specimens*. (1) The fibrous filling specimen needed for each test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 inches).

(2) From each fibrous filling specimens cut triangular cut-outs centered 575 mm (22.5 inches) from the top end on both sides. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 inches) high. See Subpart E of this Part and Figure 12.

(3) If the fibrous filling material is directional, the specimen shall be cut with the long dimension (1020 mm, 40 in) being in the warp direction and the top edge is defined as appropriate.

(l) *Mockup Assembly*. (1)Position the metal test frame in the upright position.

(2) Lay the fibrous filling test specimen flat and face up on the table first and the standard cover fabric on top, face up.

(3) Fold the two sides of the top (larger) section of standard cover fabric and fibrous filling (from the cutout upwards) over the face of the standard cover fabric.

(4) Thread the folded standard cover fabric and fibrous filling under the horizontal rod and pull them out from the back

of the metal test frame until the cutouts are lined up with the horizontal rod.

(5) Thread the folded standard cover fabric and fibrous filling back over the rod and pull it out from the front of the frame.

(6) Line up and pull both the top and bottom sections of the standard cover fabric and fibrous filling specimen so that the cutouts are lined up with the metal rod on both sides and the fabric and fibrous filling are laying flat and free of folds and wrinkles.

(7) Place the larger SFRPUF block flush against the back metal frame and resting on the fibrous filling.

(8) Lift the larger portion of both the fibrous filling and standard cover fabric over the SFRPUF back block and secure it to the top of the back section of the metal test frame using metal clips.

(9) Starting at the lowest part of the vertical section on one side, clip both the fibrous filling material and standard cover fabric to the frame. At the top corner, make a diagonal fold of the fibrous filling material separate from the standard cover fabric. Make a similar fold with the standard cover fabric and secure all the folded layers (both filling material

and cover fabric) to the frame with a clip to the side of the test frame. Repeat for the other side.

(10) When the back section is completed, place the frame down so that the back of the frame is on the table.

(11) Lift up the smaller portion of the standard cover fabric and fibrous filling and lay them on the back panel.

(12) Place the smaller SFRPUF block with the 83 mm (3.25 in) side flush against the seat section of the metal frame and press down against the back panel.

(13) Pull the smaller section of the fibrous filling and standard cover fabric over the SFRPUF seat panel and secure them to the bottom edge of the metal frame using metal clips.

(14) Re-position the assembly in the upright position.

(15) On one side, fold the unsecured front edge of the fibrous filling material back against the SFRPUF foam. Then, make a diagonal fold with the unsecured top edge of fibrous filling material down on top of it. Repeat with the unsecured edges of standard cover fabric and clip to the bottom of the metal test frame. Repeat on the other side.

(16) Ensure that the standard cover fabric and fibrous filling are smooth and under uniform tension at all locations to eliminate air gaps between the fabric, fibrous filling, and the

SFRPUF foam. Do not allow a gap exceeding 3 mm (0.125 inch) along the seat/back crevice. See Figure 17.

(m) *Test Procedure*. Have a means for extinguishing the specimen close at hand. A hand-held carbon dioxide extinguisher is adequate for most specimens; however, a water spray system should be available as a back-up, in case the carbon dioxide fails to completely extinguish the fire.

(1) *Pretest.* (i) Tare the scale with the empty metal test frame and clips or, if the scale does not have tare capability, record the mass of metal test frame and clips.

(ii) Assemble the mockup as described in Section (l). Mockup Assembly.

(iii) Record the initial mass of the assembly directly (if tared) or by subtraction (if not tared).

(iv) Calculate and record the mass corresponding to 80% of initial mass of the mockup assembly.

(2) Lighting the igniter flame.

(i) Open the butane tank slowly and light the end of the burner tube. Adjust the gas flow to the appropriate rate. See Subpart E of this Part.

(ii) Allow the flame to stabilize for at least 2 minutes.

(3) Starting and performing the test.

(i) Place the lit burner tube in the crevice of the mockup so that the end of the igniter is at the center of the mockup equidistant from either edge.

(ii) Apply the flame for 20 ± 1 seconds, then immediately remove ignition source from the mockup. Observe the mockup combustion behavior for 45 minutes.

(iii) If the mockup does not ignite and is re-useable, apply a second ignition equidistant between the center of the crevice and the left edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(iv) If the mockup does not ignite and is re-useable, apply a third ignition equidistant between the center of the crevice and the right edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(v) Conduct a maximum of three ignition runs on a single mockup assembly. If three ignition runs cannot be obtained with one mockup, a second or third mockup assembly may be required. A failure during any of the three ignition runs constitutes a failure of the test sample.

(vi) Terminate a test run if any of the following conditions occurs:

(A) The mockup self-extinguishes.

(B) The 45 minute test duration has elapsed.

(C) The mass of the mockup reaches less than 80% of the initial mass during the test duration.

(n) *Pass/Fail Criterion*. – The fibrous filling must pass a minimum of three successive ignition applications. The criterion for a sample to pass is that the mass loss of the mockup exceeds no more than 20% of its total initial mass during the 45-minute test duration.

(o) *Test Report*. The test report shall include, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the mockup including:

(i) Initial mass

(ii) Mass corresponding to 80% of initial mass

(iii) Time to reach the mass equal to 80% of the initial mass

(iv) The percent mass loss of the mockup at 45 minutes.

(6) Statement of overall pass/fail results

§ 1634.12 Loose filling material open flame ignition resistance test.

(a) *Scope.* This test method is intended to measure the open flame ignition resistance of loose filling materials used in upholstered furniture to be qualified as Type III furniture.

(b) *Summary of Test Method.* The loose filling material to be tested is assembled in a metal test frame using vertical and horizontal lose fill open flame test inserts and covered by a standard cover fabric. A small open flame is applied to the crevice formed by the intersection of the seat/back surfaces of the mockup. Test measurements and observations are recorded during the 45-minute test duration. The mockup assembly must not exceed the mass loss limit. Three tests are performed in succession.

(c) *Significance and Use.* This test method is designed to measure the response of loose filling material to a small open-flame ignition source, representing that of a match, candle or cigarette lighter, when placed under a standard cover fabric.

(d) *Test Apparatus and Materials.* The test apparatus and materials are detailed in Subpart E of this Part.

(e) *Ignition Source*. The ignition source is the nominal 35 mm butane gas flame described in Subpart E of this Part.

(f) *Standard Cover Fabric*. (1) The standard cover fabric is designed to simulate a moderately flammable upholstery cover fabric. Use the standard cover fabric specified in Subpart E of this Part.

(2) The standard cover fabric size needed for the test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 in). From the standard cover fabric cut triangular cut-outs centered 575 mm (22.5 in) from the top edge on both sides. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 in) high. See Subpart E of this Part and Figure 12.

(g) *Metal Test Frame*. The metal test frame shall consist of two rectangular metal frames locked at right angles to each other. A rod shall be continuous across the back of the metal test frame. See Subpart E of this Part and Figure 13.

(h) *Loose Fill Open Flame Test Inserts*. The vertical and horizontal loose fill open flame test inserts are used to hold the loose filling specimens to be tested. See Subpart E of this Part and Figures 14, 15 and 16.

(i) *Test Facility and Hazards*. The test facility, exhaust system, and hazards are detailed in Subpart D of this Part.

(j) *Conditioning*. All test specimens and standard test materials shall be conditioned in accordance with Subpart E of this Part.

(k) *Test Specimens*. From the loose filling material sample to be tested, use the amount of loose filling required to construct the mockup assembly in accordance with paragraph (l), *Mockup Assembly*, of this section.

(l) *Mock-Up Assembly*. (1) Position the metal frame in the upright position facing forward.

(2) Lay the standard cover fabric flat and face up on the table.

(3) Fold the two sides of the top (larger) section of standard cover fabric (from the cutout upwards) over the face of the standard cover fabric.

(4) Hold the two sides of the folded standard cover fabric and insert it under the horizontal rod. Pull the inserted standard cover fabric out from behind the seat of the metal test frame until the cut-outs are lined up with the horizontal rod.

(5) Thread the folded standard cover fabric back over the rod and pull it out from the front of the frame.

(6) Line up and pull both the top and bottom sections of the standard cover fabric so that the cutouts are lined up with the metal rod and the standard cover fabric is lying flat and free of folds and wrinkles.

(7) Place the vertical loose fill open flame test insert flush against the back metal frame resting on the standard cover fabric.

(8) Lift the larger portion of the standard cover fabric and temporarily clip to the top of the metal test frame with a metal clip in the center.

(9) Secure the left side of the larger portion of the standard cover fabric to the metal test frame with metal clips. Repeat on the right side.

(10) Remove the temporary center clip from the top of the metal test frame and fold back the excess standard cover fabric, leaving a cavity that is even with the top of the vertical test frame.

(11) If the loose fill material is polyester fiber fill or a material having a density and loft similar to polyester fiber fill, evenly fill the vertical cavity with 300 ± 10 grams of loose fill material to achieve a reasonably smooth and flat surface. For a loose fill material with a density significantly

different from polyester fiber fill, fill the cavity to the top with the loose fill material and shake to settle the material. Add additional loose fill material to fill the cavity to the top, as needed.

(12) Secure the top edge of the standard cover fabric to the metal test frame with metal clips. Diagonal folds of standard cover fabric at the corners should be attached at the side edges using the top clips on the right and left sides.

(13) When the back section is completed, place the frame down so that the back of the metal test frame is on the table.

(14) Lift up the smaller portion of the standard cover fabric and lay it on the back section of the metal test frame.

(15) Place the horizontal loose fill open flame test insert with the open edge in the crevice and the rod in the upper front section of the seat.

(16) Lift the remaining section of standard cover fabric over the insert and temporarily clip the standard cover fabric to the center of the horizontal frame using a metal clip.

(17) Secure the left side of the smaller portion of the standard cover fabric to the metal test frame with a metal clip. Repeat on the right side.

(18) Remove the temporary center clip from the front of the metal test frame and fold back the excess standard cover fabric, leaving a cavity that is even with the front of the horizontal test insert.

(19) If the loose fill material is polyester fiber fill or a material having a density and loft similar to polyester fiber fill, evenly fill the horizontal cavity with 85 ± 5 grams of loose fill material to achieve a reasonably smooth and flat surface. For a loose fill material with a density significantly different from polyester fiber fill, fill the cavity to the top with the loose fill material and shake to settle the material. Add additional loose fill material to fill the cavity to the top, as needed.

(20) Secure the front edge of the standard cover fabric to the metal test frame with metal clips. Diagonal folds of standard cover fabric at the corners should be attached at the side edges using the clip already in place on the right and left sides. Be careful to avoid spillage of loose fill material when removing and re-securing these clips.

(21) Ensure that the standard cover fabric is smooth and under uniform tension at all locations to eliminate air gaps between the standard cover fabric and loose filling. Do not

allow a gap exceeding 3 mm (0.125 inch) along the seat/back crevice. See Figure 18.

(m) *Test Procedure*. Have a means for extinguishing the specimen close at hand. A hand-held carbon dioxide extinguisher is adequate for most specimens; however, a water spray system should be available as a back-up, in case the carbon dioxide fails to completely extinguish the fire.

(1) *Pretest*. (i) Tare the scale with the empty metal test frame, loose fill inserts and clips or, if the scale does not have tare capability, record the mass of metal test frame, loose fill inserts and clips.

(ii) Assemble the mockup as described in Section (l) Mockup Assembly.

(iii) Record the initial mass of the assembly directly (if tared) or by subtraction (if not tared).

(iv) Calculate and record the mass corresponding to 80% of initial mass of the mockup assembly.

(2) Lighting the igniter flame.

(i) Open the butane tank slowly and light the end of the burner tube. Adjust the gas flow to the appropriate rate. See Subpart E of this Part.

(ii) Allow the flame to stabilize for at least 2 minutes.

(3) Starting and performing the test.

(i) Place the lit burner tube in the crevice of the mockup so that the end of the igniter is at the center of the mockup equidistant from either edge.

(ii) Apply the flame for 20 ± 1 seconds, then immediately remove ignition source from the mockup. Observe the mockup combustion behavior for 45 minutes.

(iii) If the mockup does not ignite and is re-useable, apply a second ignition equidistant between the center of the crevice and the left edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(iv) If the mockup does not ignite and is re-useable, apply a third ignition equidistant between the center of the crevice and the right edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(v) Conduct a maximum of three ignition runs on a single mockup assembly. If three ignition runs cannot be obtained with one mockup, a second or third mockup assembly may be required. A failure during any of the three ignition runs constitutes a failure of the test sample.

(vi) Terminate a test run if any of the following conditions occurs:

(A) The mockup self-extinguishes.

(B) The 45 minute test duration has elapsed.

(C) The mass of the mockup reaches less than 80% of the initial mass during the test duration.

(n) *Pass/Fail Criterion*. – The loose filling material must pass a minimum of three successive ignition applications. The criterion for a sample to pass is that the mass loss of the mockup exceeds no more than 20% of its total initial mass during the 45-minute test duration.

(o) *Test Report*. The test report shall include, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the mockup including:

(i) Initial mass

(ii) Mass corresponding to 80% of initial mass

(iii) Time to reach the mass equal to 80% of the initial mass

(iv) The percent mass loss of the mockup at 45 minutes.

(6) Statement of overall pass/fail results

§ 1634.13 Loose filling interliner fabric open flame ignition resistance test.

(a) *Scope*. This test method is intended to measure the open flame ignition resistance of loose filling interliner fabrics used to encase loose filling materials in upholstered furniture to be qualified as Type III-B furniture. Such fabrics are commonly used as protective lining for loose filling found in loose or semi-attached backs, arms, or throw pillows. The materials covered by this test method include, but are not limited to, flame-resistant ticking or non-woven fabrics used to protect loose filling.

(b) *Summary of Test Method.* The loose filling interliner fabric to be tested is assembled in a metal test frame using metal inserts filled with standard polyester fiber fill and covered by a standard cover fabric. A small open flame is applied to the crevice formed by the intersection of the seat/ back surfaces of the mockup. Test measurements and observations are recorded during the 45-minute test duration. The mockup assembly must not exceed the mass loss limit. Three tests are performed in succession.

(c) *Significance and Use.* This test method is designed to measure the response of loose filling interliner fabrics to a

small open-flame ignition source, representing that of a match, candle or cigarette lighter when filled with a standard polyester fiber fill substrate and placed under a standard cover fabric.

(d) *Test Apparatus and Materials*. The test apparatus and materials are detailed in Subpart E of this Part.

(e) *Ignition Source*. The ignition source is the nominal 35 mm butane gas flame described in Subpart E of this Part.

(f) *Standard Cover Fabric*. (1) The standard cover fabric represents a moderately flammable upholstery cover fabric. Use the standard cover fabric specified in Subpart E.

(2) The standard cover fabric size needed for each test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 inches). From the standard cover fabric, cut triangular cut-outs centered 575 mm (22.5 inches) from the top edge on both sides. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 inches) high. See Subpart E of this Part and Figure 12.

(g) *Standard Polyester Fiber Fill*. Loose filling interliner fabrics are tested in a metal mockup frame filled with standard polyester fiber fill substrate. Use the standard polyester fiber fill substrate specified in Subpart E of this Part.

(h) *Metal Test Frame*. The metal test frame shall consist of two rectangular metal frames locked at right angles to each other. A rod shall be continuous across the back of the metal test frame. See Subpart E of this Part and Figure 13.

(i) *Loose Fill Open Flame Test Inserts*. The vertical and horizontal loose fill open flame test inserts are used to hold the standard polyester fiber fill substrate. See Subpart E of this Part and Figures 14, 15 and 16.

(j) *Test Facility and Hazards.* The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(k) *Conditioning*. All test specimens and standard test materials shall be conditioned in accordance with Subpart E of this Part.

(l) *Test Specimens*. (1) The loose filling interliner fabric size needed for each test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 in). From the fabric test specimen, cut triangular cut-outs centered 575 mm (22.5 inches) from the top edge on both sides. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 in) high. See Subpart E of this Part and Figure 12.

(2) If the loose filling interliner fabric is directional, the specimen shall be cut with the long dimension (1020 mm, 40

in) being in the warp direction and the top edge is defined as appropriate.

(m) *Mockup Assembly*. (1) Position the metal test frame in the upright position facing forward.

(2) Lay the interliner fabric specimen flat and face up on the table. Lay the standard cover fabric flat on top, face up.

(3) Fold the two sides of the top (larger) section of standard cover fabric and interliner specimen (from the cutout upwards) over the face of the standard cover fabric.

(4) Hold the two sides of the folded standard cover fabric and interliner and insert them under the horizontal rod. Pull the inserted standard cover fabric and interliner out from behind the seat of the metal test frame until the cutouts are lined up with the horizontal rod.

(5) Thread the folded standard cover fabric and standard interliner back over the rod and pull them out from the front of the frame.

(6) Line up and pull both the top and bottom sections of the standard cover fabric and interliner so that the cutouts are lined up with the metal rod and the standard cover fabric and interliner are laying flat and free of folds and wrinkles.

(7) Place the vertical loose fill open flame test insert flush against the back metal frame resting on the interliner specimen.

(8) Lift the larger portion of the standard cover fabric and interliner over the vertical test insert and temporarily clip to the top of the metal test frame with one clip in the center.

(9) Secure the left side of the larger portion of the standard cover fabric and interliner to the metal test frame with metal clips. Repeat on the right side.

(10) Remove the temporary center clip from the top of the metal test frame and fold back the excess standard cover fabric and interliner to the metal test frame, leaving a cavity that is even with the top of the vertical test frame.

(11) Evenly fill the vertical cavity with 300 ± 10 grams of standard polyester fiber fill substrate to achieve a reasonably smooth and flat surface.

(12) Secure the top edge of the standard cover fabric to the metal test frame with metal clips. At the top corner, make diagonal folds of the interliner fabric separate from the standard cover fabric. Make a similar fold with the standard cover fabric and secure all folded layers (both interliner and

standard fabric) to the frame with a clip to the side of the test frames. Repeat for the other side.

(13) When the back section is completed, place the metal test frame down so that the back portion of the metal test frame is on the table.

(14) Lift up the smaller portion of the standard cover fabric and interliner specimen and lay them on the back section of the metal test frame.

(15) Place the horizontal loose fill horizontal test insert with the open edge in the crevice and the rod in the upper front section of the seat.

(16) Lift the remaining section of standard cover fabric and interliner fabric over the insert and temporarily clip the fabric to the center of the horizontal frame using a metal clip.

(17) Secure the left side of the smaller portion of the standard cover fabric and interliner fabric to the metal test frame with a metal clip. Repeat on the right side.

(19) Remove the temporary center clip from the front of the test frame and fold back the excess fabrics, leaving a cavity that is even with the front of the horizontal test insert.

(20) Fill the horizontal cavity with 85 ± 5 grams of standard polyester fiber fill material to achieve a reasonably smooth and flat surface.

(21) Secure the front edge of the standard cover fabric and interliner fabric to the metal test frame with metal clips.

(22) On one side, fold the unsecured front edge of the interliner fabric back against the horizontal loose fill open flame test insert. Then, make a diagonal fold with the unsecured top edge of interliner fabric down on top of it. Repeat with the unsecured edges of standard cover fabric and clip to the bottom of the metal test frame. Repeat on the other side.

(23) Ensure that the fabrics are smooth and under uniform tension at all locations to eliminate air gaps between the fabrics and the standard polyester fiber fill. Do not allow a gap exceeding 3 mm (0.125 inch) along the seat/back crevice. See Figure 19.

(n) *Test Procedure*. Have a means for extinguishing the specimen close at hand. A hand-held carbon dioxide extinguisher is adequate for most specimens; however, a water spray system should be available as a back-up, in case the carbon dioxide fails to completely extinguish the fire.

(1) Pretest. (i) Tare the scale with the empty metal test frame and clips or, if the scale does not have tare capability, record the mass of metal test frame and clips.

(ii) Assemble the mockup as described in Section (m) Mockup Assembly.

(iii) Record the initial mass of the assembly directly (if tared) or by subtraction (if not tared).

(iv) Calculate and record the mass corresponding to 80% of initial mass of the mockup assembly.

(2) Lighting the igniter flame.

(i) Open the butane tank slowly and light the end of the burner tube. Adjust the gas flow to the appropriate rate. See Subpart E of this Part.

(ii) Allow the flame to stabilize for at least 2 minutes.

(3) Starting and performing the test.

(i) Place the lit burner tube in the crevice of the mockup so that the end of the igniter is at the center of the mockup equidistant from either edge.

(ii) Apply the flame for 20 ± 1 seconds, then immediately remove ignition source from the mockup. Observe the mockup combustion behavior for 45 minutes.

(iii) If the mockup does not ignite and is re-useable, apply a second ignition equidistant between the center of the crevice and the left edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(iv) If the mockup does not ignite and is re-useable, apply a third ignition equidistant between the center of the crevice and the right edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(v) Conduct a maximum of three ignition runs on a single mockup assembly. If three ignition runs cannot be obtained with one mockup, a second or third mockup assembly may be required. A failure during any of the three ignition runs constitutes a failure of the test sample.

(vi) Terminate a test run if any of the following conditions occurs:

(A) The mockup self-extinguishes.

(B) The 45 minute test duration has elapsed.

(C) The mass of the mockup reaches less than 80% of the initial mass during the test duration.

(o) *Pass/Fail Criterion*. – The loose filling interliner fabric must pass a minimum of three successive ignition applications. The criterion for a sample to pass is that the

mass loss of the mockup exceeds no more than 20% of its total initial mass during the 45-minute test duration.

(p) *Test Report*. The test report shall include, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the mockup including:

(i) initial mass;

(ii) mass corresponding to 80% of initial mass;

(iii) time to reach the mass equal to 80% of the initial mass; and

(iv) the percent mass loss of the mockup at 45 minutes.

(6) Statement of overall pass/fail results

§ 1634.14 Resilient filling material open flame ignition resistance test.

(a) *Scope*. This test method is intended to measure the open flame ignition resistance of resilient filling materials used in upholstered furniture to be qualified as Type III furniture.

(b) *Summary of Test Method*. The resilient filling material to be tested is covered with a standard cover fabric and assembled on a metal test frame. A small open flame is applied to the crevice formed by the intersection of the seat/back surfaces of the mockup. Test measurements and observations are recorded during the 45-minute test duration. The mockup assembly must not exceed the mass loss. Three tests are performed in succession.

(c) *Significance and Use*. This test method is designed to measure the response of a resilient filling material to a small open flame ignition source, representing that of a match, candle or cigarette lighter when tested under a standard cover fabric.

(d) *Test Apparatus and Materials*. The test apparatus and materials are detailed in Subpart E of this Part.

(e) *Ignition Source*. The ignition source is the nominal 35 mm butane gas flame described in Subpart E of this Part.

(f) *Standard Cover Fabric*. (1) The standard cover fabric represents a moderately flammable upholstery cover fabric. Use the standard cover fabric specified in Subpart E of this Part.

(2) The standard cover fabric size needed for each test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 in). From the standard cover fabric, cut triangular cut-outs centered 575 mm (22.5 in) from

the top edge on both sides. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 in) high. See Subpart E and Figure 12.

(g) *Metal Test Frame*. The metal test frame shall consist of two rectangular metal frames locked at right angles to each other. A rod shall be continuous across the back of the metal test frame. See Subpart E of this Part and Figure 13.

(h) *Test Facility and Hazards*. The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(i) *Conditioning*. All test specimens and standard test materials shall be conditioned in accordance with Subpart E of this Part.

(j) *Test Specimens*. Two blocks of the sample of resilient filling material to be tested shall be used. The vertical (back) block shall be 457 x 305 ± 5 mm (18.0 x 12.0 ± 0.2 in) x 76 ± 2 mm (3.0 ± 0.2 in) thick. The horizontal (seat) block shall be 457 x 83 ± 5 mm (18.0 x 3.25 ± 0.2 in) x 76± 2 mm (3.0 ± 0.2 in) thick.

(k) *Mock-up Assembly*. (1) Position the metal test frame in the upright position.

(2) Lay the standard cover fabric face up and flat on the table.

(3) Fold the two sides of the top (larger) section of the standard cover fabric (from the cutout upwards) over the face of the standard cover fabric.

(4) Hold the two sides of the folded standard cover fabric and insert it under the horizontal rod. Pull the inserted standard cover fabric out from the back of the metal test frame until the cut-outs are lined up with the horizontal rod.

(5) Thread the folded standard cover fabric back over the rod and pull it out from the front of the frame.

(6) Line up and pull both the top and bottom sections of the standard cover fabric so that the cutouts are lined up with the metal rod on both sides and the fabric is laying flat and free of folds and wrinkles.

(7) Place the larger resilient filling specimen block flush against the back metal frame and resting on the standard cover fabric.

(8) Lift the larger portion of the standard cover fabric over the resilient filling specimen block back panel and secure it to the back section of the metal frame using metal clips.

(9) Starting at the lowest part of the vertical section on one side, clip the standard cover fabric to the frame. At the top corner, make a diagonal fold of standard cover fabric.

Secure the folded layers of the standard cover fabric to the frame with a metal clip on the side of the metal test frame. Repeat on the other side.

(10) When the back section is completed, place the frame down so that the back of the frame is on the table.

(11) Lift up the smaller portion of the standard cover fabric and lay it flat on the back panel.

(12) Place the smaller resilient filling specimen block with the 83 mm (3.25 in) side flush against the seat section of the metal test frame and press down against the back panel.

(13) Pull the smaller section of the standard cover fabric over the resilient filling specimen seat panel and secure it to the bottom front edge of the metal frame using metal clips.

(14) Re-position the assembly in the upright position.

(15) On one side, fold the unsecured front edge of the standard cover fabric against the resilient filling specimen block. Then make a diagonal fold with the unsecured top edge of the standard cover fabric and clip to the bottom of the metal test frame. Repeat on the other side.

(16) Ensure that the standard cover fabric is smooth and under uniform tension at all locations to eliminate air gaps between the standard cover fabric and the resilient filling

specimens. Do not allow a gap exceeding 3 mm (0.125 in) along the seat/back crevice. See Figure 20.

(l) *Test Procedure*. Have a means for extinguishing the specimen close at hand. A hand-held carbon dioxide extinguisher is adequate for most specimens; however, a water spray system should be available as a back-up, in case the carbon dioxide fails to completely extinguish the fire.

(1) Pretest. (i) Tare the scale with the empty metal test frame and clips or, if the scale does not have tare capability, record the mass of metal test frame and clips.

(ii) Assemble the mockup as described in Section (k) Mockup Assembly.

(iii) Record the initial mass of the assembly directly (if tared) or by subtraction (if not tared).

(iv) Calculate and record the mass corresponding to 80% of initial mass of the mockup assembly.

(2) Lighting the igniter flame.

(i) Open the butane tank slowly and light the end of the burner tube. Adjust the gas flow to the appropriate rate. See Subpart E of this Part.

(ii) Allow the flame to stabilize for at least 2 minutes.

(3) Starting and performing the test.

(i) Place the lit burner tube in the crevice of the mockup so that the end of the igniter is at the center of the mockup equidistant from either edge.

(ii) Apply the flame for 20 ± 1 seconds, then immediately remove ignition source from the mockup. Observe the mockup combustion behavior for 45 minutes.

(iii) If the mockup does not ignite and is re-useable, apply a second ignition equidistant between the center of the crevice and the left edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(iv) If the mockup does not ignite and is re-useable, apply a third ignition equidistant between the center of the crevice and the right edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(v) Conduct a maximum of three ignition runs on a single mockup assembly. If three ignition runs cannot be obtained with one mockup, a second or third mockup assembly may be required. A failure during any of the three ignition runs constitutes a failure of the test sample.

(vi) Terminate a test run if any of the following conditions occurs:

(A) The mockup self-extinguishes.

(B) The 45 minute test duration has elapsed.

(C) The mass of the mockup reaches less than 80% of the initial mass.

(m) *Pass/Fail Criterion*. – The resilient filling material must pass a minimum of three successive ignition applications. The criterion for a sample to pass is that the mass loss of the mockup exceeds no more than 20% of its total initial mass during the 45-minute test duration.

(n) *Test Report*. The test report shall include, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the mockup including:

(i) Initial mass

(ii) Mass corresponding to 80% of initial mass

(iii) Time to reach the mass equal to 80% of the initial mass

(iv) The percent mass loss of the mockup at 45 minutes.

(6) Statement of overall pass/fail results

§ 1634.15 Upholstery fabric fire barrier open flame ignition resistance test.

(a) *Scope.* This test method is intended to measure the open flame ignition resistance of upholstery cover fabrics used in upholstered furniture to be qualified as Type II furniture. This test allows upholstery fabrics to qualify as fire barriers.

(b) *Summary of Test Method.* The upholstery fabric fire barrier to be tested is placed over a standard polyurethane foam substrate and assembled on a metal test frame. A small open flame is applied to the crevice formed by the intersection of the seat/back surfaces of the mockup. Test measurements and observations are recorded during the 45-minute test duration. The mockup assembly must not exceed the mass loss limit. Three tests are performed in succession.

(c) *Significance and Use.* This test method is designed to measure the response of upholstery cover fabrics used as fire barriers to a small open-flame ignition source, representing that of a match, candle or cigarette lighter when tested over specified foam substrate.

(d) *Test Apparatus and Materials*. The test apparatus and materials are detailed in Subpart E of this Part.

(e) *Ignition Source*. The ignition source is the nominal 35 mm butane gas flame described in Subpart E of this Part.

(f) *Standard Polyurethane Foam Substrate*. (1) Upholstery fabric fire barriers are tested with a standard polyurethane foam (SPUF) substrate. Use the SPUF substrate specified in Subpart E of this Part.

(2) Two blocks of SPUF substrate shall be used. The vertical (back) block shall be 457 x 305 ± 5 mm (18.0 x 12.0 ± 0.2 in) x 76 ± 2 mm (3.0 ± 0.2 in) thick. The horizontal (seat) block shall be 457 x 83 ± 5 mm (18.0 x 3.25 ± 0.2 in) x 76 ± 2 mm (3.0 ± 0.2 in) thick.

(g) *Metal Test Frame*. The metal test frame shall consist of two rectangular metal frames locked at right angles to each other. A rod shall be continuous across the back of the metal test frame. See Subpart E of this Part and Figure 13.

(h) *Test Facility and Hazards*. The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(i) Conditioning. All test specimens and standard test materials shall be conditioned in accordance with Subpart E of this Part.

(j) *Test Specimens*. (1) The upholstery fabric fire barrier size needed for each test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 in).

(2) The specimen shall be cut with the long dimension (1020 mm, 40 in) being in the warp direction and the top edge defined as appropriate.

(3) From the upholstery fabric test specimen, cut triangular cut-outs centered 575 mm (22.5 in) from the top edge on both sides. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 in) high. See Subpart E of this Part and Figure 12.

(k*) Mockup Assembly*. (1) Position the metal test frame in the upright position.

(2) Lay the upholstery cover fabric specimen flat on the table and face up.

(3) Fold the two sides of the top (larger) section of the upholstery fabric specimen (from the cutout upwards) over the face of the upholstery fabric.

(4) Thread the folded upholstery fabric specimen under the horizontal rod and pull it out from the back of the metal test frame until the cutouts are lined up with the horizontal rod.

(5) Thread the folded upholstery fabric specimen back over the rod and pull it out from the front of the frame.

(6) Line up and pull both the top and bottom sections of the upholstery fabric specimen so that the cutouts are lined up

with the metal rod on both sides and the upholstery fabric is laying flat and free of folds and wrinkles.

(7) Place the larger SPUF block flush against the back metal frame and resting on the upholstery fabric specimen.

(8) Lift the larger portion of the fabric specimen over the SPUF back block and secure it to the top of the back section of the metal frame using metal clips.

(9) Starting at the lowest part of the vertical section on one side clip the upholstery fabric to the frame. At the top corner, make a diagonal fold of fabric. Secure all the folded layers of upholstery fabric to the frame with a metal clip to the side of the test frame. Repeat for the other side.

(10) When the back section is completed, place the frame down so that the back of the frame is on the table.

(11) Lift up the smaller portion of the upholstery fabric specimen and lay it on the back panel.

(12) Place the smaller SPUF block with the 83 mm (3.25 in) side flush against the seat section of the metal frame and press against the back panel.

(13) Pull the smaller section of the upholstery fabric specimen over the SPUF seat panel and secure it to the bottom front edge of the metal frame using metal clips.

(14) Re-position the assembly in the upright position.

(15) On one side, fold the unsecured front edge of the upholstery fabric specimen back against the SPUF block. Then make a diagonal fold with the unsecured top edge of the upholstery fabric specimen and clip to the bottom of the metal test frame. Repeat on the other side.

(16) Ensure that the upholstery fabric specimen is smooth and under uniform tension at all locations to eliminate air gaps between the upholstery fabric and the SPUF panels. Do not allow a gap exceeding 3 mm (0.125 in) along the seat/back crevice. See Figure 21.

(l) *Test Procedure*. Have a means for extinguishing the specimen close at hand. A hand-held carbon dioxide extinguisher is adequate for most specimens; however, a water spray system should be available as a back-up, in case the carbon dioxide fails to completely extinguish the fire.

(1) Pretest. (i) Tare the scale with the empty metal test frame and clips or, if the scale does not have tare capability, record the mass of metal test frame and clips.

(ii) Assemble the mockup as described in Section (k) Mockup Assembly.

(iii) Record the initial mass of the assembly directly (if tared) or by subtraction (if not tared).

(iv) Calculate and record the mass corresponding to 80% of initial mass of the mockup assembly.

(2) Lighting the igniter flame.

(i) Open the butane tank slowly and light the end of the burner tube. Adjust the gas flow to the appropriate rate. See Subpart E of this Part.

(ii) Allow the flame to stabilize for at least 2 minutes.

(3) Starting and performing the test.

(i) Place the lit burner tube in the crevice of the mockup so that the end of the igniter is at the center of the mockup equidistant from either edge.

(ii) Apply the flame for 20 ± 1 seconds, then immediately remove ignition source from the mockup. Observe the mockup combustion behavior for 45 minutes.

(iii) If the mockup does not ignite and is re-useable, apply a second ignition equidistant between the center of the crevice and the left edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(iv) If the mockup does not ignite and is re-useable, apply a third ignition equidistant between the center of the

crevice and the right edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(v) Conduct a maximum of three ignition runs on a single mockup assembly. If three ignition runs cannot be obtained with one mockup, a second or third mockup assembly may be required. A failure during any of the three ignition runs constitutes a failure of the test sample.

(vi) Terminate a test run if any of the following conditions occurs:

(A) The mockup self-extinguishes.

(B) The 45 minute test duration has elapsed.

(C) The mass of the mockup reaches less than 80% of the initial mass during the test duration.

(m) *Pass/Fail Criterion*. – The upholstery fabric fire barrier must pass a minimum of three successive ignition applications. The criterion for a sample to pass is that the mass loss of the mockup exceeds no more than 20% of its total initial mass during the 45-minute test duration.

(n) *Test Report*. The test report shall include, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the mockup including:

(i) Initial mass

(ii) Mass corresponding to 80% of initial mass

(iii) Time to reach the mass equal to 80% of the initial mass

(iv) The percent mass loss of the mockup at 45 minutes.

(6) Statement of overall pass/fail results

§ 1634.16 Interior fire barrier material open flame ignition resistance test.

(a) *Scope*. This test procedure is intended to measure the open flame ignition resistance of interior fire-barrier materials used in upholstered furniture to be qualified as Type I furniture. This test applies to materials including but not limited to interior fabrics or high loft battings to qualify them as fire barriers.

(b) Summary of Test Method. The interior fire-barrier material to be tested is placed between a standard cover fabric and standard foam substrate and assembled on a metal test frame. An open flame ignition source is applied to the crevice formed by the intersection of the seat/back surfaces of the mockup.

Test measurements and observations are recorded during the 45-minute test duration. The mockup assembly must not exceed the mass loss limit. Three tests are performed in succession.

(c) *Significance and Use*. This test method is designed to measure the response of an interior fire-barrier material when exposed to a burning standard cover fabric over a standard foam substrate.

(d) *Test Apparatus and Materials*. The test apparatus and materials are detailed in Subpart E of this Part.

(e) *Ignition Source*. The ignition source is the nominal 240 mm butane gas flame described in Subpart E of this Part.

(f) *Standard Cover Fabric*. (1) The standard cover fabric represents a moderately flammable upholstery cover fabric. Use the standard cover fabric specified in Subpart E of this Part.

(2) The standard cover fabric size needed for each test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 in). From the standard cover fabric, cut triangular cut-outs centered 575 mm (22.5 in) from the top edge on both sides. The size of these cut-outs shall be approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 in) high. See Subpart E of this Part and Figure 12.

(g) *Standard Polyurethane Foam Substrate*. (1) Interior fire-barrier materials are tested with a standard polyurethane

foam (SPUF) substrate. Use the SPUF substrate specified in Subpart E of this Part.

(2) Two panels of the SPUF substrate shall be used. The vertical (back) block shall be 457 x 305 ± 5 mm (18.0 x 12.0 ± 0.2 in) x 76 ± 2 mm (3.0 ± 0.2 in) thick. The horizontal (seat) block shall be 457 x 83 ± 5 mm (18.0 x 3.25 ± 0.2 in) x 76± 2 mm (3.0 ± 0.2 in) thick.

(h) *Metal Test Frame*. The metal test frame shall consist of two rectangular metal frames locked at right angles to each other. A rod shall be continuous across the back of the metal test frame. See Subpart E of this Part and Figure 13.

(i) Test Facility and Hazards - The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(j) *Conditioning*. All test specimens and standard test materials shall be conditioned in accordance with Subpart E of this Part.

(k) *Test Specimens*. (1) The interior fire-barrier specimen needed for each test is 1020 x 700 ± 10 mm (40 x 27.5 ± 0.4 in). From the interior fire-barrier specimen, cut triangular cut-outs centered 575 mm (22.5 in) from the top edge on both sides. The size of these cut-outs shall be

approximately 55 x 135 ± 5 mm (2.1 x 5.25 ± 0.2 in) high. See Subpart E of this Part and Figure 12.

(2) If the interior fire-barrier material is directional, the specimen shall be cut with the long dimension (1020 mm, 40 in) being in the warp direction and the top edge is defined as appropriate.

(l) Mockup Assembly. (1) Position the seat frame in the upright position.

(2) Lay the interior fire-barrier specimen flat and face up on the table. Lay the standard cover fabric on top, face up.

(3) Fold the two sides of the top (larger) section of fabric and fire-barrier specimen (from the cutout upwards) over the face of the standard cover fabric.

(4) Thread the folded standard cover fabric and fire-barrier specimen under the horizontal rod and pull them out from the back of the metal test frame until the cutouts are lined up with the horizontal rod.

(5) Thread the folded standard cover fabric and fire-barrier specimen back over the rod and pull them out from the front of the frame.

(6) Line up and pull both the top and bottom sections of the standard cover fabric and fire-barrier specimen so that the

cutouts are lined up with the metal rod on both sides and the standard cover fabric and fire-barrier specimen are laying flat and free of folds and wrinkles.

(7) Place the larger SPUF block flush against the back metal frame and resting on the fire-barrier specimen.

(8) Lift the larger portion of both the fire-barrier specimen and standard cover fabric over the SPUF back block and secure them to the top of the back section of the metal frame using metal clips.

(9) Starting at the lowest part of the vertical section on one side, clip both the fire-barrier specimen and standard cover fabric to the frame. At the top corner, make a diagonal fold of the fire-barrier specimen separate from the standard cover fabric. Make a similar fold with the standard cover fabric and secure all the folded layers (both fire-barrier and standard cover fabric) to the frame with metal clips to the side of the test frame. Repeat for the other side.

(10) When the back section is completed, place the frame down so that the back of the frame is on the table.

(11) Lift up the smaller portion of the standard cover fabric and fire-barrier specimen and lay them flat on the back panel.

(12) Place the smaller SPUF block with the 83 mm (3.25 in) side flush against the seat section of the metal frame and press against the back panel.

(13) Pull the smaller section of the fire-barrier specimen and standard cover fabric over the SPUF seat block and secure them to bottom front edge of the metal frame using metal clips.

(14) Re-position the assembly in the upright position.

(15) On one side, fold the unsecured front edge of the fire-barrier specimen back against the SPUF block. Then, make a diagonal fold with the unsecured top edge of fire-barrier specimen down on top of it. Repeat with the unsecured edges of standard cover fabric and clip to the bottom of the metal test frame. Repeat on the other side.

(16) Ensure that the standard cover fabric and fire-barrier specimens are smooth and under uniform tension at all locations to eliminate air gaps between the standard cover fabric, fire-barrier specimen, and the SPUF blocks. Do not allow a gap exceeding 3 mm (0.125 inch) along the seat/back crevice. See Figure 22.

(m) *Test Procedure*. Have a means for extinguishing the specimen close at hand. A hand-held carbon dioxide extinguisher is adequate for most specimens; however, a water spray system

should be available as a back-up, in case the carbon dioxide fails to completely extinguish the fire.

(1) Pretest. (i) Tare the scale with the empty metal test frame and clips or, if the scale does not have tare capability, record the mass of metal test frame and clips.

(ii) Assemble the mockup as described in Section (l) Mockup Assembly.

(iii) Record the initial mass of the assembly directly (if tared) or by subtraction (if not tared).

(iv) Calculate and record the mass corresponding to 80% of initial mass of the mockup assembly.

(2) Lighting the igniter flame.

(i) Open the butane tank slowly and light the end of the burner tube. Adjust the gas flow to the appropriate rate to achieve a 240 mm flame. See Subpart E of this Part.

(ii) Allow the flame to stabilize for at least 2 minutes.

(3) Starting and performing the test.

(i) Place the lit burner tube in the crevice of the mockup so that the end of the igniter is at the center of the mockup equidistant from either edge.

(ii) Apply the flame for 70 ± 1 seconds, then immediately remove ignition source from the mockup. Observe the mockup combustion behavior for 45 minutes.

(iii) If the mockup does not ignite and is re-useable, apply a second ignition equidistant between the center of the crevice and the left edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(iv) If the mockup does not ignite and is re-useable, apply a third ignition equidistant between the center of the crevice and the right edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(v) Conduct a maximum of three ignition runs on a single mockup assembly. If three ignition runs cannot be obtained with one mockup, a second or third mockup assembly may be required. A failure during any of the three ignition runs constitutes a failure of the test sample.

(vi) Terminate a test run if any of the following conditions occurs:

(A) The mockup self-extinguishes.

(B) The 45 minute test duration has elapsed.

(C) The mass of the mockup reaches less than 80% of the initial mass before 45 minutes have elapsed.

(n) *Pass/Fail Criterion*. – The interior fire barrier must pass a minimum of three successive ignition applications. The criterion for a sample to pass is that the mass loss of the mockup exceeds no more than 20% of its total initial mass during the 45-minute test duration.

(o) *Test Report*. The test report shall include, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the mockup including:

(i) Initial mass

(ii) Mass corresponding to 80% of initial mass

(iii) Time to reach the mass equal to 80% of the initial mass

(iv) The percent mass loss of the mockup at 45 minutes.

(6) Statement of overall pass/fail results

§ 1634.17 End product material open flame ignition resistance test.

(a) *Scope.* This test method is intended to measure the open flame ignition resistance of actual combinations of

materials intended for use in the construction of the finished furniture item. This test applies to the cover fabric, interliner/fire barrier (if present), and any filling materials in the end product to be qualified as Type IV furniture.

(b) *Summary of Test Method.* The cover fabric, interliner/fire barrier (if present), and any filling materials in the finished product are assembled on a metal test frame. A small open flame is applied to the crevice formed by the intersection of the seat/back surfaces of the mockup. Test measurements and observations are recorded during the 45-minute test duration. The mockup assembly must not exceed the mass loss limit. Three tests are performed in succession.

(c) *Significance and Use.* This test method is designed to measure the response of combined assemblies of cover fabric, interliner/fire barrier (if present), and any filling material intended for use in the finished product to a small open flame ignition source, representing that of a match, candle or cigarette lighter.

(d) *Test Apparatus and Materials.* The test apparatus and materials are detailed in Subpart E of this Part.

(e) *Ignition Source*. The ignition source is the nominal 35 mm butane gas flame described in Subpart E of this Part.

(f) *Metal Test Frame*. The metal test frame shall consist of two rectangular metal frames locked at right angles to each other. A rod shall be continuous across the back of the metal test frame. See Subpart E of this Part and Figure 13.

(g) *Test Facility and Hazards*. The test facility, exhaust system and hazards are detailed in Subpart D of this Part.

(h) *Conditioning*. All test specimens and standard test materials shall be conditioned in accordance with Subpart E of this Part.

(i) *Test Specimens*. From the cover fabric, interliner/fire barrier (if present), and any filling materials intended to be used in the end product, prepare test specimens in accordance with the application *Test Specimens* in Sections 1634.11 to 1634.16.

(1) For cover fabrics, prepare test specimens in accordance with Section 1634.15(j)

(2) For interliner/fire barriers (if present) prepare test specimens in accordance with Section 1634.16(k)

(3) For fibrous filling materials, prepare test specimens in accordance with Section 1634.11(k)

(4) For loose filling materials, prepare test specimens in accordance with Section 1634.12(k).

(5) For loose filling interliner fabrics, prepare test specimens in accordance with Section 1634.13(l).

(6) For resilient filling materials, prepare test specimens in accordance with Section 1634.14(l).

(j) *Mockup Assembly.* (1) Assemble test specimens in the metal test frame using §§ 1634.11 to 1634.16 as guidance to prepare mockups using the combinations of materials used in the finished furniture item. The materials shall be assembled in the mockup in the order they appear and consist of materials used in the first 76 mm (3.0 in) depth of the finished furniture item including the cover fabric.

(2) If the finished article contains different combinations of materials in different locations in the seating area, each combination must be tested. For example, if the horizontal (seat) cushion contained resilient filling material and the vertical (back) cushion contains loose filling material, the mockup shall be assembled so that the seat panel contains the resilient filling specimen and the back panel contains the loose filling specimen in the metal test frame with prescribed loose fill inserts.

(k) *Test Procedure.* Have a means for extinguishing the specimen close at hand. A hand-held carbon dioxide extinguisher

is adequate for most specimens; however, a water spray system should be available as a back-up, in case the carbon dioxide fails to completely extinguish the fire.

(1) Pretest. (i) Tare the scale with the empty metal test frame and clips or, if the scale does not have tare capability, record the mass of metal test frame and clips.

(ii) Assemble the mockup as described in Section (j) Mockup Assembly.

(iii) Record the initial mass of the assembly directly (if tared) or by subtraction (if not tared).

(iv) Calculate and record the mass corresponding to 80% of initial mass of the mockup assembly.

(2) Lighting the igniter flame.

(i) Open the butane tank slowly and light the end of the burner tube. Adjust the gas flow to the appropriate rate. See Subpart E of this Part.

(ii) Allow the flame to stabilize for at least 2 minutes.

(3) Starting and performing the test.

(i) Place the lit burner tube in the crevice of the mockup so that the end of the igniter is at the center of the mockup equidistant from either edge.

(ii) Apply the flame for 20 ± 1 seconds, then immediately remove ignition source from the mockup. Observe the mockup combustion behavior for 45 minutes.

(iii) If the mockup does not ignite and is re-useable, apply a second ignition equidistant between the center of the crevice and the left edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(iv) If the mockup does not ignite and is re-useable, apply a third ignition equidistant between the center of the crevice and the right edge of the specimen. Observe the mockup combustion behavior for 45 minutes.

(v) Conduct a maximum of three ignition runs on a single mockup assembly. If three ignition runs cannot be obtained with one mockup, a second or third mockup assembly may be required. A failure during any of the three ignition runs constitutes a failure of the test sample.

(vi) Terminate a test run if any of the following conditions occurs:

(A) The mockup self-extinguishes.

(B) The 45 minute test duration has elapsed.

(C) The mass of the mockup reaches less than 80% of the initial mass during the test duration.

(m) Pass/Fail Criterion. – The end product must pass a minimum of three successive ignition applications. The criterion for a sample to pass is that the mass loss of the mockup exceeds no more than 20% of its total initial mass during the 45-minute test duration.

(n) Test Report. The test report shall include, at a minimum, the following information:

(1) Name and address of the test laboratory.

(2) Date of the test(s).

(3) Name of operator conducting the test.

(4) Complete description of the test specimens.

(5) Mass data for the mockup including:

(i) Initial mass

(ii) Mass corresponding to 80% of initial mass

(iii) Time to reach the mass equal to 80% of the initial mass

(iv) The percent mass loss of the mockup at 45 minutes.

(6) Statement of overall pass/fail results

§ 1634.18 Glossary of Terms.

(a) Chaise lounge. An upholstered couch chair or couch with a chair back intended for outdoor use.

(b) Futon. A flexible mattress generally used on the floor that can be folded or rolled up for storage. It usually consists of resilient material covered by ticking.

(c) Pillow. Cloth bag filled with resilient material such as feathers, down, sponge rubber, urethane, or fiber used as the support for the head of a person.

(d) Sleep sofa. An upholstered sofa that converts into an adult sized bed. Mattress unfolds out and up from under the seat cushioning.

(e) Flip or sleeper chair. Chair that unfolds to be used for sleeping, typically has several connecting fabric covered, solid foam core segments.

Subpart B – Requirements Applicable to Upholstered Furniture Manufacturers, Labeling, Guaranties

§ 1634.22 Requirements Applicable to Upholstered Furniture Manufacturers.

(a) General. The manufacturer (Note: an importer is considered the manufacturer for purposes of this Part) of upholstered furniture subject to this Part shall ensure that each article of upholstered furniture it produces for sale complies with all applicable requirements of this Part.

(b) Label. Each article of upholstered furniture subject to this Part that the manufacturer produces shall bear a label conforming to the requirements of § 1634.24.

(c) Certification. The certification statement specified on the label required by paragraph (b) of this section constitutes the manufacturer's certification that the article of upholstered furniture to which it is affixed complies with all applicable requirements of this Part.

(d) Basis for certification. The manufacturer shall have an objectively reasonable basis for the certification required by paragraph (c) of this section. Examples of an objectively reasonable basis for certification are:

(1) possession of guaranties meeting the requirements of § 1634.26 for each upholstered furniture material required for the Type of furniture specified on the label required by § 1634.24 and an objectively reasonable basis for maintaining that the manufacturer has not, by further processing, negatively affected the fire resistance properties of any such upholstered furniture material; or

(2) records of reasonable and representative tests demonstrating compliance with all applicable requirements of this Part for each upholstered furniture material required for

the Type of furniture specified on the label required by § 1634.24.

(e) Certification family records. For each certification family, the manufacturer shall maintain records sufficient to:

(1) identify all articles of upholstered furniture comprising the certification family;

(2) identify the supplier of each upholstered furniture material required by this Part used in the upholstered furniture comprising the certification family; and

(3) identify each retailer and other non-consumer customer to whom sales of upholstered furniture from the certification family have been made.

(f) Records maintenance and availability. Records required by this section shall be maintained by the manufacturer during production of the upholstered furniture and for a period of at least three (3) years after production of the certification family ceases. These records shall be made available to Commission staff upon request.

(g) Cessation of production. If the manufacturer becomes aware of any information that indicates that any article of upholstered furniture produced by that manufacturer fails to comply with this Part, the manufacturer shall cease production

and distribution of such upholstered furniture until corrective action has been taken to ensure that further production will conform to all applicable requirements of this Part.

(h) Notification to upholstered furniture material suppliers. An upholstered furniture manufacturer who becomes aware of information indicating that any upholstered furniture material used, or to be used, in upholstered furniture produced by it fails to meet any applicable requirement of this Part shall promptly inform the supplier of that material of the deficiency. (Upholstered furniture manufacturers are also reminded of the reporting requirements of § 15 of the Consumer Product Safety Act, 15 U.S.C. § 2064, and implementing regulations at 16 CFR Part 1115.)

§ 1634.24 Labeling.

(a) Each article of upholstered furniture subject to this Part shall bear a permanent, conspicuous, and legible label containing:

(1) name of the manufacturer (and importer, if any);

(2) location of the manufacturer (and importer, if any), including street address, city and state;

(3) month and year of manufacture;

(4) model identification;

(5) Type identification (i.e., "Type I," "Type II," "Type III", or “Type IV");

(6) For "Type III" upholstered furniture, the letter "B" following the type designation if the item of upholstered furniture is intended to comply with this Part through use of loose filling interliner fabric meeting the requirements of §§ 1634.7 and 1634.13 of this Part.

(7) The statement "The manufacturer hereby certifies that this article of upholstered furniture complies with all applicable requirements of 16 C.F.R. Part 1634"; and

(8) a statement that: "No person shall remove or mutilate, or cause or participate in the removal or mutilation of, this label."

(b) The information required by this section shall be set forth separately from any other information appearing on the label. Other information, representations, or disclosures, appearing on labels required by this section or elsewhere on the item, shall not interfere with, minimize, detract from, or conflict with, the required information.

(c) No person shall remove or mutilate, or cause or participate in the removal or mutilation of, any label required

by this section to be affixed to any article of upholstered furniture.

§ 1634.26 Requirements applicable to guaranties under section 8 of the FFA, 15 U.S.C § 1197.

(a) General. Either the manufacturer of a finished article of upholstered furniture subject to this Part or the manufacturer of any upholstered furniture material subject to this Part may issue a guaranty in accordance with this section. The guaranty shall specify the classification(s) (Type I, II, III, IV) of upholstered furniture for which the guaranty is intended to be valid.

(b) Tests to support guaranties. Section 8 of the Flammable Fabrics Act, 15 U.S.C. § 1197, requires that a guaranty there under ultimately be supported by reasonable and representative tests. Reasonable and representative tests for purposes of this Part shall be tests performed sufficiently to demonstrate that the tested item conforms with each applicable requirement of this Part.

Subpart C - Apparatus and Materials for Smoldering Ignition Resistance Tests

§ 1634.27 Test Room

(a) The test room shall have an appropriate fire protection suppression system. A suitable extinguishment system such as a water bottle fitted with a spray nozzle shall be provided to extinguish any ignited portions of the mockup assembly. Dry chemical extinguishing agents shall not be used to extinguish or suppress smoldering combustion since the chemicals add mass therefore increasing the post-test mass of the mockup remains. In addition, straight pins, staples, a razor, knife or scissors, a scale, and a brush and/or tongs may be needed to perform the tests.

(b) The test room shall have controlled environmental conditions during testing, including temperature maintained at $21^{o} \pm 6^{o}$ C ($70^{o} \pm 10^{o}$ F) and between 30% and 70% relative humidity.

§ 1634.28 Draft Enclosure

(a) To prevent extreme changes in surface ventilation rate, tests are performed inside a draft enclosure measuring 711 mm (28 inches) long, 711 mm (28 inches) deep and 457 mm (18 inches) high, without a bottom. The enclosure is designed such that up to three individual specimen holders may be positioned simultaneously. The enclosure construction material may be wood, transite, sheet metal, polymethylmethacrylate (PMMA) or other similar materials. It is desirable that the enclosure, if

opaque, contain an observation window so that tests may be visually monitored. See Figure 1.

§ 1634.29 Specimen Holder

(a) The specimen holder shall consist of two wooden panels, each nominal 203 x 203 mm (8.0 x 8.0 in) and nominal 19 mm (0.75 in) thickness, joined together at one edge. A moveable horizontal panel support is positioned on a centrally located guide. See Figures 2 and 3.

§ 1634.30 Loose Fill Test Panels

(a) For the loose fill smoldering ignition resistance tests in §§ 1634.6 and 1634.7 of this Part, vertical and horizontal test panels are used.

(1) The vertical panel consists of a 203 x 203 x 12 mm (8.0 x 8.0 x 0.5 in) plywood board with an attached wire rod frame that is 203 x 203 x 76 mm (8.0 x 8.0 x 3.0 in). See Figure 4.

(2) The horizontal panel consists of a 203 x 127 x 12 mm (8.0 x 5.0 x 0.5 in) plywood board with an attached wire rod frame that is 203 x 127 x 76 mm (8.0 x 5.0 x 3.0 in). See Figure 5.

§ 1634.31 Ignition Source

(a) The ignition source for all tests shall be cigarettes without filter tips made from natural tobacco, 85 ± 2 mm (3.3 ±

0.1 in) long and with a packing density of 0.27 ± 0.02g/cm^3 (0.16 ± 0.01 oz/in^3) and a total weight of 1.1 ± 0.1 g (0.039 ± 0.004 oz).

§ 1634.32 Sheeting Material

(a) The sheeting material, where specified for smoldering tests, shall be white, 100% cotton sheets or sheeting material, not treated with a chemical finish which imparts a characteristic such as permanent press or flame resistance, 19 - 33 threads per square centimeter (120–210 threads per square inch), fabric weight – 125 ± 28 g/m^2 (3.7 ± 0.8 oz/yd^2). The sheeting shall be laundered once before use in a residential home washer using the hot water setting and longest normal cycle with the washer manufacturer’s recommended quantity of a commercial detergent and dried in an automatic residential tumble dryer. Cut the sheet or sheeting material to 127 x 127 mm (5.0 x 5.0 inches) to be used for the tests.

(b) This material can be obtained from several commercial sources.

§ 1634.33 Standard Cover Fabric

The standard cover fabric is designed to simulate a smolder-prone fabric and shall have the following specifications:

(a) The smoldering performance of the standard cover fabric is specified as follows:

(1) Fabric Smoldering Test on SPUF - The fabric shall be tested in accordance with the test procedures specified in §1634.8 using SPUF as the substrate. The allowable range of mass loss of the SPUF substrate for all test specimens tested shall be between 3 and 12 percent mass loss except that one specimen may have a mass loss greater than 12 percent. Using fabric from the roll or production lot to be qualified, the SPUF substrate shall have an average mass loss of between 6 and 10 percent for 6 fabric test specimens that are tested consecutively.

(2) Fabric Smoldering Test on SFRPUF - The fabric shall be tested in accordance with the test procedures specified in §1634.8 using SFRPUF as the substrate. The allowable range of mass loss for all foam specimens tested shall be between 4 and 18 percent mass loss except that one specimen may have a mass loss greater than 18 percent. Using fabric from the roll or production lot to be qualified, the SFRPUF substrate shall have an average mass loss of between 9 and 13 percent for 6 fabric test specimens that are tested consecutively.

(b) The open flame performance of the standard cover fabric, when tested in accordance with the test procedures specified in §1634.14, using the substrate materials listed below, shall have an assembly mass loss that falls within the bounds of the performance bands as listed below for the particular substrate material for the number of trials listed:

(1) Test on SPUF - Performance Band

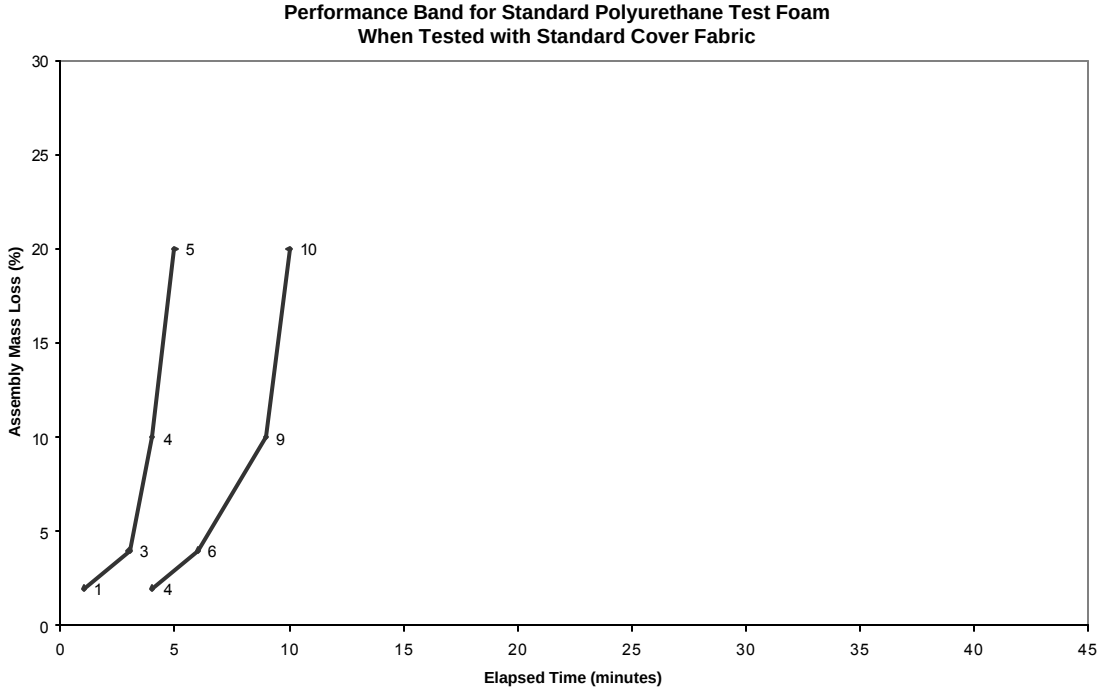
(i) Two(2) percent weight loss between 1 and 4 minutes.

(ii) Four(4) percent weight loss between 3 and 6 minutes.

(iii) Ten(10) percent weight loss between 4 and 9 minutes.

(iv) Twenty(20) percent weight loss between 5 and 10 minutes.

See Graph 1 for a graphical depiction of this performance band. Five (5) of 6 consecutive trials, using fabric from the roll or production lot to be qualified, must fall within the performance band with one outlier allowed.



Graph 1. Performance band for SPUF when tested with standard cover fabric.

(2) Test on SFRPUF - Performance Band

(i) At 5 minutes, 4 to 7 percent weight loss.

(ii) At 10 minutes, 10 to 15 percent weight loss.

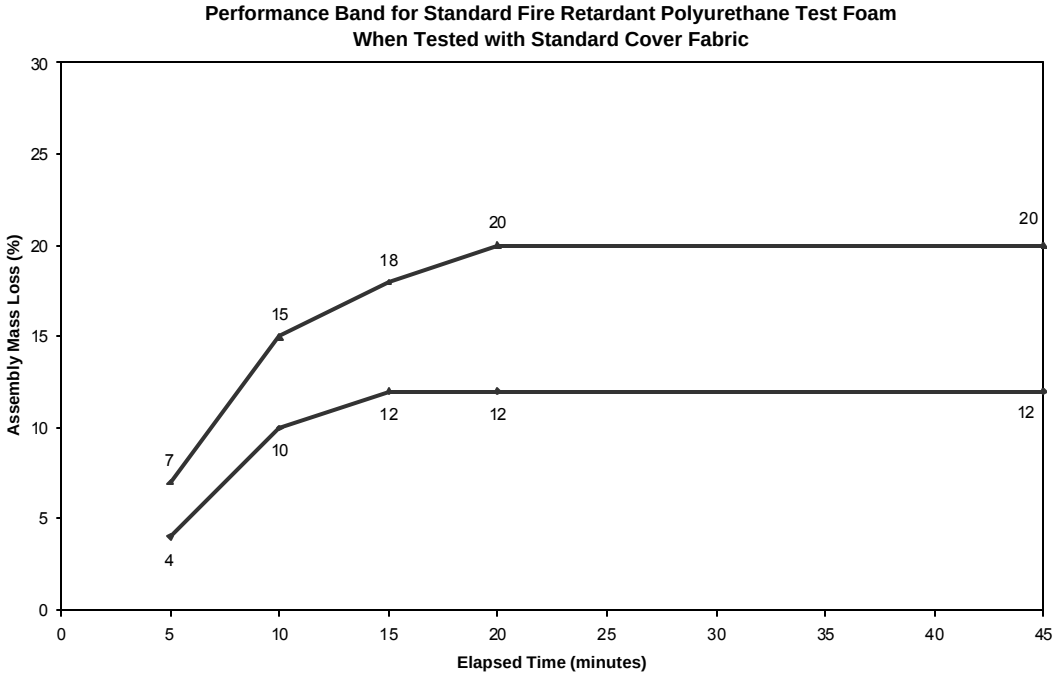
(iii) At 15 minutes, 12 to 18 percent weight loss.

(iv) At 20 minutes, 12 to 20 percent weight loss.

(v) At 45 minutes, 12 to 20 percent weight loss.

See Graph 2 for a graphical depiction of this performance band. Five (5) of the 6 consecutive trials, using fabric from the roll or production lot to be qualified, must fall within the performance band with one

outlier allowed above the higher weight loss values of the performance band.



Graph 2. Performance band for SFRPUF when tested with standard cover fabric.

NOTE: CPSC staff has found that a nominal 10 oz./yd^2 100% cotton, velvet pile fabric of beige color, with no backcoating and treated with certain finishing chemicals involving a resin catalyst that contains small amounts of melamine, generally demonstrates the desired flammability performance characteristics specified.

§ 1634.34 Standard Flame-Retardant Polyurethane Foam (SFRPUF) Substrate

(a) The SFRPUF substrate is used in smoldering and some open flame ignition tests. Although foams are generally smolder-resistant, formulation of flame-retardant foams can result in decreased smolder resistance for certain weight percent ranges of FR foam. The

physical and performance properties of the flame-retardant foam specified in this section provide for a suitable substrate to evaluate the sample of upholstered furniture material being tested with respect to smoldering and open flame ignition.

(b) The open flame performance of the SFRPUF substrate is specified as follows:

(1) SFRPUF 20 Second Small Open Flame Exposure Test - The SFRPUF foam shall be tested in accordance with the test procedures specified in §1634.14, but without the use of the standard cover fabric and using a 20-second impingement of the 35 mm butane flame specified in §1634.40. In each of 3 consecutive trials, using SFRPUF from the production lot to be qualified, the SFRPUF substrate shall not sustain flaming ignition and have a mass loss of 1.0 percent or less, 120 seconds after removal of the ignition source.

(2) SFRPUF 30 Second Small Open flame Exposure Test - The SFRPUF foam shall be tested in accordance with the test procedures specified in §1634.14, but without the use of the standard cover fabric and using a 30-second impingement of the 35 mm butane flame specified in §1634.40. In each of 3 consecutive trails, using SFRPUF from the production lot to be qualified, the SFRPUF substrate shall ignite and have a mass loss of greater than 5 percent, 120 seconds after removal of the ignition source.

(3) The open flame performance of the SFRPUF, when tested in accordance with the test procedures specified in §1634.14, shall have an assembly mass loss that falls within the bounds of the following performance band:

(i) At 5 minutes, 4 to 7 percent weight loss.

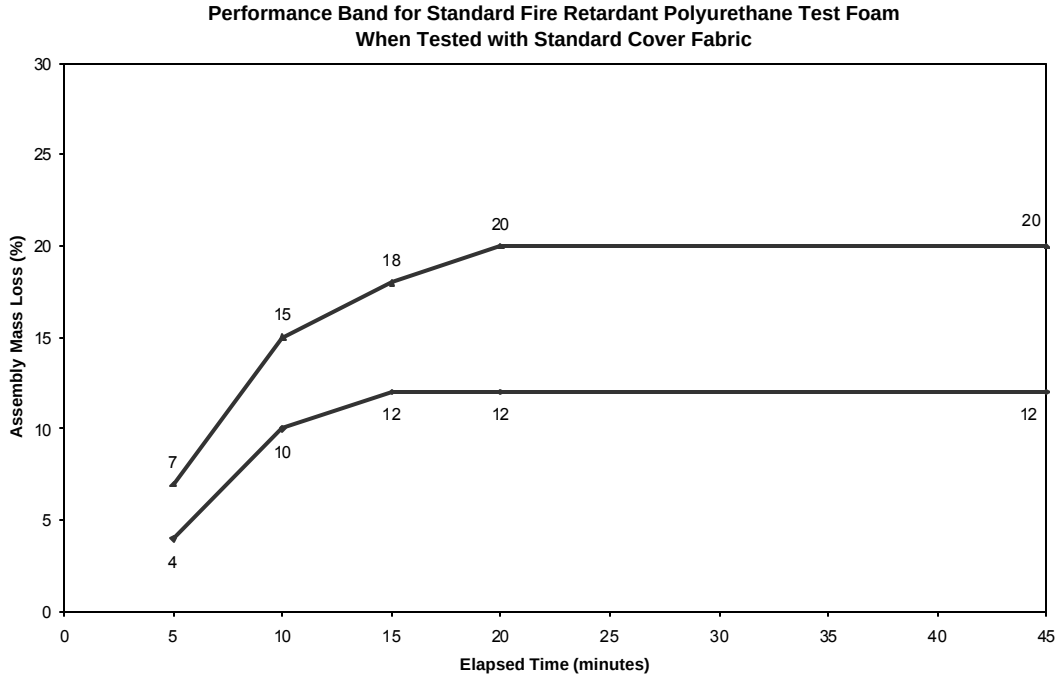
(ii)At 10 minutes, 10 to 15 percent weight loss.

(iii) At 15 minutes, 12 to 18 percent weight loss.

(iv) At 20 minutes, 12 to 20 percent weight loss.

(v) At 45 minutes, 12 to 20 percent weight loss.

See Graph 2 for a graphical depiction of this performance band. Five (5) of the 6 consecutive trials, using SFRPUF from the production lot to be qualified, must fall within the performance band with one outlier allowed above the higher weight loss values of the performance band.



Graph 2. Performance band for SFRPUF when tested with standard cover fabric.

(c) The physical specifications of the SFRPUF substrate shall be as follows:

(1) Density: 1.4 ± 0.1 lb/ft^3

(2) Indentation Load Deflection (ILD): 25 to 30

(3) Air Permeability: Greater than 4.0 ft^3/min

(d) The smoldering performance specifications of the SFRPUF substrate shall be as follows:

(1) The SFRPUF shall be tested in accordance with the test procedures specified in §1634.8 using the standard cover fabric. The allowable range of mass loss for all foam specimens tested shall be between 4 and 18 percent mass loss except that one specimen may have

a mass loss greater than 18 percent. Using SFRPUF from the production lot to be qualified, the SFRPUF substrate shall have an average mass loss of between 9 and 13 percent for 6 consecutive samples.

(2) When tested in accordance with §1634.8 without the standard cover fabric and without the cover sheeting, and the cigarette placed directly on the foam, the allowable SFRPUF substrate weight loss for each of 3 consecutive trials, using SFRPUF from the production lot to be qualified, shall be less than 1 percent.

§ 1634.35 Standard Polyester Fiber Fill

(a) The Standard Polyester Fiber Fill is used in smoldering and open flame tests in the assembly of the mockup for evaluation of loose filling interliner fabrics.

(b) The Standard Polyester Fiber Fill shall be 100% white polyester fiber fill with no flame retardant chemicals.

§ 1634.36 Conditioning.

(a) All test specimens and standard test materials (including SFRPUF substrates, cigarettes, and sheeting material) shall be conditioned at a temperature of $21^{o} \pm 3^{o}$ C ($70^{o} \pm 4^{o}$ F) and between 50% and 66% relative humidity for at least 24 hours prior to testing.

(b) If conditions in the test room do not meet these specifications, then testing must be initiated within 10 minutes after the specimens are removed from the conditioning room.

Subpart D - Test facility, exhaust system, and hazards

§ 1634.37 Test Facility and Exhaust System

(a) The room size needed to conduct tests is one with a volume greater than 20 m^3 in order to contain sufficient oxygen for testing. If tests are conducted in a smaller area, the room must have a ventilation system permitting the necessary flow of air. During the pretest and testing period, airflow rates are maintained below 0.1 m/s, measured in the locality of the mockup assembly to provide adequate air movement without disturbing the burning behavior. Room ventilation rates before and during tests are maintained at about 200 ft^3/min foot per minute. Airflow rates in this range have been shown to provide adequate oxygen without physically disturbing the burning behavior of the ignition source or the mockup assembly. In addition, the ventilation system of the test facility must be capable of extracting smoke and toxic combustion products generated during testing for health and safety reasons.

§ 1634.38 Hazards

(a) Health and safety risks associated with conducting the required testing in accordance with this Part 1634 exist. It is essential that suitable precautions be taken, which include the use of breathing apparatus and protective clothing. Products of combustion can be irritating and dangerous to test personnel. Test personnel must avoid exposure to smoke and gases produced during testing.

(b) A suitable means of fire extinguishment shall be at hand. When the termination point of the test has been reached and the fire is extinguished, the presence of a back-up fire extinguisher is recommended. It is often difficult to determine when combustion in a mockup assembly has ceased, even after an extinguishment action is taken, due to burning deep inside the specimens. Care should be taken that specimens are disposed of only when completely inert.

Subpart E - Test facility and materials for open flame ignition resistance tests

§ 1634.39 Test Room

The test room shall be draft protected and equipped with a suitable ventilation system for exhausting smoke and any toxic gases generated during testing.

§ 1634.40 Butane Gas Flame Ignition Sources

(a) The butane gas flame ignition source shall be in accordance to the following specifications or equivalent:

(1) The burner tube shall consist of a stainless steel tube, 8.0 ± 0.1 mm (5/16 ± 0.004 inch) outside diameter, 6.5 ± 0.1 mm (0.256 ± 0.004 inch) internal diameter.

(2) "C.P. Grade" (chemically pure) butane, 99.0% purity.

(b) A means to control the flowrate of butance.

(c) In the open flame tests of section 1634.11 through 1634.15 and section 1634.17, a nominal 35 mm butane is required. The nominal 35 mm butane flame is obtained by establishing a flow rate of butane gas that is 45 ± 2 ml/min at 25^{o}C (77^{o}F) and 101.3 kPa (14.7 psi). Flame height is measured from the center end of the burner tube when held horizontally and the flame is allowed to burn freely in air.

§ 1634.41 Metal test frame

(a) The metal test frame shall consist of two rectangular steel frames locked at right angles to each other (See Figure 13).

(b) The frames shall be made of nominal 25 mm x 25 mm (1 x 1 inch) steel angle 3 mm (0.125 inch) thick, and shall securely hold platforms of steel mesh set 6 ± 1 mm (0.25 ± 0.05 inch) below the front face of each test frame.

(c) An optional standard edging section around the steel mesh will provide protection and greater rigidity. The rod shall be continuous across the back of the apparatus.

(d) or equivalent.

§ 1634.42 Standard Cover Fabric

The standard cover fabric shall have the following specifications:

(a) Weight/linear yard: 14.5 oz (411 g) (54-in bolt) (nominally 10.0 oz/yd)

(b)Flammability performance properties:

(1) The smoldering performance of the standard cover fabric is specified as follows:

(i) Fabric Smoldering Test on SPUF - The fabric shall be tested in accordance with the test procedures specified in §1634.8 using SPUF as the substrate. The allowable range of mass

loss of the SPUF substrate for all test specimens tested shall be between 3 and 12 percent mass loss except that one specimen may have a mass loss greater than 12 percent. Using fabric from the roll or production lot to be qualified, the SPUF substrate shall have an average mass loss of between 6 and 10 percent for 6 fabric test specimens, that are tested consecutively.

(ii) Fabric Smoldering Test on SFRPUF - The fabric shall be tested in accordance with the test procedures specified in §1634.8 using SFRPUF as the substrate. The allowable range of mass loss for all foam specimens tested shall be between 4 and 18 percent mass loss except that one specimen may have a mass loss greater than 18 percent. Using fabric from the roll or production lot to be qualified, the SFRPUF substrate shall have an average mass loss of between 9 and 13 percent for 6 fabric test specimens, that are tested consecutively.

(2) The open flame performance of the standard cover fabric, when tested in accordance with the test procedures specified in §1634.14, using the substrate materials listed below, shall have an assembly mass loss that falls within the bounds of the performance bands as listed below for the particular substrate material for the number of trials listed:

(i) Test on SPUF - Performance Band

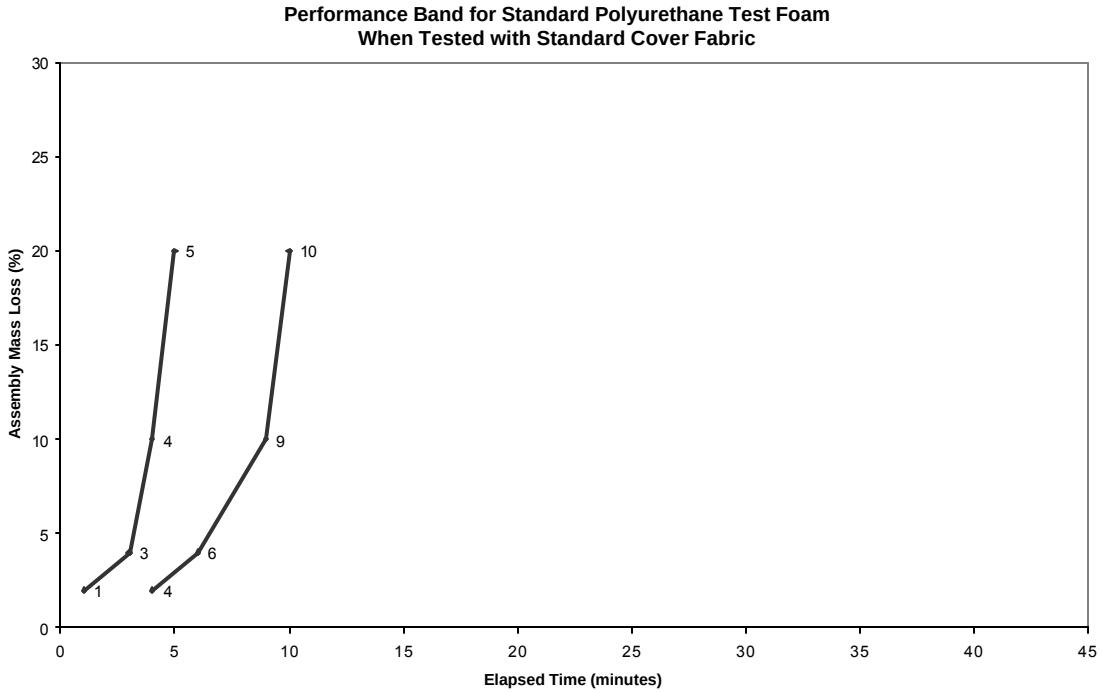
(1) Two(2) percent weight loss between 1 and 4 minutes.

(2) Four(4) percent weight loss between 3 and 6 minutes.

(3) Ten(10) percent weight loss between 4 and 9 minutes.

(4) Twenty (20) percent weight loss between 5 and 10 minutes.

See Graph 1 for a graphical depiction of this performance band. Five (5) of the 6 consecutive trials, using fabric from the roll or production lot to be qualified, must fall within the performance band with one outlier allowed.

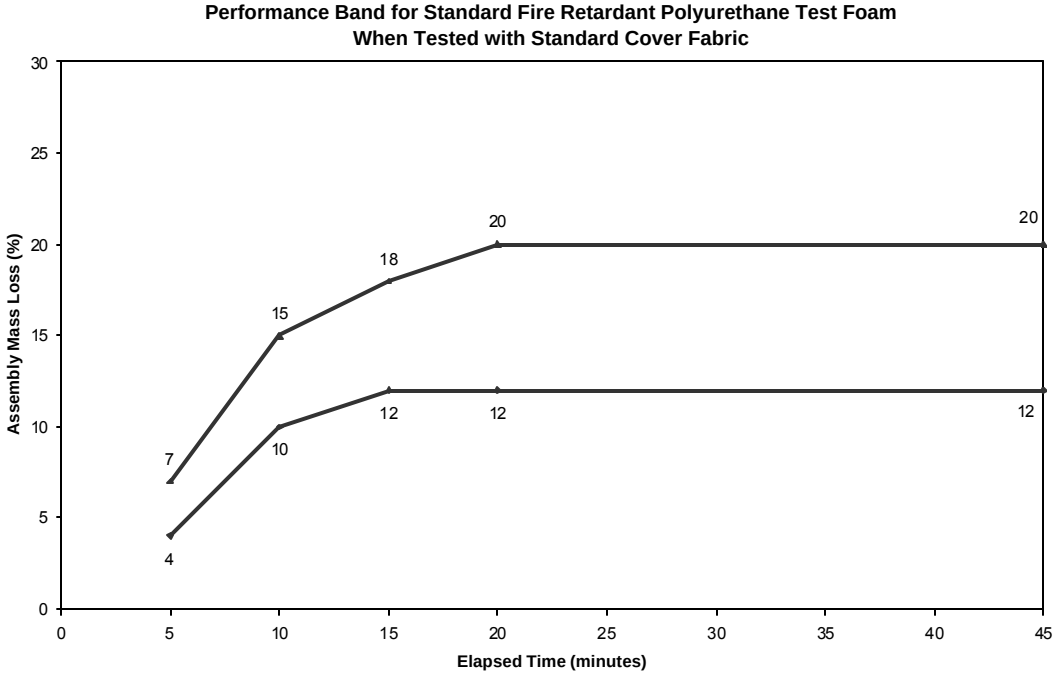


Graph 1. Performance band for SPUF when tested with standard cover fabric.

(ii) Test on SFRPUF - Performance Band
(1) At 5 minutes, 4 to 7 percent weight loss.
(2) At 10 minutes, 10 to 15 percent weight loss.
(3) At 15 minutes, 12 to 18 percent weight loss.

(4) At 20 minutes, 12 to 20 percent weight loss.
(5) At 45 minutes, 12 to 20 percent weight loss.

See Graph 2 for a graphical depiction of this performance band. Five(5) of the 6 consecutive trials, using fabric from the roll or production lot to be qualified, must fall within the performance band with one outlier allowed above the higher weight loss values of the performance band.



Graph 2. Performance band for SFRPUF when tested with standard cover fabric.

NOTE: CPSC staff has found that a 100% cotton, velvet pile fabric of beige color, with no backcoating and treated with certain finishing chemicals involving a resin catalyst that contains small amounts of melamine, generally demonstrates the desired flammability performance characteristics specified.

§ 1634.44 Open Flame Tests Fabric Cut-out Dimensions

The fabric cut-out dimensions needed for installing in the mockup assembly to conduct open flame tests are shown in Figure 12.

§ 1634.45 Standard Polyurethane Foam Substrate

(a) The Standard Polyurethane Foam (SPUF) substrate is used in open flame tests in Sections 1634.15 (Type II furniture) and 1634.16 (Type I furniture) for assembly of the mockup for evaluation of fire barriers and to qualify standard cover fabric in 1634.33

(b) Flammability Performance:

(1) The open flame performance of the SPUF substrate is specified as follows:

(i) The SPUF foam shall be tested in accordance with the test procedures specified in §1634.14, but without the use of the standard cover fabric and using a 5-second impingement of the 35 mm butane flame. In 3 consecutive trials, using SPUF from the production lot to be qualified, the SPUF substrate shall have a mass loss that is greater than 20 percent in less than 120 seconds after removal of the ignition source.

(ii) The open flame performance of the SPUF, when tested in accordance with the test procedures specified in §1634.14, using the standard cover fabric, shall have an assembly mass loss that falls within the bounds of the performance band as listed below:

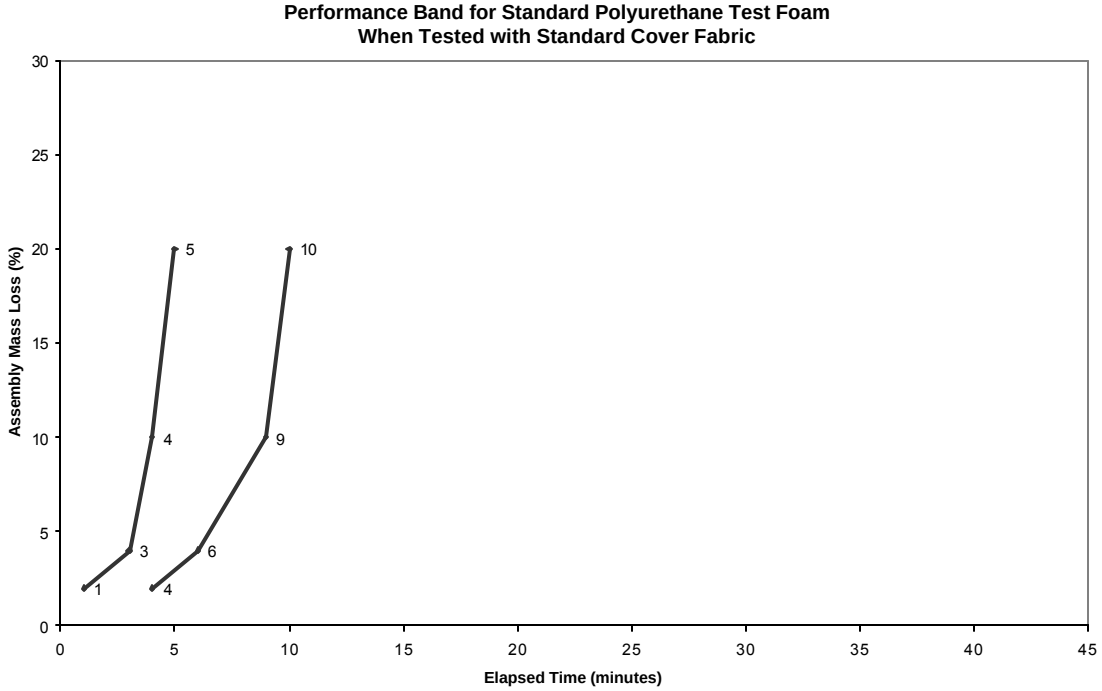
(i) Two(2) percent weight loss between 1 and 4 minutes.

(ii) Four(4) percent weight loss between 3 and 6 minutes.

(iii) Ten(10) percent weight loss between 4 and 9 minutes.

(iv) Twenty(20) percent weight loss between 5 and 10 minutes.

See Graph 1 for a graphical depiction of this performance band. Five (5) of 6 consecutive trials, using SPUF from the production lot to be qualified, must fall within the performance band with one outlier allowed.



Graph 1. Performance band for SPUF when tested with standard cover fabric.

(2) The smoldering performance specifications of the SPUF substrate shall be as follows:

(i) The SPUF shall be tested in accordance with the test procedures specified in §1634.8 using the standard cover fabric. The allowable range of mass loss of the SPUF substrate for all test specimens tested shall be between 3 and 12 percent mass loss except that one specimen may have a mass loss greater than 12 percent. Using SPUF from the production lot to be qualified, the SPUF substrate shall have an average mass loss of between 6 and 10 percent for 6 samples that are tested consecutively.

(ii) When tested in accordance with §1634.8 without the standard cover fabric and without the sheeting material, and the cigarette placed directly on the foam, the allowable SPUF substrate weight loss for each of 3 consecutive trials, using SPUF from the production lot to be qualified, shall be less than 1 percent.

(c) The SPUF substrate shall have the following specifications:

(1) Density: 1.8 ± 0.1 lb/ft^3

(2) Indentation Load Deflection (ILD) (25%): 25 to 30

(3) Air Permeability: Greater than 4.0ft^3/min

(4) No flame-retardant chemical treatment as determined by post production chemical analyses.

§ 1634.46 Standard Flame-Retardant Polyurethane Foam (SFRPUF) Substrate

(a) The SFRPUF substrate is used in smoldering and some open flame ignition tests. Although foams are generally smolder-resistant, formulation of flame-retardant foams can result in decreased smolder resistance for certain weight percent ranges of FR foam. The physical and performance properties of the flame-retardant foam specified in this section provide for a suitable substrate to

evaluate the sample of upholstered furniture material being tested with respect to smoldering and open flame ignition.

(b) The open flame performance of the SFRPUF substrate is specified as follows:

(1) SFRPUF 20 Second Small Open Flame Exposure Test - The SFRPUF foam shall be tested in accordance with the test procedures specified in §1634.14, but without the use of the standard cover fabric and using a 20-second impingement of the 35 mm butane flame specified in §1634.40. In each of 3 consecutive trials, using SFRPUF from the production lot to be qualified, the SFRPUF substrate shall not sustain flaming ignition and have a mass loss of 1.0 percent or less, 120 seconds after removal of the ignition source.

(2) SFRPUF 30 Second Small Open flame Exposure Test - The SFRPUF foam shall be tested in accordance with the test procedures specified in §1634.14, but without the use of the standard cover fabric and using a 30-second impingement of the 35 mm butane flame specified in §1634.40. In each of 3 consecutive trails, using SFRPUF from the production lot to be qualified, the SFRPUF substrate shall ignite and have a mass loss of greater than 5 percent, 120 seconds after removal of the ignition source.

(3) The open flame performance of the SFRPUF, when tested in accordance with the test procedures specified in §1634.14, shall

have an assembly mass loss that falls within the bounds of the following performance band:

(i) At 5 minutes, 4 to 7 percent weight loss.

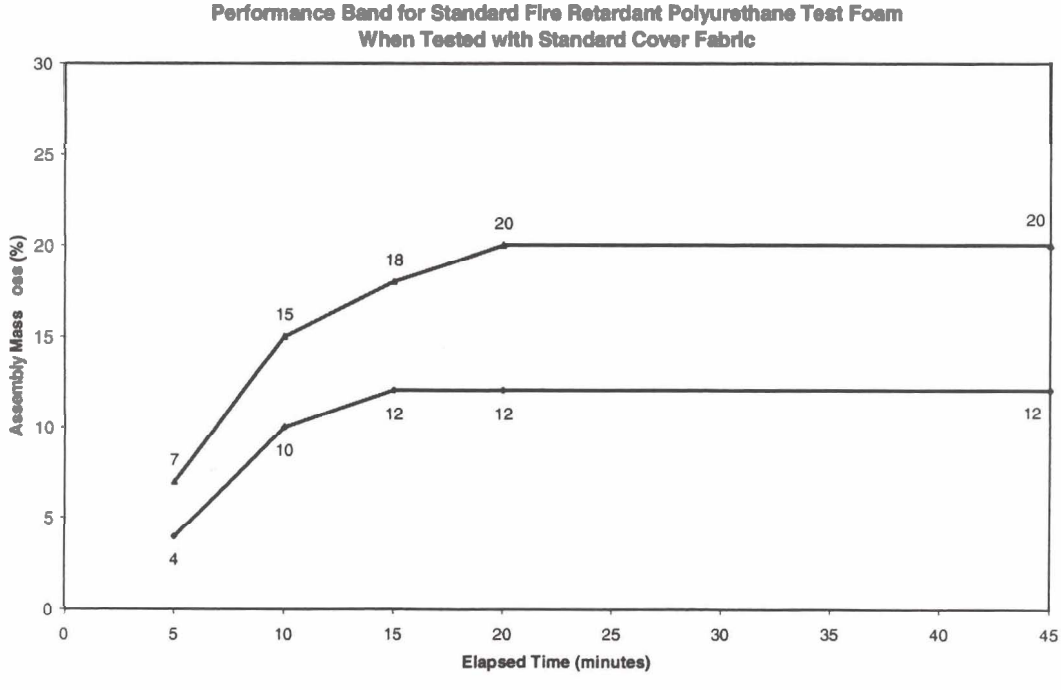
(ii)At 10 minutes, 10 to 15 percent weight loss.

(iii) At 15 minutes, 12 to 18 percent weight loss.

(iv) At 20 minutes, 12 to 20 percent weight loss.

(v) At 45 minutes, 12 to 20 percent weight loss.

See Graph 2 for a graphical depiction of this performance band. Five (5) of the 6 consecutive trials, using SFRPUF from the production lot to be qualified, must fall within the performance band with one outlier allowed above the higher weight loss values of the performance band.



Graph 2. Performance band for SFRPUF when tested with standard cover fabric.

(c) The physical specifications of the SFRPUF substrate shall be as follows:

(1) Density: 1.4 ± 0.1 lb/ft^3

(2) Indentation Load Deflection (ILD): 25 to 30

(3) Air Permeability: Greater than 4.0 ft^3/min

(d) The smoldering performance specifications of the SFRPUF substrate shall be as follows:

(1) The SFRPUF shall be tested in accordance with the test procedures specified in §1634.8 using the standard cover fabric. The allowable range of mass loss for all foam specimens tested shall be between 4 and 18 percent mass loss except that one specimen may have a mass loss greater than 18 percent. Using SFRPUF from the production lot to be qualified, the SFRPUF substrate shall have an average mass loss of between 9 and 13 percent for 6 consecutive samples.

(2) When tested in accordance with §1634.8 without the standard cover fabric and without the cover sheeting, and the cigarette placed directly on the foam, the allowable SFRPUF substrate weight loss for each of 3 consecutive trials, using SFRPUF from the production lot to be qualified, shall be less than 1 percent.

§ 1634.47 Standard Polyester Fiber Fill

(a) The Standard Polyester Fiber Fill is used in smoldering and open flame tests in the assembly of the mockup for evaluation of loose filling interliner fabrics. The Standard Polyester Fiber Fill shall have the following specification:

(b) The Standard Polyester Fiber Fill shall be 100 % white polyester fiber fill with no flame retardant chemicals.

§ 1634.48 Conditioning

(1) All test specimens and standard test materials shall be conditioned at a temperature of 21º ± 3º C (70º ± 4º F) and between 50% and 66% relative humidity for at 24 hours prior to testing.

(2) If the test room conditions do not meet the specifications above for the conditioning room, then testing must be initiated within ten minutes after the specimens are removed from the conditioning room.

§ 1634.49 Loose Fill Test Inserts

(a) For open flame testing of loose filling material, vertical and horizontal test inserts are used to aid in the assembly of the test mockup.

(b) The inserts provide support for the standard cover fabric which is then used to contain the loose filling material specimen.

(1) The vertical insert is constructed of steel angle iron and flat stock as shown in Figure 14.

(2) The horizontal insert is constructed of steel angle iron, flat stock and steel rod as shown in Figure 15.

(3) See Figure 16 for an assembled view of the loose fill open flame test inserts.

(4) Thin perforated steel sheet metal or steel wire screen may also be inserted against the tall back of the vertical insert and the bottom of the horizontal insert when the loose fill material(s) being tested are of a small size that might spill through the metal test frame steel mesh.

Subpart F – Reupholstering

§ 1634.51 Requirements on reupholstering.

(a) Section 3 of the Flammable Fabrics Act (15 U.S.C. § 1192) prohibits, among other things, the “manufacture for sale” of any product which fails to conform to an applicable standard issued under the Act.

(b) Reupholstering upholstered furniture for sale is manufacturing upholstered furniture for sale and, therefore, is

subject to the Flammable Fabrics Act and all applicable requirement of this Part.

(c) Reupholstering is any replacing of upholstered furniture material subject to any applicable performance requirement of §§ 1634.4 through 1634.17.

(d) If the person who reupholsters the upholstered furniture intends to retain the reupholstered furniture for his or her own use, or if a customer hires the services of the reupholsterer and intends to take back the reupholstered furniture for his or her own use, “manufacture for sale” has not occurred and such an article of reupholstered furniture is not subject to this Part.

(e) If an article of reupholstered furniture is sold or intended for sale, either by the reupholsterer or the owner of the upholstered furniture who hires the services of the reupholsterer, such a transaction is considered to be “manufacture for sale” and the article of upholstered furniture is subject to all applicable requirements of this Part.

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Figure 1 - Cigarette Ignition Draft Enclosure

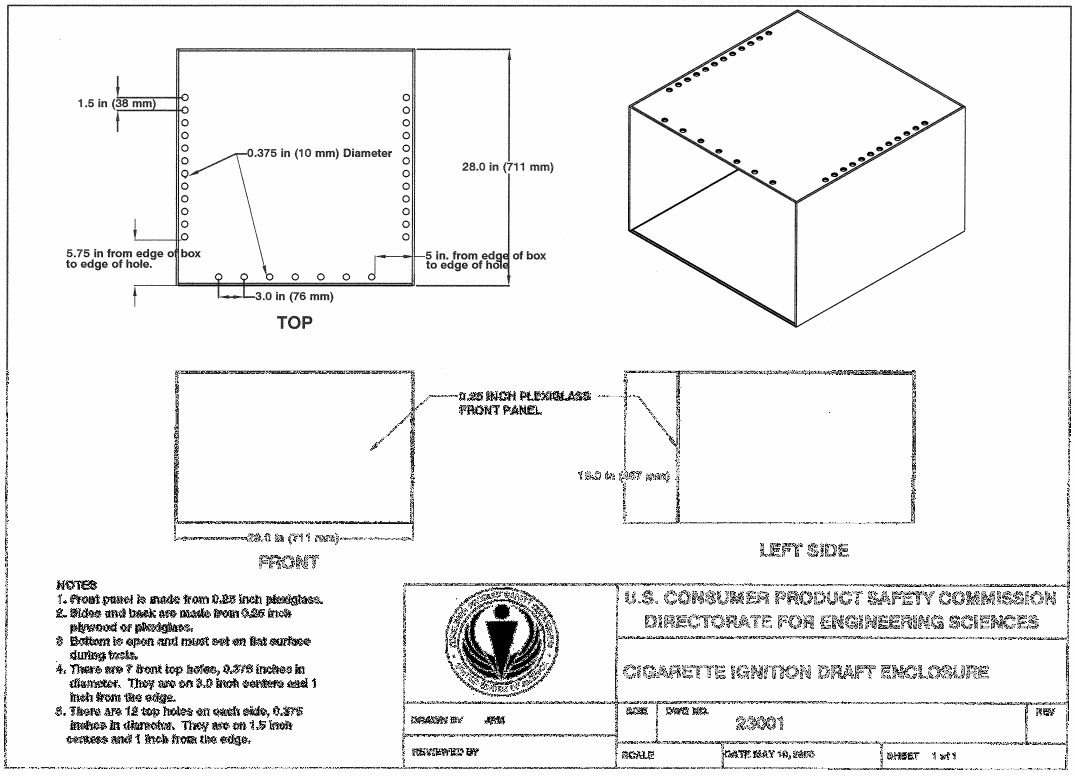

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Figure 2 - Cigarette Ignition Specimen Holder - Base

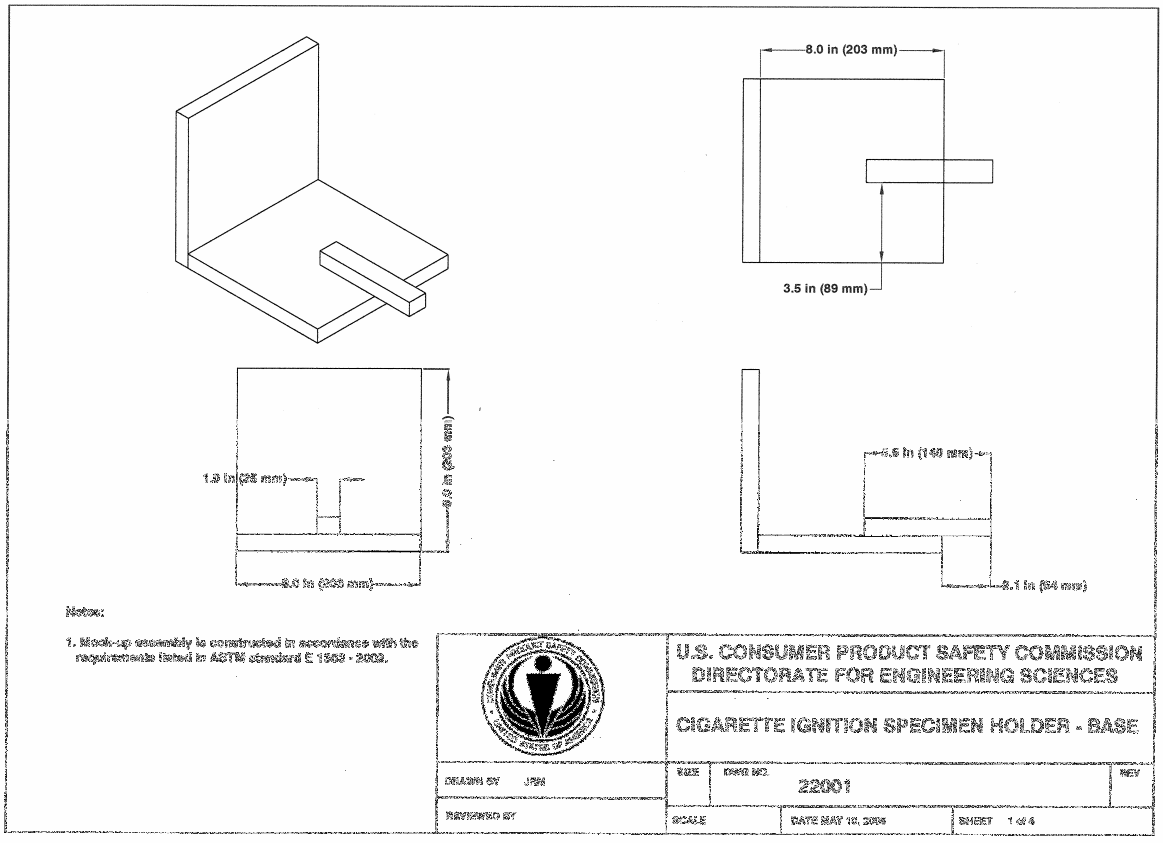

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Figure 3 - Cigarette Ignition Specimen Holder - Movable Horizontal Support Panel

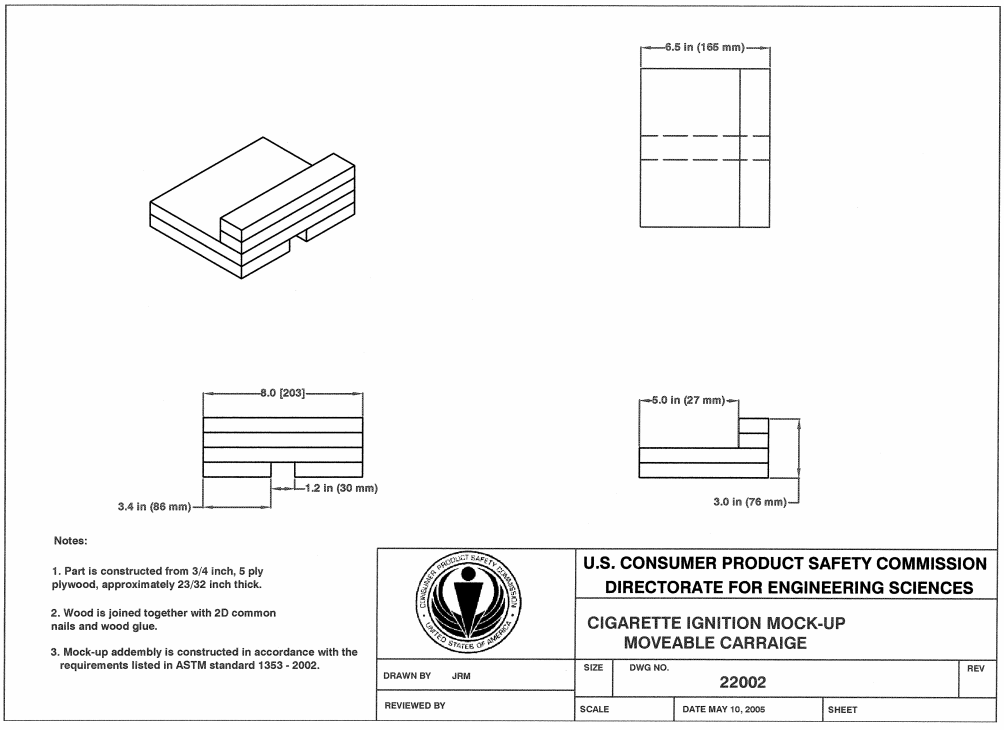

Figure 4 - Loose Fill Smoldering Ignition Resistance Test
Vertical Panel

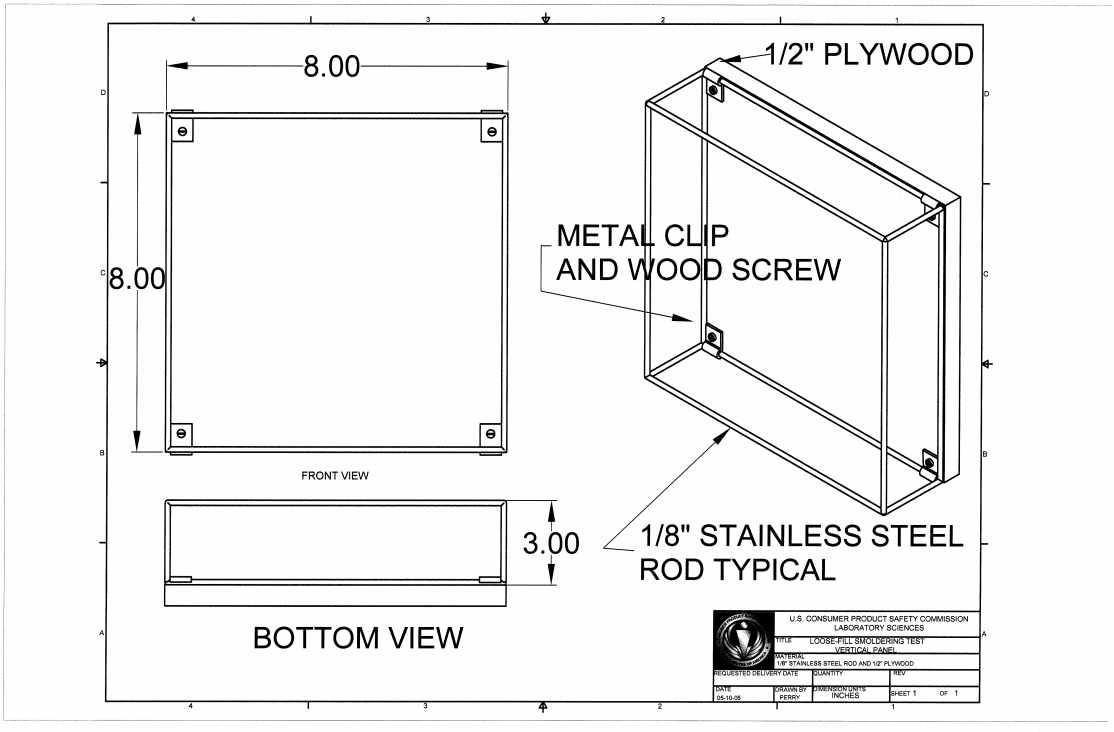

Figure 5 - Loose Fill Smoldering Ignition Resistance Test Horizontal Panel

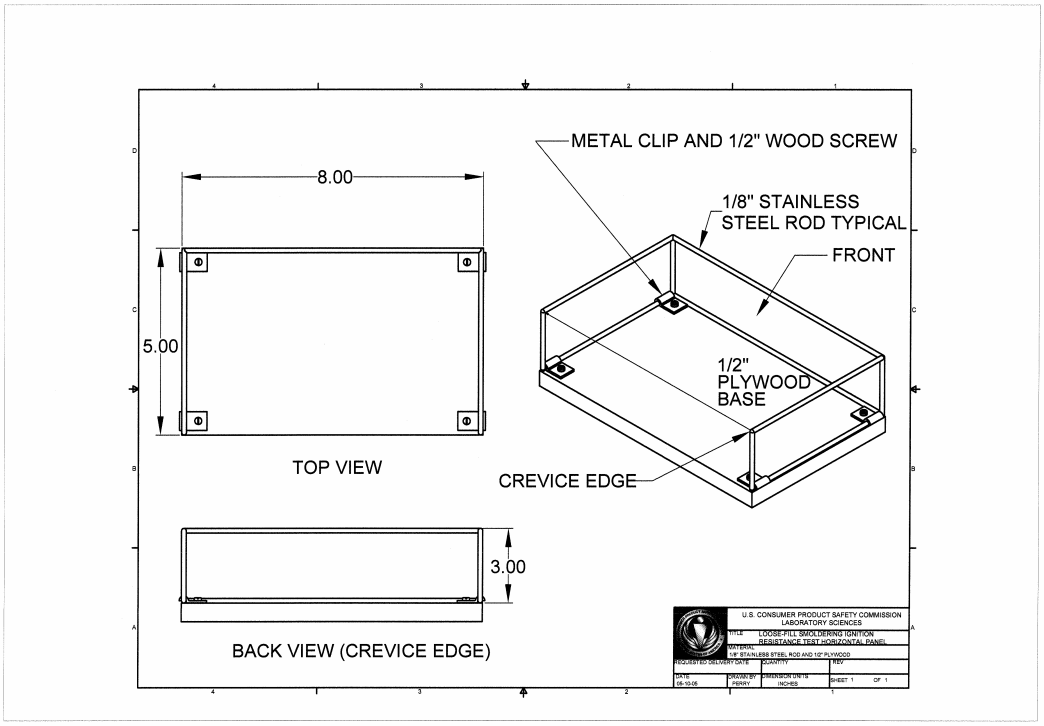

Figure 6 - Mockup Assembly for Upholstery Cover Fabric Smoldering Ignition Resistance Test

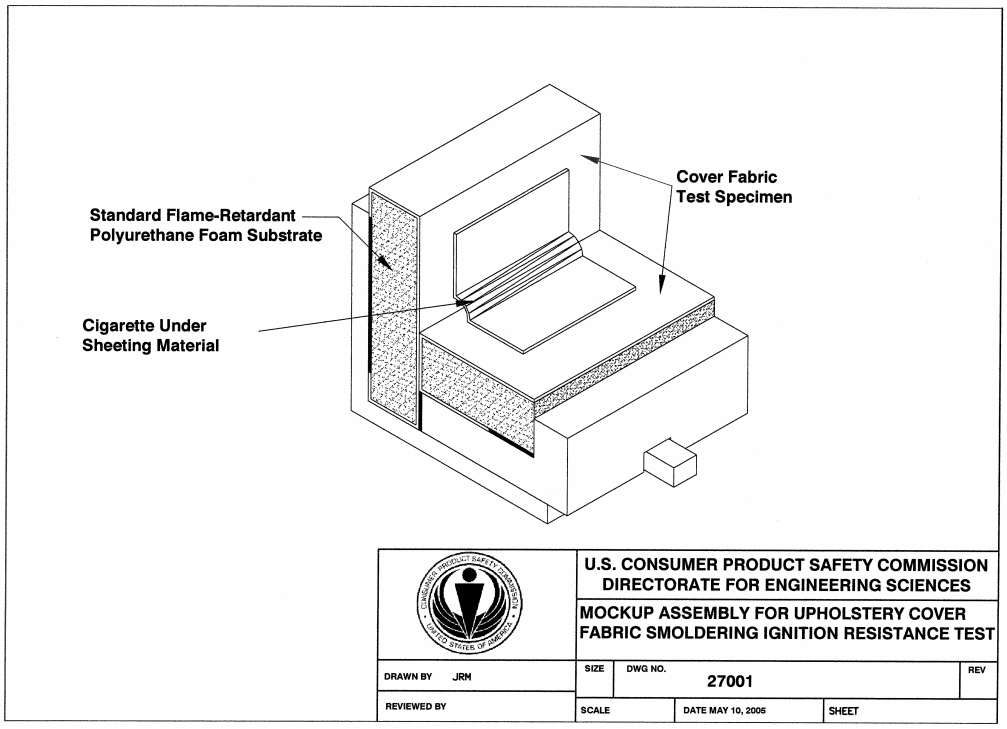

Figure 7 - Mockup Assembly for Fibrous Filling Material Smoldering Ignition Resistance Test

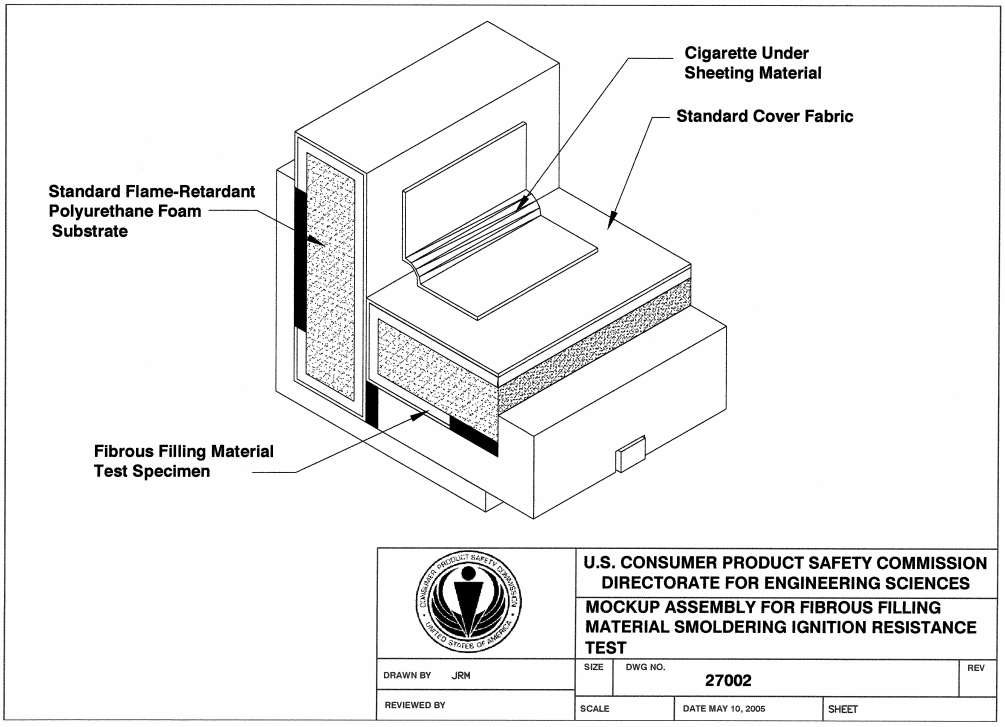

Figure 8 - Mockup Assembly for Loose Filling Material Smoldering Ignition Resistance Test

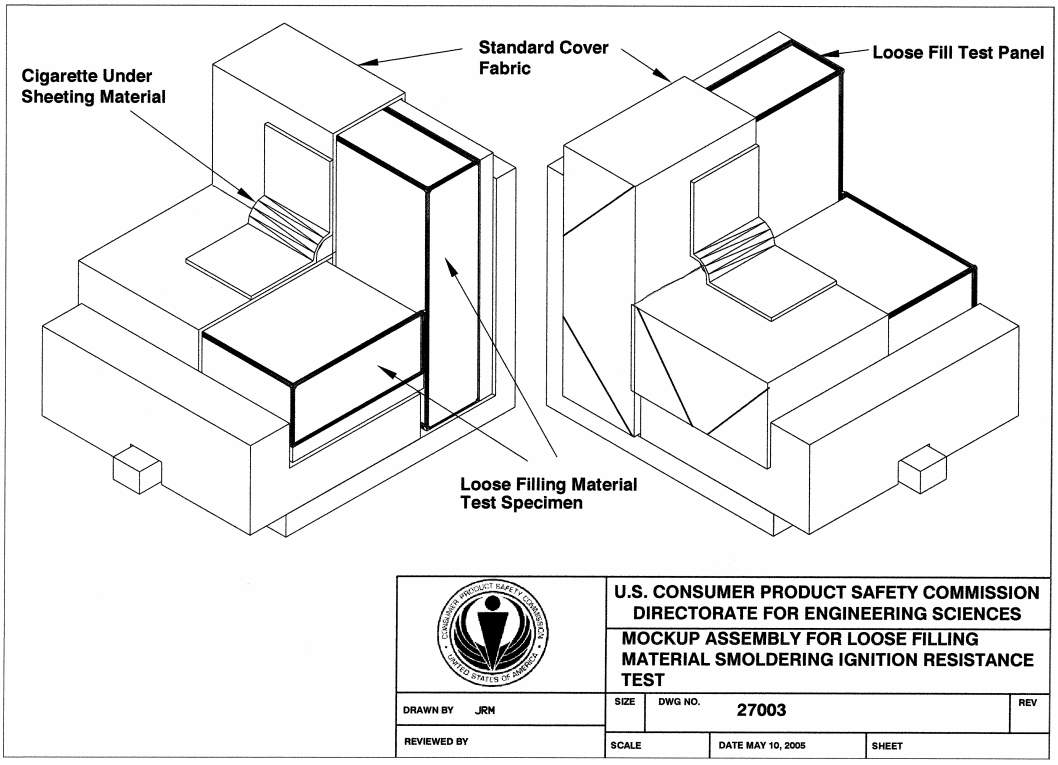

Figure 9 - Mockup Assembly for Loose Filling Interliner Fabric Smoldering Ignition Resistance Test

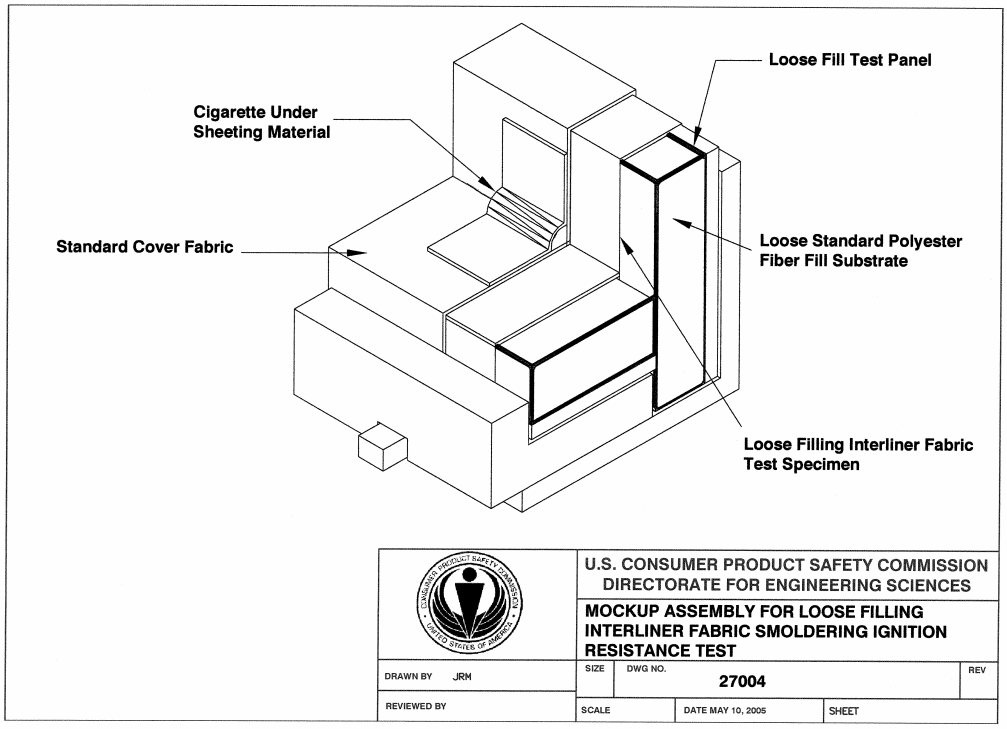

Figure 10 - Mockup Assembly for Resilient Filling Material Smoldering Ignition Resistance Test

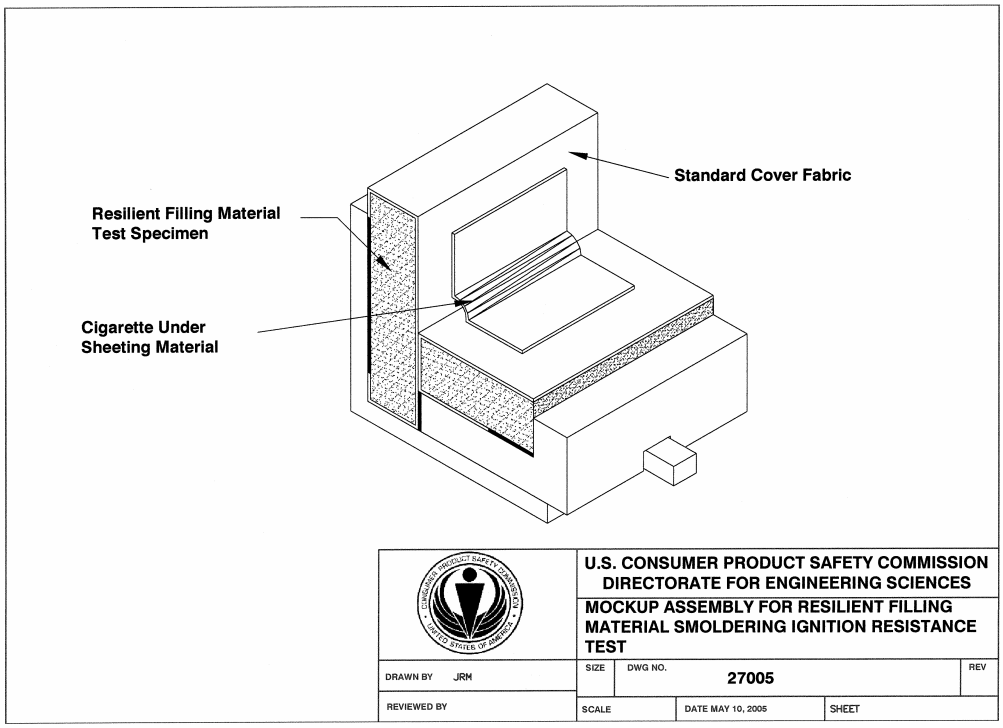

Figure 11 - Mockup Assembly for Interior Fire Barrier Material Smoldering Ignition Resistance Test

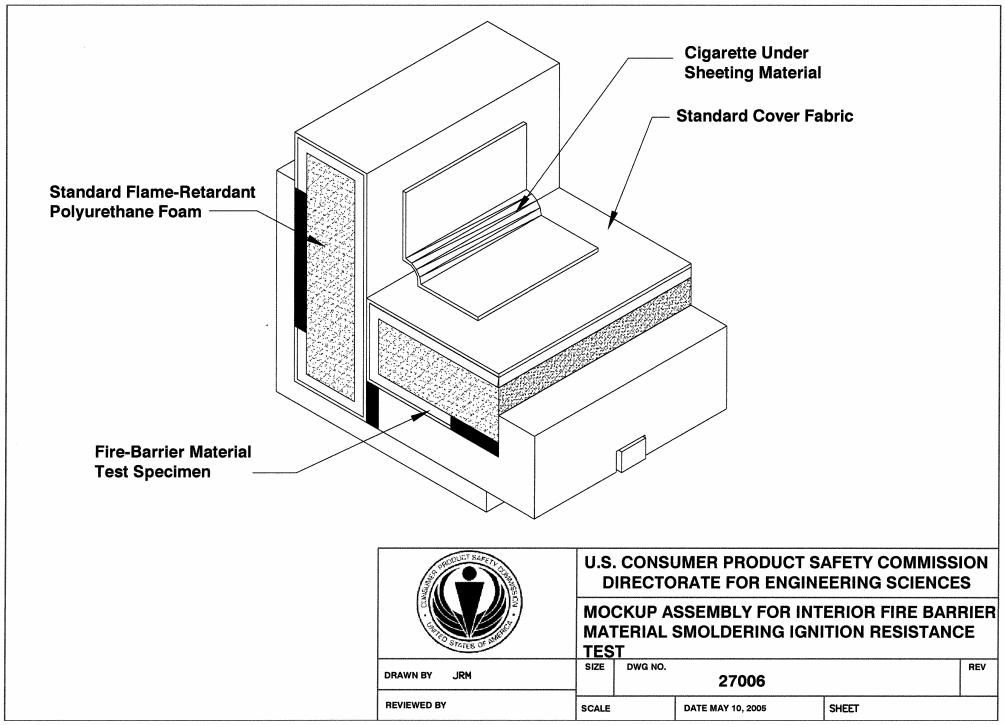

Figure 12 - Cut-Out Template Dimensions for Open Flame Tests

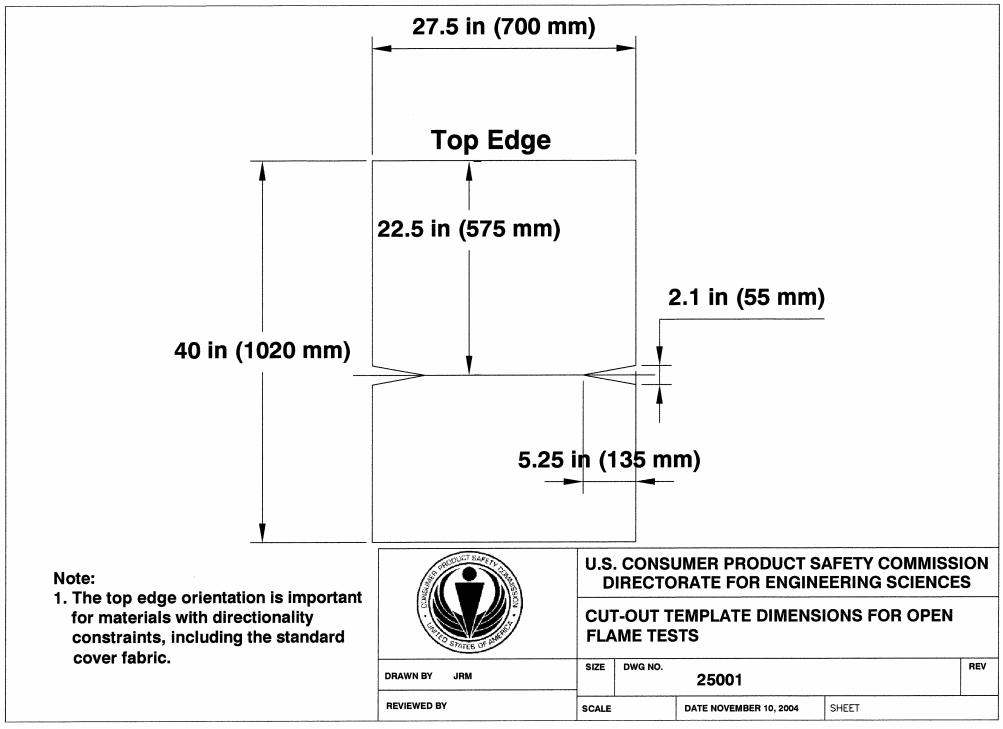

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Figure 13 - Open Flame Metal Test Frame

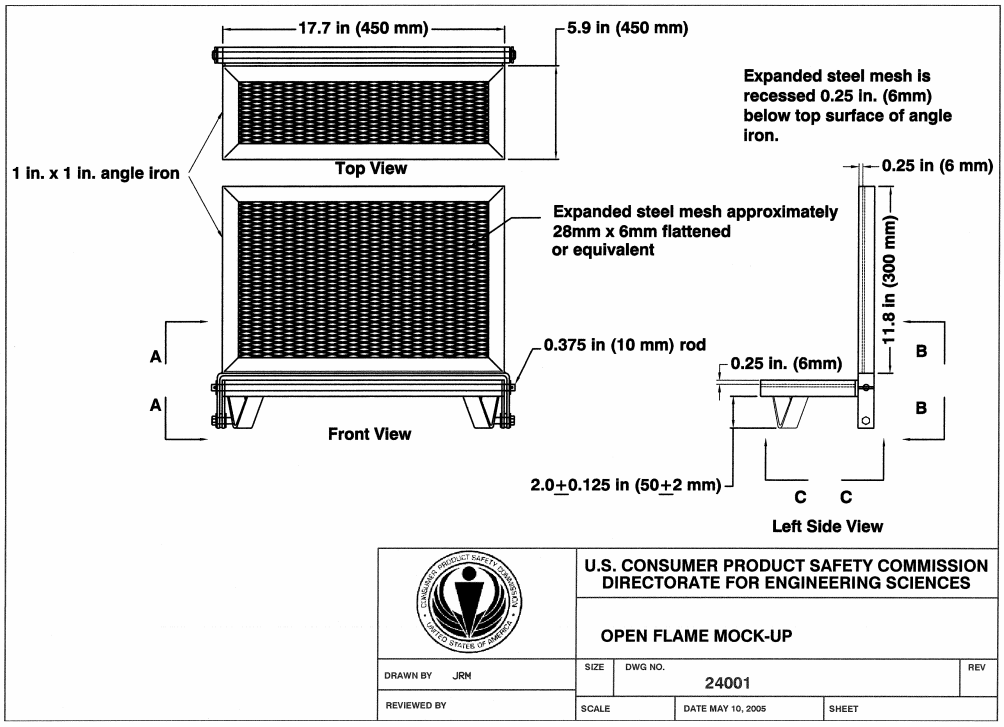

Figure 14 - Loose Fill Open Flame Test Vertical Insert

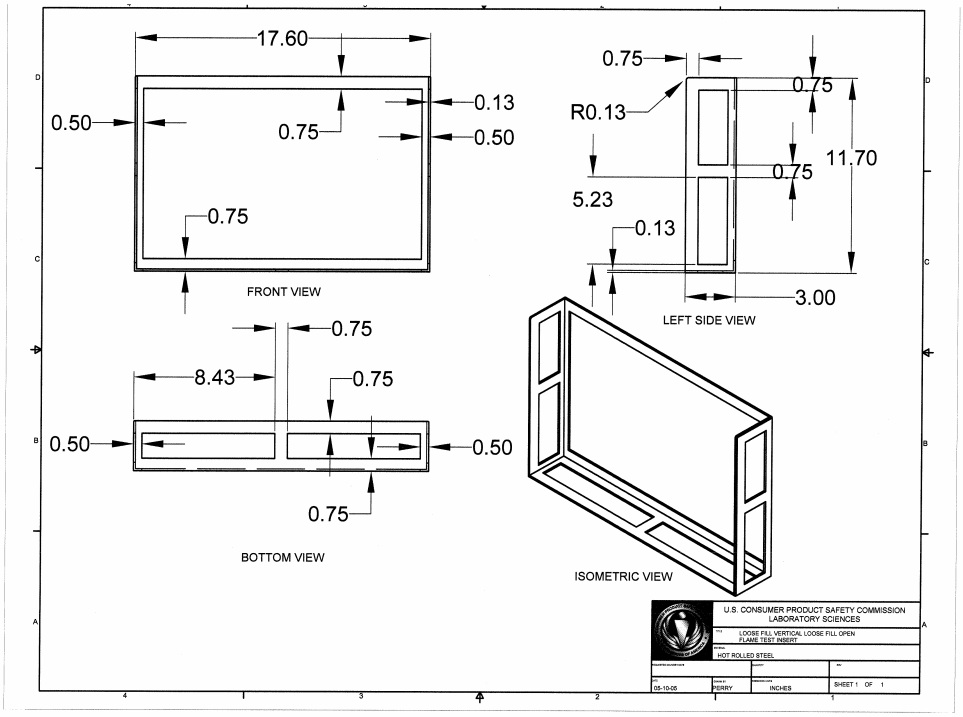

Figure 15 - Loose Fill Open Flame Test Horizontal Insert

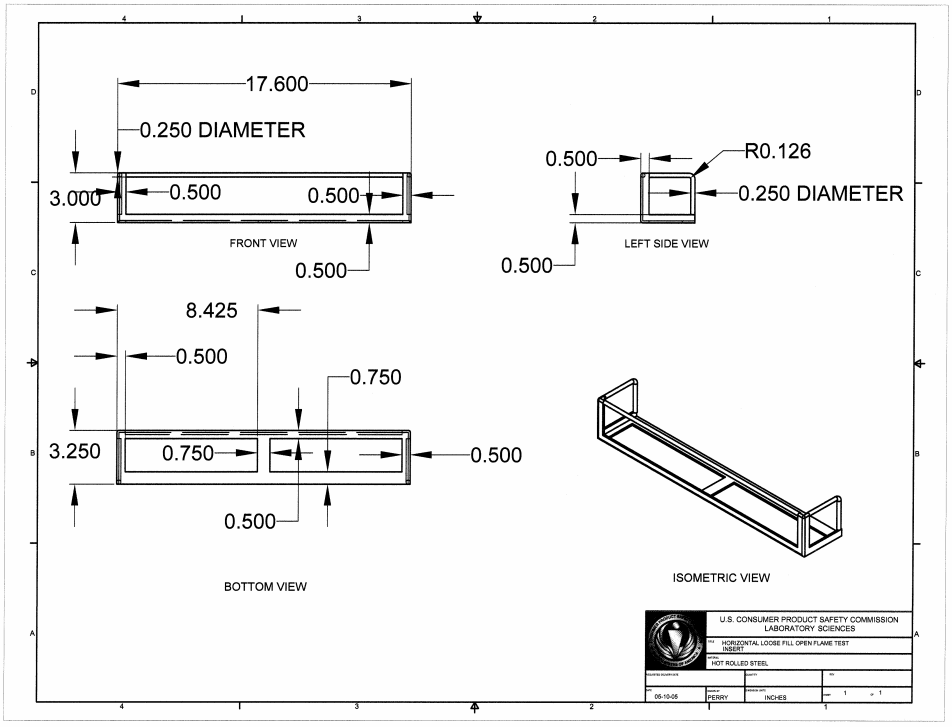

Figure 16 - Loose Fill Open Flame Test Inserts

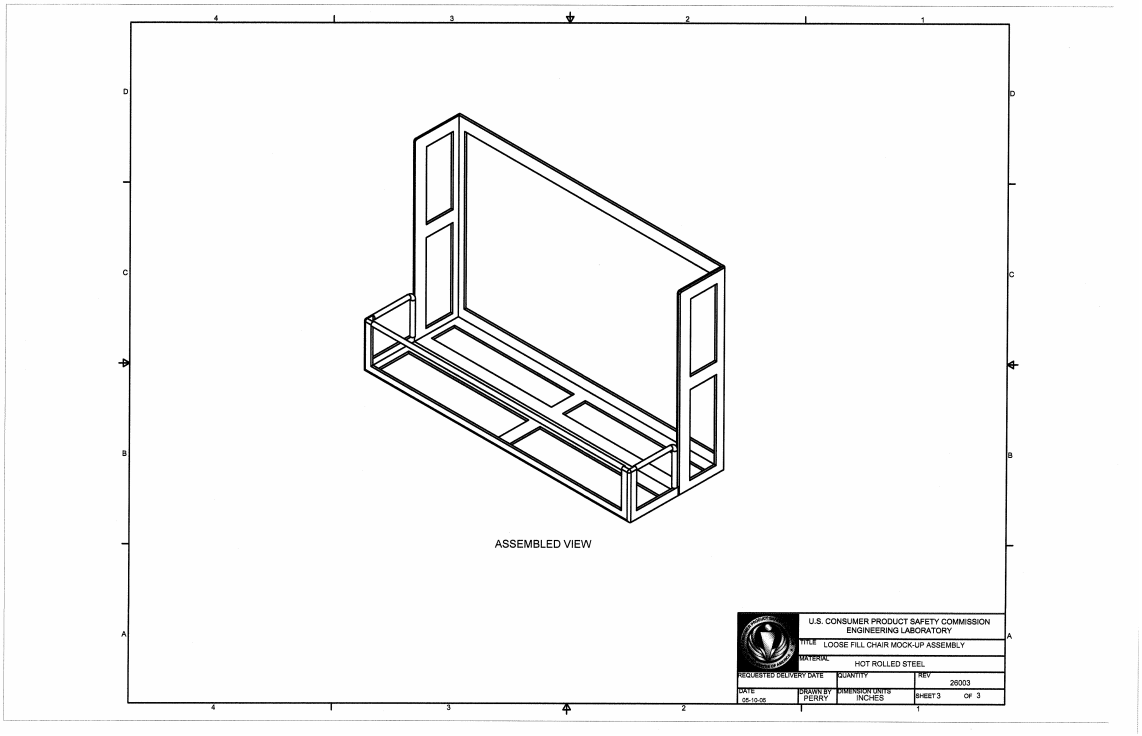

Figure 17 - Mockup Assembly for Fibrous Filling Open Flame Ignition Resistance Test

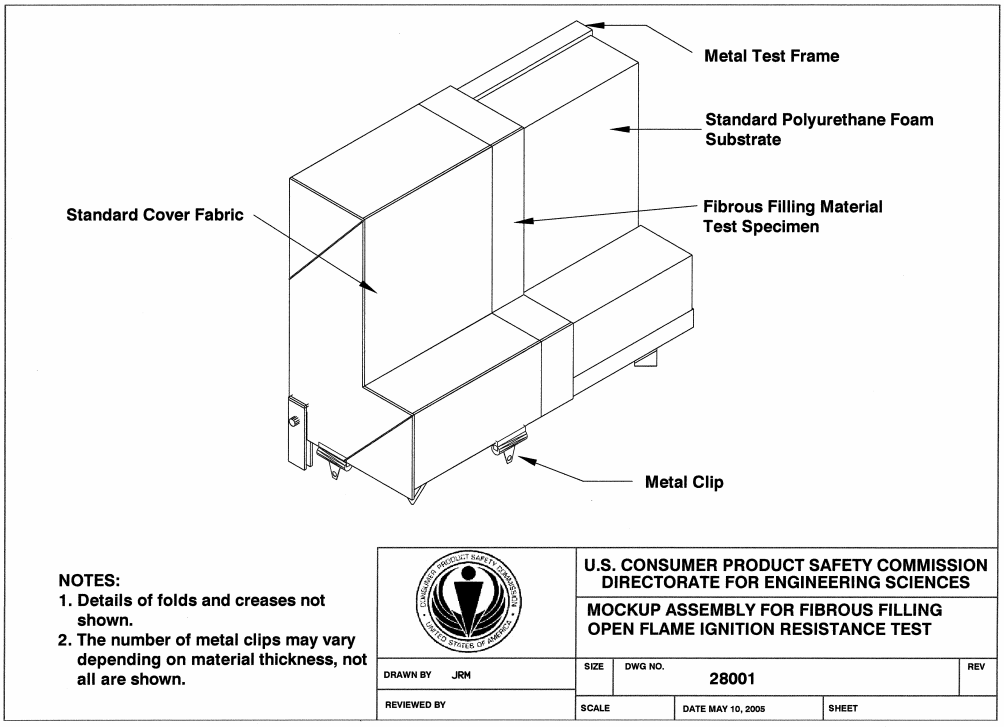

Figure 18 - Mockup Assembly for Loose Filling Materials Open Flame Ignition Resistance Test

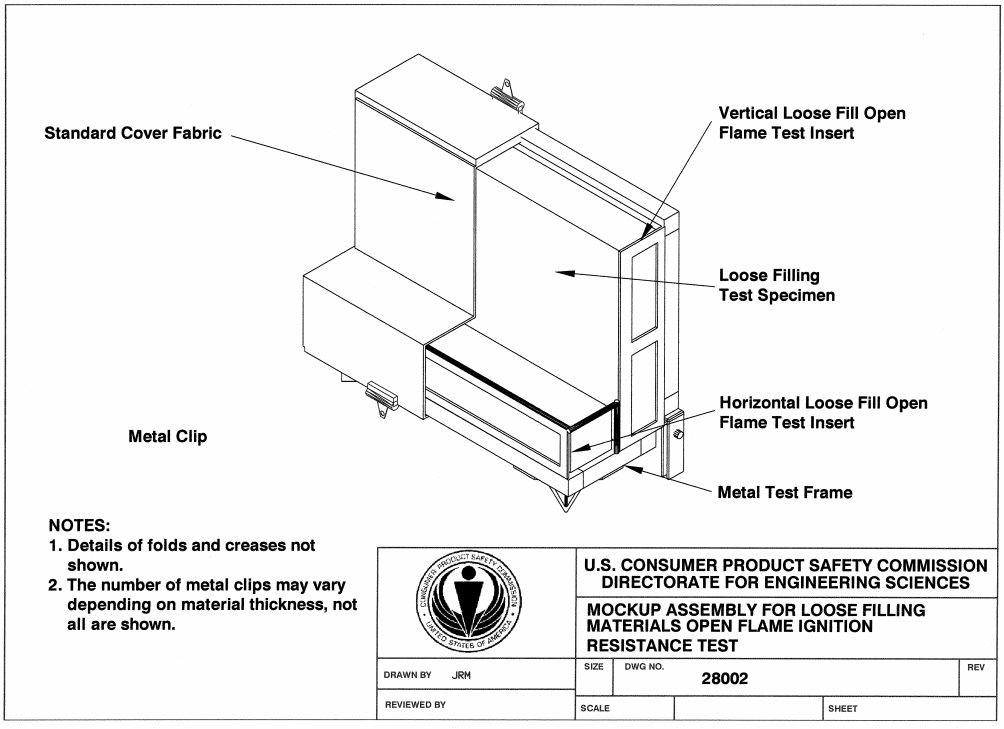

Figure 19 - Mockup Assembly for Loose Filling Interliner Fabrics Open Flame Ignition Resistance Test

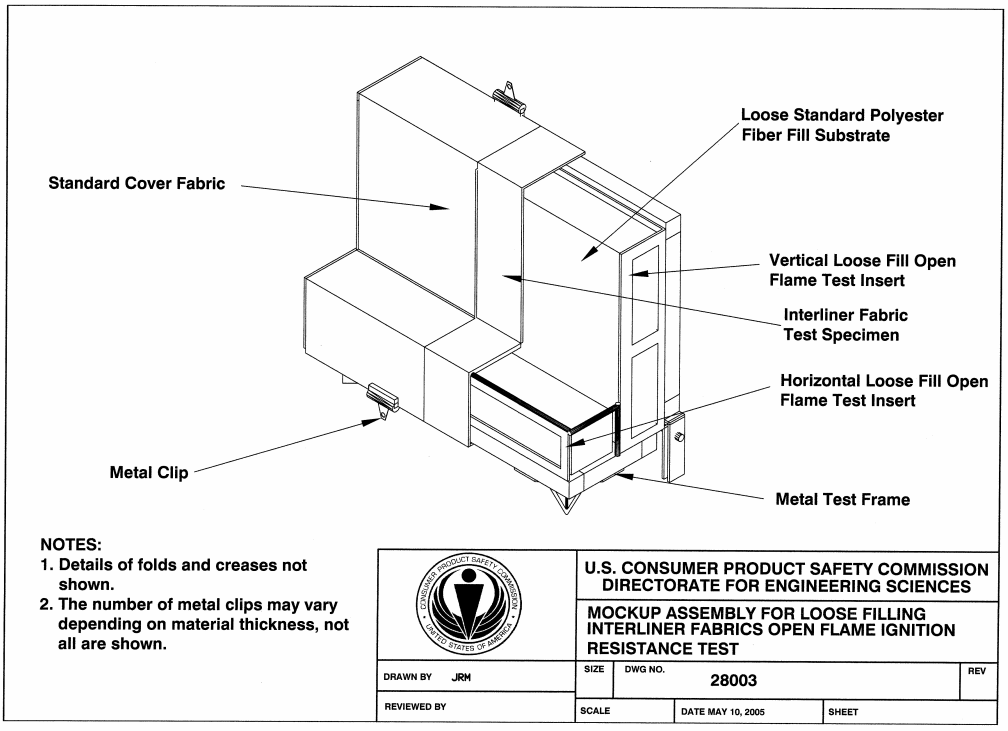

Figure 20 - Mockup Assembly for Resilient Filling Materials Open Flame Ignition Resistance Test

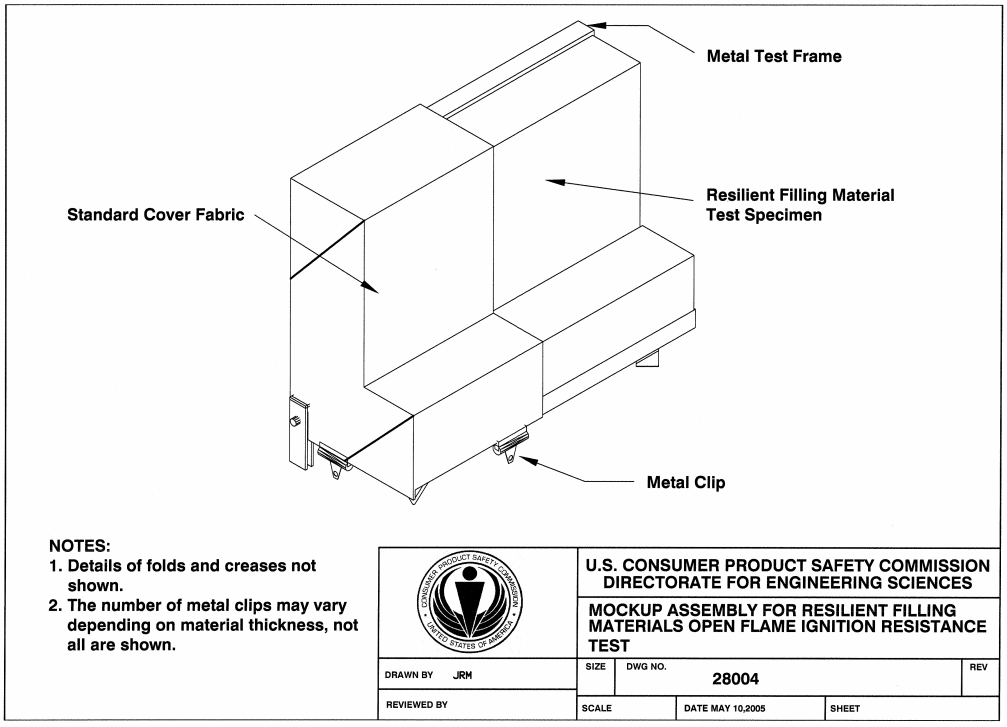

Figure 21 - Mockup Assembly for Upholstery Fabric Fire Barriers Open Flame Ignition Resistance Test

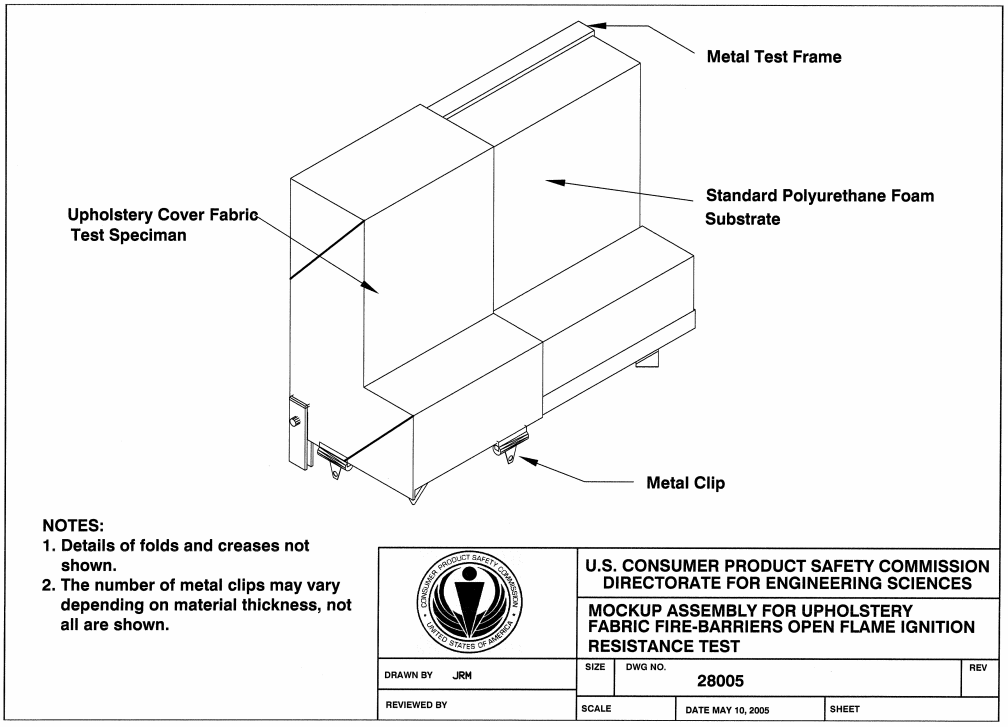

Figure 22 - Mockup Assembly for Interior Fire Barrier Materials Open Flame Ignition Resistance Test