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CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1610

Standard for the Flammability of Clothing Textiles

AGENCY: Consumer Product Safety Commission.

ACTION: Final rule.

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SUMMARY: The Commission is amending its flammability standard for general wearing apparel, the Standard for the Flammability of Clothing Textiles, 16 CFR part 1610. The Standard, originally issued in 1953, has become outdated in several respects. The revisions better reflect current consumer practices and technologies and clarify several aspects of the Standard.

DATES: The rule is effective September 22, 2008. The incorporation by reference of the publication listed in this rule is approved by the Director of the Federal Register as of September 22, 2008.

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SUPPLEMENTARY INFORMATION:

A. Background

1. History of the Standard

The Standard for the Flammability of Clothing Textiles, 16 CFR part 1610 ('`the Standard'') dates back to the 1950s. Congress enacted the Flammable Fabrics Act ('`FFA'') in 1953 (Pub. L. 83-88, 67 Stat. 111). It specified a test, a voluntary commercial standard then called ``Flammability of Clothing Textiles, Commercial Standard ('`CS'') 191-53,' ' to be used to determine if fabric or clothing is ``so highly flammable as to be dangerous when worn by individuals.''

When Congress established the Consumer Product Safety Commission in 1972, it transferred to the Commission the authority the Secretary of Commerce had to issue and amend flammability standards under the FFA. 15 U.S.C. 2079(b). In 1975, the Commission published the FFA of 1953 at 16 CFR 1609 and codified the Standard for the Flammability of Clothing Textiles at 16 CFR 1610.

2. The Standard

The Commission's revisions to the Standard will update and clarify it. The Standard describes a test apparatus and the procedures for testing clothing and textiles intended to be used for clothing. It establishes three classes of flammability. The classes are based on measurement of burn time, along with visual observations of flame intensity. The classes are: Class 1 or normal flammability; Class 2 or intermediate flammability; and Class 3 or rapid and intense burning. Clothing and textiles that are categorized as Class 3 under the prescribed test method are considered dangerously flammable. 16 CFR 1610.4.

The Standard prescribes the method of testing to determine the appropriate classification. Five specimens are subjected to a flammability tester. This is a draft-proof ventilated chamber containing an ignition medium, a sample rack and an automatic timing device. A swatch of each sample must be subjected to the dry cleaning

and hand washing procedure prescribed by the Standard. To determine results, the average time of flame spread is taken for five specimens. However, if the time of flame spread is less than 4 seconds (3½ seconds for plain-surfaced fabrics), five additional specimens must be tested and the average time of flame spread for these ten specimens, or for as many of them as burn, must be taken. Classification is based on the reported results before and after dry cleaning and washing, whichever is lower.

### 3. The Products

The products regulated under the Standard are clothing and fabrics intended to be used for clothing. The Standard applies to all items of clothing, and fabrics used for such clothing, whether for adults or children, for daywear or nightwear. The Commission has other regulations governing the flammability of children's sleepwear, 16 CFR parts 1615 and 1616, that are more stringent than the general wearing apparel flammability standard. The revisions discussed in this notice would not affect the children's sleepwear standards.

### 4. The Risk of Injury

Fatalities where clothing was the first item ignited have declined from 311 fatalities in 1980 to 129 fatalities in 2004, the most recent year of available data. An average of 120 clothing fire-related fatalities occurred annually during 2002-2004. Population fatality rates increased with age. In addition, an estimated 3,947 non-fatal injuries were treated in hospital emergency departments annually (2003-2005). Among these non-fatal injuries, 25 percent were serious enough to require admission to a hospital (compared to 5 percent for all consumer products).

### B. Statutory Provisions

Section 4 of the FFA sets forth the process by which the Commission can issue or amend a flammability standard. In accordance with that section, the Commission issued an advance notice of proposed rulemaking ('`ANPR'`) on September 12, 2002, 67 FR 57770. The Commission issued a notice of proposed rulemaking ('`NPR'`) on February 27, 2007 containing the text of the proposed rule along with alternatives the Commission has considered and a preliminary regulatory analysis. 72 FR 8844. Before issuing a final rule, the FFA requires the Commission to prepare a final regulatory analysis, and make certain findings concerning any relevant voluntary standard, the relationship between costs and benefits of the rule, and the burden imposed by the regulation. 15 U.S.C. 1193(j). In addition, the Commission must find that the Standard (1) is needed to adequately protect the public against the risk of the occurrence of fire leading to death, injury or significant property damage, (2) is reasonable, technologically practicable, and appropriate, (3) is limited to fabrics, related materials or products which present unreasonable risks, and (4) is stated in objective terms. Id. U.S.C. 1193(b).

### C. Revisions

The changes to the Standard reflect changes in consumer garment care practices and will make the Standard easier to understand. These changes are discussed below.

Definitions. Some definitions have been revised and some new ones added to eliminate confusion. In particular, the meaning of the terms ``base burn'' and ``surface flash'' have caused confusion in interpreting and reporting test results for raised surface textile fabrics. These terms are now defined in the Standard. In addition, several other relevant terms and definitions have been added. These terms include burn time, dry cleaning, flammability, flame application time, ignition, interlining, laundering, long dimension, plain surface textile fabric, raised surface textile fabric, refurbishing, sample, specimen, and stop thread supply.

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Changes to the flammability tester. The test chamber prescribed in the current Standard uses a mechanical timing mechanism and is no longer available for purchase. Apparel manufacturers and testing laboratories currently use more modern flammability test chambers that

incorporate electro-mechanical components to apply the ignition flame and measure burn time. (The Standard allows alternate procedures if they are as stringent as the specified procedure.) A variety of such testers are available from a number of manufacturers. The revision describes the critical parameters of a modern flammability test apparatus and provides diagrams. In 1982, CPSC staff conducted some work comparing the flame impingement time of the electrical test chamber to that of a chamber with the mechanical timing device and found that the electrical test chamber readings were comparable to and more consistent than the manual test chamber readings. The revisions expressly permit the use of electro-mechanical devices to control and apply the flame impingement.

Refurbishing methods. The Standard requires fabrics to be refurbished, that is, dry cleaned and laundered, one time before testing. The purpose of this requirement is to remove any non-durable solvent or water soluble treatment present on the fabric. It is not intended to replicate how the garment would be used or cared for by a consumer. Both the dry cleaning and laundering procedures prescribed by the current Standard are outdated. The Commission is revising these procedures to better reflect modern techniques for laundering and dry cleaning.

The method of dry cleaning that the current Standard prescribes uses perchloroethylene in an open vessel. However, perchloroethylene has been shown to cause cancer in animal tests, and use in this manner violates regulations issued by the U.S. Environmental Protection Agency. The Commission staff has not used this procedure since 1986. (The Standard allows alternate procedures if they are as stringent as the specified procedure.) Industry and independent laboratories have been using an alternative dry cleaning procedure provided in ASTM D1230, Standard Test Method for Apparel Flammability. This procedure uses perchloroethylene in a closed environment commercial dry cleaning machine for one cycle. The revision to the Standard prescribes a dry cleaning method based on the ASTM D1230 dry cleaning procedure.

The soap specified in the handwashing procedure in the current Standard is no longer available. Most detergents are now non-phosphate based due to environmental concerns. The revision sets forth laundering requirements based on those prescribed in American Association of Textile Chemists and Colorists ('`AATCC'') 124-2001, Appearance of Fabrics After Repeated Home Laundering. An earlier version of this test method was incorporated into other FFA standards in 2000. 65 FR 12924, 12929, and 12935 (March 10, 2000).

Test procedures. The revision reorganizes and rewrites the test procedure in a more logical step-by-step fashion to clarify the directions for selecting the surface or direction of the fabric to be tested, how to determine when testing five additional specimens is necessary, as well as how to conduct the flammability test.

Test result interpretation and reporting. The current Standard provides no codes to report complex test results consistently which can be a problem when classification is more complex. The revision clarifies the instructions for calculating burn times and establishing the occurrence of a base burn. By defining the terms ``base burn'' and ``surface flash'' in Sec. 1610.2, the revision provides further clarification for the reporting of test results for raised surface textile fabrics. The revision also specifies test result codes from CPSC's laboratory test manual. Uniform result codes will facilitate reporting accuracy and consistency, understanding of flammability performance, and resolution of test result differences among laboratories.

Subpart B and Subpart C. The Commission is also making changes to subparts B and C of the Standard. To reduce confusion, some provisions concerning procedures for conducting the tests that are currently in subparts B and C are moved into subpart A. This should provide a more cohesive and clearer standard. Subpart C is substantially the same, but some language has been clarified to make it more consistent with subparts A and B, and the section describing the history of the FFA and the Standard has been removed.

#### D. Response to Comments on the NPR

On February 27, 2007, the Commission published an NPR. 72 FR 8844. The Commission received eight written comments. These were mostly supportive and suggested minor editorial changes to the proposal. Specific issues raised by the comments are discussed below.

##### 1. Laundering and Dry Cleaning

a. Comment. One commenter stated 60 3 [deg]C is too hot and another recommended a washing temperature consistent with the original standard.

Response. Staff reviewed the proposed water temperature for the laundering portion of the section and agreed that the wash temperature of 60 3 [deg]C (140 5 [deg]F) in the proposed rule is too hot. The current Standard, which uses a hand wash procedure, specifies 95-100 [deg]F, with a rinse temperature of 80 [deg]F. Since the proposal specifies machine washing, staff does not agree that it is appropriate to use a temperature suited to hand washing. The final amendments specify a wash temperature of 49 3 [deg]C (120 5 [deg]F). Staff believes this temperature is hot enough to remove any water soluble finishes from the fabric which may affect its flammability characteristics and is appropriate for a machine wash. The staff agrees that the most recent version of AATCC 124 should be referenced; the final amendments reference AATCC 124-2006.

b. Comment. One commenter recommended allowing the use of a ``trial dry cleaner'' rather than a commercial dry cleaning machine.

Response. The dry cleaning procedure in the proposed rule is similar but not identical to the procedure specified in ASTM D1230 Standard Test Method for Flammability of Apparel Textiles, section 9.2.1, Option B. The ASTM D1230 refurbishing procedure was found by staff and ASTM Committee D13 (Textiles) to be as stringent as the procedure specified in 16 CFR Part 1610. Because the dry cleaning method specified in the current Standard is illegal to perform in the United States, the industry and the CPSC staff have been using the ASTM D1230 section 9.2.1, Option B for many years. Staff does not have any data to indicate whether the use of a ``trial dry cleaner'' would be as stringent as the refurbishing procedure in ASTM D1230. The amount of detergent to be used in the dry cleaning procedure will depend on the capacity of the machine; this information is provided with the machine manufacturer's instructions.

c. Comment. Three commenters disagreed with the specified ballast (80% wool fabric pieces and 20% polyester fabric pieces) in the proposal.

Response. Upon further consideration, the staff has decided to change the specified ballast to 80% wool and 20% cotton to be consistent with internationally recognized dry cleaning standards.

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d. Comment. Two commenters questioned the need to dry clean samples in a load that is 80% of the dry cleaning machine's capacity and suggested that the load should be 100% of the load's capacity.

Response. Staff concludes that the International Fabricare Institute's recommendation of 80% capacity is appropriate for proper dry cleaning.

## 2. Comments on Definitions

a. Comment. Several commenters made suggestions for changes to the definitions in the proposal. Three commenters requested clarification of ``base burn'' and one commenter suggested a change to the definition of ``long dimension.''

Response. Staff considers the proposed definition of ``base burn'' to be sufficiently clear. The definition includes specific burning characteristics that must be observed during and after each test in order to distinguish between a base burn at point of flame impingement and the type of base burn used to establish a Class 3 fabric, where the base burn starts at places on the specimen other than the point of flame impingement as a result of surface flash.

b. Comment. One commenter suggested changing the ``long dimension'' definition to ``the 150mm (6 inch) length of test specimen (cut with the 6 dimension in the same orientation of the worst burning direction of the overall fabric).''

Response. Staff does not agree because the long dimension is not always in the fastest burning direction of the fabric. For example, when preparing preliminary test specimens to determine the fastest burning direction of a plain surface textile fabric, the 6 inch length of each specimen will be in a different fabric direction.

c. Comment. One commenter requested that a definition for ``coated fabrics'' be added to section 1610.33(a)(2).

Response. Staff agrees and has added the definition for ``coated fabrics'' from ASTM D123-03 Standard Terminology Relating to Textiles.

### 3. Comments on the Test Procedure

a. Comment. One commenter suggested that cotton fabrics, being hydrophilic, should be tested in standard humidity rather than be subject to the conditioning oven and dessicator at 0% humidity. The commenter notes the proposed conditions are more stringent than likely "real world" conditions and those specified in two international textile test methods.

Response. Staff realizes that cotton responds quickly to changes in humidity, but concludes that testing cotton and cotton containing fabrics under the more severe atmospheric conditions in the current standard provides a greater level of safety than testing under standard textile testing conditions. Therefore, the staff has not changed the conditioning requirements.

b. Comment. One commenter stated that the procedure for selecting test specimens in Sec. 1610.6(a)(3)(i), Raised surface textile fabrics--(i) Preliminary trials is confusing.

Response. Staff has reviewed this language and concludes that this procedure is properly explained in the proposed rule; thus, the staff has not changed the language in the final rule. In addition, the commenter asked if there is a specific rate to be used when brushing raised-fiber surface textile fabrics. The Standard specifies only that the specimen be brushed at a uniform rate; no change was made in the proposal.

### 4. Comments on the Test Apparatus and Materials

a. Comment. Several comments were received on the test apparatus and materials. Several commenters on the ANPR discussed the need for testing laboratories to be allowed to use more modern versions of the flammability test chamber.

Response. In the proposed amendments the staff worked to achieve a balance between providing an appropriate description of the flammability test chamber, along with figures, without providing prescriptive requirements that would have limited the test chamber to a specific make and model.

b. Comment. In response to the NPR, one commenter asked that more detailed information on the flammability test cabinet be specified in the Standard.

Response. The final amendments provide additional details, including manufacturing tolerances and descriptive language, which the staff believes will be helpful but will not limit or discourage the use of modern equipment.

### 5. Comments on Exemptions, Reasonable and Representative Testing, and the Standard's Applicability to Specific Apparel Items

a. Comment. One commenter asked what the justification was for the 2.6 oz/yd<sup>2</sup> exemption for all plain surface fabrics and asked for the historical information that formed the basis for the exemption. The commenter further requested that, if that information could not be provided, the exemption be lowered to 2.0 oz/yd<sup>2</sup>.

Response. This information can be found at 49 FR 242; December 14, 1984; 16 CFR part 1610 Standard for the Flammability of Clothing Textiles; Requirements for Testing and Recordkeeping to Support Guaranties. No change has been made to the exemptions.

b. Comment. One commenter asked for clarification about the Standard's applicability to scarves.

Response. The proposed amendment, like the current 16 CFR part 1610, applies to scarves.

c. Comment. One commenter asked that the Standard provide further guidance on reasonable and representative testing.

Response. Guidance on developing a reasonable and representative testing program was issued by the Commission in 1998 and can be found at 63 FR 42697, August 11, 1998; Policy Statement--Reasonable and Representative Testing to Assure Compliance with the Standard for the Flammability of Clothing Textiles.

## E. Final Regulatory Analysis

### Introduction

Section 4(j)(1) of the FFA requires that the Commission prepare a final regulatory analysis for a final regulation under the FFA and that

it be published with the final rule. 15 U.S.C. 1193(j)(1). The following discussion, extracted from the staff's memorandum titled ``Final Regulatory Analysis of Amendment to the Flammability Standard for Clothing Textiles,`` addresses this requirement.

#### Potential Benefits and Costs

The clothing textiles Standard provides a minimum level of fire protection for articles of apparel worn by consumers. The amendments under consideration pertain to definitions and test methods, and are technical in nature. The amendments would not affect the substance or likely results of the performance tests in the Standard; the projected effectiveness of the Standard would neither increase nor decrease as a result. Thus, there would be no impact on the level or value of fire safety benefits (i.e., the reduced risk to the public of fire-related death, injury, or property damage) derived from the Standard.

The amendment to the Standard is not expected to increase costs to manufacturers and importers of products that currently comply. These firms have, for a number of years, been conducting compliance tests using

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methods and apparatus that would be allowed under the amendments. Overall, the amendments, if issued on a final basis, would not likely have any significant impact on apparel and fabric testing costs.

On balance, the technical amendments would have no significant impact on expected benefits or costs of the flammability standard for clothing textiles. The amendment would simplify testing requirements and allow existing practices among manufacturers and importers subject to the standard.

#### Alternatives

There is an existing U.S. voluntary standard for wearing apparel. This standard, ASTM D1230, ``Test Method for Flammability of Apparel Textiles,`` contains performance tests that are virtually identical to those in the existing FFA standard, but that are presented in a standard ASTM format with somewhat different language on some elements. The Commission could opt to use the ASTM standard language instead of the language of the amendments. The language of the CPSC's amendments is, however, clearer and more complete than that of the ASTM standard. The ASTM alternative would have no significant economic effects.

An existing U.S. voluntary consensus standard for clothing textile washing procedures, AATCC Test Method 124-2006, is incorporated by reference in the amended federal standard. An international standard (ISO) test method also exists for apparel dry cleaning procedures. The Commission could opt to incorporate the provisions of this international standard into the amended federal standard, but they are no more clear or comprehensive than CPSC's amendments. Again, this alternative would have no significant economic effects.

In summary, there are no readily available and technically feasible alternatives that would be significantly different from the Commission's amendments. Thus, no reasonable alternative would make the standard more effective or less costly.

#### F. Regulatory Flexibility Certification

As discussed in the NPR, this rulemaking will have little or no effect on small businesses in the textile and apparel industries because the revisions are largely technical, updating the FFA Standard to current industry practices. Therefore, the Commission concludes that the amendment will not have a significant economic impact on a substantial number of small entities.

#### G. Environmental Considerations

Because the revision continues current industry practices, it is not expected to alter production processes or affect the amounts of materials used in manufacturing, packaging or labeling. Therefore, the Commission does not expect the revision to have any environmental impacts.

#### H. Executive Orders

Executive Order 12988 (February 5, 1996), requires agencies to state in clear language the preemptive effect, if any, to be given to a new regulation. The clothing standard amendment would modify a flammability standard issued under the FFA. The FFA provides, with certain exceptions which are not applicable in this instance, that no state or political subdivision of a state may enact or continue in effect ``a flammability standard or other regulation'' applicable to the same fabric or product covered by an FFA standard if the state or local flammability standard or other regulation is ``designed to protect against the same risk of the occurrence fire'' unless the state or local flammability standard or regulation ``is identical'' to the FFA standard. See section 16 of the FFA (15 U.S.C. 1203).

#### I. Effective Date

Section 4(b) of the FFA (15 U.S.C. 1193(b)) provides that an amendment of a flammability standard shall become effective one year from the date it is promulgated, unless the Commission finds for good cause that an earlier or later effective date is in the public interest, and publishes that finding. Section 4(b) also requires that an amendment of a flammability standard shall exempt products ``in inventory or with the trade'' on the date the amendment becomes effective, unless the Commission limits or withdraws that exemption because those products are so highly flammable that they are dangerous for use by consumers.

The Commission believes that a shorter effective date is in the public interest. The revisions reflect practices that industry and laboratories are currently following. Thus, the impact of the changes should be minimal. Moreover, making the clarifications in the revisions effective sooner than one year should be helpful to the public. Therefore, the revisions to the Standard become effective 180 days after publication in the Federal Register. As required by the FFA, products ``in inventory or with the trade'' would be exempt from the revised standard.

#### J. Findings

Section 1193(a) and (j)(2) of the FFA require the Commission to make certain findings when it issues or amends a flammability standard. The Commission must find that the standard or amendment: (1) Is needed to adequately protect the public against the risk of the occurrence of fire leading to death, injury or significant property damage; (2) is reasonable, technologically practicable, and appropriate; (3) is limited to fabrics, related materials or products which present unreasonable risks; and (4) is stated in objective terms. 15 U.S.C. 1193(b). In addition, the Commission must find that: (1) If an applicable voluntary standard has been adopted and implemented, that compliance with the voluntary standard is not likely to adequately reduce the risk of injury, or compliance with the voluntary standard is not likely to be substantial; (2) that benefits expected from the regulation bear a reasonable relationship to its costs; and (3) that the regulation imposes the least burdensome alternative that would adequately reduce the risk of injury. These findings are discussed below.

The amendment to the Standard is needed to adequately protect the public against unreasonable risk of the occurrence of fire. The Standard dates from 1953. In the past fifty years changes in technology and consumer practices have made some parts of the Standard obsolete. Through the years, some have found the Standard's terminology and organization confusing and difficult to follow. The amendment will better reflect the modern practices followed by industry and consumers, and modifications in the language and organization of the Standard will enhance its clarity.

The amendment to the Standard is reasonable, technologically practicable, and appropriate. The amendment essentially establishes in the Standard the practices currently followed by industry and testing laboratories. These changes should enhance the Standard's reasonableness, practicability, and appropriateness.

The amendment to the Standard is limited to fabrics, related materials, and products that present an unreasonable risk. The amendment continues to apply to the same textiles as the existing Standard.

Voluntary standards. The Standard is similar to ASTM D1230 Standard Test Method for Flammability of Apparel Textiles in methods of testing but significantly different in refurbishing procedures, terminology and

criteria. The Commission believes that the

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amendment will provide better clarity to industry and testing laboratories and therefore is likely to better address the risk of injury.

Relationship of benefits to costs. Because the amendment reflects current practices, both anticipated costs and benefits are likely to be negligible.

Least burdensome requirement. The amendment makes no substantive changes to the Standard, but only provides modifications that are necessary to update and clarify the Standard.

#### K. Conclusion

For the reasons discussed above, the Commission finds that amending the clothing textile flammability standard is needed to adequately protect the public against the unreasonable risk of the occurrence of fire leading to death, injury, and significant property damage. The Commission also finds that the amendment to the Standard is reasonable, technologically practicable, and appropriate. The Commission further finds that the amendment is limited to the fabrics, related materials and products which present such unreasonable risks.

#### List of Subjects in 16 CFR Part 1610

Clothing, Consumer protection, Flammable materials, Incorporation by reference, Reporting and recordkeeping requirements, Textiles, Warranties.

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Therefore, the Commission amends Title 16 of the Code of Federal Regulations by revising part 1610 to read as follows:

#### PART 1610--STANDARD FOR THE FLAMMABILITY OF CLOTHING TEXTILES

##### Subpart A--The Standard

###### Sec.

- 1610.1 Purpose, scope and applicability.
- 1610.2 Definitions.
- 1610.3 Summary of test method.
- 1610.4 Requirements for classifying textiles.
- 1610.5 Test apparatus and materials.
- 1610.6 Test procedure.
- 1610.7 Test sequence and classification criteria.
- 1610.8 Reporting results.

##### Subpart B--Rules and Regulations

- 1610.31 Definitions.
- 1610.32 General requirements.
- 1610.33 Test procedures for textile fabrics and film.
- 1610.34 Only uncovered or exposed parts of wearing apparel to be tested.
- 1610.35 Procedures for testing special types of textile fabrics under the standard.
- 1610.36 Application of Act to particular types of products.
- 1610.37 Reasonable and representative tests to support guaranties.
- 1610.38 Maintenance of records by those furnishing guaranties.
- 1610.39 Shipments under section 11(c) of the Act.
- 1610.40 Use of alternative apparatus, procedures, or criteria for tests for guaranty purposes.

##### Subpart C--Interpretations and Policies

1610.61 Reasonable and representative testing to assure compliance with the standard for the clothing textiles.

- FIGURE 1 TO PART 1610--SKETCH OF FLAMMABILITY APPARATUS
- FIGURE 2 TO PART 1610--FLAMMABILITY APPARATUS VIEWS
- FIGURE 3 TO PART 1610--SPECIMEN HOLDER SUPPORTED IN SPECIMEN RACK
- FIGURE 4 TO PART 1610--AN EXAMPLE OF A TYPICAL INDICATOR FINGER
- FIGURE 5 TO PART 1610--AN EXAMPLE OF A TYPICAL GAS SHIELD
- FIGURE 6 TO PART 1610--IGNITER
- FIGURE 7 TO PART 1610--BRUSHING DEVICE
- FIGURE 8 TO PART 1610--BRUSH
- FIGURE 9 TO PART 1610--BRUSHING DEVICE TEMPLATE

Authority: 15 U.S.C. 1191-1204.

## Subpart A--The Standard

## Sec. 1610.1 Purpose, scope and applicability.

(a) Purpose. The purpose of this standard is to reduce danger of injury and loss of life by providing, on a national basis, standard methods of testing and rating the flammability of textiles and textile products for clothing use, thereby prohibiting the use of any dangerously flammable clothing textiles.

(b) Scope. The Standard provides methods of testing the flammability of clothing and textiles intended to be used for clothing, establishes three classes of flammability, sets forth the requirements which textiles shall meet to be classified, and warns against the use of those textiles which have burning characteristics unsuitable for clothing. Hereafter, "clothing and textiles intended to be used for clothing" shall be referred to as "textiles."

(c) Specific exceptions. This standard shall not apply to: (1) Hats, provided they do not constitute or form part of a covering for the neck, face, or shoulders when worn by individuals;

(2) Gloves, provided they are not more than 14 inches in length and are not affixed to or do not form an integral part of another garment;

(3) Footwear, provided it does not consist of hosiery in whole or part and is not affixed to or does not form an integral part of another garment;

(4) Interlining fabrics, when intended or sold for use as a layer between an outer shell and an inner lining in wearing apparel.

(d) Specific exemptions. Experience gained from years of testing in accordance with the Standard demonstrates that certain fabrics consistently yield acceptable results when tested in accordance with the Standard. Therefore, persons and firms issuing an initial guaranty of any of the following types of fabrics, or of products made entirely from one or more of these fabrics, are exempt from any requirement for testing to support guaranties of those fabrics:

(1) Plain surface fabrics, regardless of fiber content, weighing 2.6 ounces per square yard or more; and

(2) All fabrics, both plain surface and raised-fiber surface textiles, regardless of weight, made entirely from any of the following fibers or entirely from combination of the following fibers: acrylic, modacrylic, nylon, olefin, polyester, wool.

(e) Applicability. The requirements of this part 1610 shall apply to textile fabric or related material in a form or state ready for use in an article of wearing apparel, including garments and costumes finished for consumer use.

## Sec. 1610.2 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 this part 1610.

(a) Base burn (also known as base fabric ignition or fusing) means the point at which the flame burns the ground (base) fabric of a raised surface textile fabric and provides a self-sustaining flame. Base burns, used to establish a Class 3 fabric, are those burns resulting from surface flash that occur on specimens in places other than the point of impingement when the warp and fill yarns of a raised surface textile fabric undergo combustion. Base burns can be identified by an opacity change, scorching on the reverse side of the fabric, or when a physical hole is evident.

(b) Burn time means the time elapsed from ignition until the stop thread is severed as measured by the timing mechanism of the test apparatus.

(c) Dry cleaning means the cleaning of samples in a commercial dry cleaning machine under the conditions described in Sec. 1610.6.

(d) Film means any non-rigid, unsupported plastic, rubber or other synthetic or natural film or sheeting, subject to the Act, or any combination thereof, including transparent, translucent, and opaque material, whether plain, embossed, molded, or otherwise surface treated, which is in a

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form or state ready for use in wearing apparel, and shall include film

or sheeting of any thickness.

(e) Flammability means those characteristics of a material that pertain to its relative ease of ignition and relative ability to sustain combustion.

(f) Flame application time means the 1 second during which the ignition flame is applied to the test specimen.

(g) Ignition means that there is a self-sustaining flame on the specimen after the test flame is removed.

(h) Interlining means any textile which is intended for incorporation into an article of wearing apparel as a layer between an outer shell and an inner lining.

(i) Laundering means washing with an aqueous detergent solution and includes rinsing, extraction and tumble drying as described in Sec. 1610.6.

(j) Long dimension means the 150 mm (6 in) length of test specimen.

(k) Plain surface textile fabric means any textile fabric which does not have an intentionally raised fiber or yarn surface such as a pile, nap, or tuft, but shall include those fabrics that have fancy woven, knitted or flock-printed surfaces.

(l) Raised surface textile fabric means any textile fabric with an intentionally raised fiber or yarn surface, such as a pile, including flocked pile, nap, or tufting.

(m) Refurbishing means dry cleaning and laundering in accordance with Sec. 1610.6.

(n) Sample means a portion of a lot of material which is taken for testing or for record keeping purposes.

(o) Specimen means a 50 mm by 150 mm (2 in by 6 in) section of sample.

(p) Stop thread supply means No. 50, white, mercerized, 100% cotton sewing thread.

(q) Surface flash means a rapid burning of the pile fibers and yarns on a raised fiber surface textile that may or may not result in base burning.

(r) Textile fabric means any coated or uncoated material subject to the Act, except film and fabrics having a nitro-cellulose fiber, finish, or coating, which is woven, knitted, felted or otherwise produced from any natural or manmade fiber, or substitute therefore, or combination thereof, of 50 mm (2 in) or more in width, and which is in a form or state ready for use in wearing apparel, including fabrics which have undergone further processing, such as dyeing and finishing, in garment form, for consumer use.

#### Sec. 1610.3 Summary of test method.

The Standard provides methods of testing the flammability of textiles from or intended to be used for apparel; establishes three classes of flammability; sets forth the requirements for classifying textiles; and prohibits the use of single or multi-layer textile fabrics that have burning characteristics that make them unsuitable for apparel. All textiles shall be tested before and after refurbishing according to Sec. 1610.6. Each specimen cut from the textile shall be inserted in a frame, brushed if it has a raised-fiber surface, and held in a special apparatus at an angle of 45[deg]. A standardized flame shall be applied to the surface near the lower end of the specimen for 1 second, and the time required for the flame to proceed up the fabric a distance of 127 mm (5 in) shall be recorded. A notation shall be made as to whether the base of a raised-surface textile fabric ignites or fuses.

#### Sec. 1610.4 Requirements for classifying textiles.

(a) Class 1, Normal Flammability. Class 1 textiles exhibit normal flammability and are acceptable for use in clothing. This class shall include textiles which meet the minimum requirements set forth in paragraph (a)(1) or paragraph (a)(2) of this section.

(1) Plain surface textile fabric. Such textiles in their original state and/or after being refurbished as described in Sec. 1610.6(a) and Sec. 1610.6(b), when tested as described in Sec. 1610.6 shall be classified as Class 1, Normal flammability, when the burn time is 3.5 seconds or more.

(2) Raised surface textile fabric. Such textiles in their original state and/or after being refurbished as described in Sec. 1610.6(a) and Sec. 1610.6(b), when tested as described in Sec. 1610.6, shall be

classified as Class 1, Normal flammability, when the burn time is more than 7 seconds, or when they burn with a rapid surface flash (0 to 7 seconds), provided the intensity of the flame is so low as not to ignite or fuse the base fabric.

(b) Class 2, Intermediate flammability. Class 2 fabrics, applicable only to raised-fiber surface textiles, are considered to be of intermediate flammability, but may be used for clothing. This class shall include textiles which meet the minimum requirements set forth in paragraph (b)(2) of this section.

(1) Plain surface textile fabric. Class 2 is not applicable to plain surface textile fabrics.

(2) Raised surface textile fabric. Such textiles in their original state and/or after being refurbished as described in Sec. 1610.6(a) and Sec. 1610.6(b), when tested as described in Sec. 1610.6, shall be classified as Class 2, Intermediate flammability, when the burn time is from 4 through 7 seconds, both inclusive, and the base fabric ignites or fuses.

(c) Class 3, Rapid and intense burning. Class 3 textiles exhibit rapid and intense burning, are dangerously flammable and shall not be used for clothing. This class shall include textiles which have burning characteristics as described in paragraphs (c)(1) and (c)(2) of this section. Such textiles are considered dangerously flammable because of their rapid and intense burning.

(1) Plain surface textile fabric. Such textiles in their original state and/or after refurbishing as described in Sec. 1610.6(a) and Sec. 1610.6(b), when tested as described in Sec. 1610.6, shall be classified as Class 3 Rapid and Intense Burning when the time of flame spread is less than 3.5 seconds.

(2) Raised surface textile fabric. Such textiles in their original state and/or after refurbishing as described in Sec. 1610.6(a) and Sec. 1610.6(b), when tested as described in Sec. 1610.6, shall be classified as Class 3 Rapid and Intense Burning when the time of flame spread is less than 4 seconds, and the base fabric starts burning at places other than the point of impingement as a result of the surface flash (test result code SFBB).

Table 1 to Sec. 1610.4.--Summary of Test Criteria for Specimen Classification  
[see Sec. 1610.7]

Class	Plain surface textile fabric	Raised surface textile fabric
1.....	Burn time is 3.5 seconds or more ACCEPTABLE (3.5 sec is a pass).	(1) Burn time is greater than 7.0 seconds; or (2) Burn time is 0-7 seconds with no base burns (SFBB). Exhibits rapid surface flash only. ACCEPTABLE.
2.....	Class 2 is not applicable to plain surface textile fabrics.	Burn time is 4-7 seconds (inclusive) with base burn (SFBB). ACCEPTABLE.
3.....	Burn time is less than 3.5 seconds. NOT ACCEPTABLE.	Burn time is less than 4.0 seconds with base burn (SFBB). NOT ACCEPTABLE.

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Sec. 1610.5 Test apparatus and materials.

(a) Flammability apparatus. The flammability test apparatus consists of a draft-proof ventilated chamber enclosing a standardized ignition mechanism, sample rack, and automatic timing mechanism. The flammability apparatus shall meet the minimum requirements for testing as follows.

(1) Test chamber--(i) Test chamber structure. The test chamber shall be a metal, draft-proof ventilated chamber. The test chamber shall have inside dimensions of 35.3 cm high by 36.8 cm wide by 21.6 cm deep (14 in by 14.5 in by 8.5 in). There shall be eleven or twelve 12.7 mm diameter (0.5 in) holes equidistant along the rear of the top closure. The front of the chamber shall be a close fitting door with an insert made of clear material (i.e., glass, plexiglass) to permit observation of the entire test. A ventilating strip is provided at the base of the door in the front of the apparatus. The test chamber to be used in this test method is illustrated in Figures 1 and 2 of this part.

(ii) Specimen rack. The specimen rack provides support for the specimen holder (described in paragraph (a)(1)(iii) of this section) in which the specimen is mounted for testing. The angle of inclination shall be 45[deg]. Two guide pins projecting downward from the center of the base of the rack travel in slots provided in the floor of the chamber so that adjustment can be made for the thickness of the specimen in relation to the test flame. A stop shall be provided in the base of the chamber to assist in adjusting the position of the rack. The specimen rack shall be constructed so that: It supports the specimen holder in a way that does not obstruct air flow around the bottom edge of the fabric specimen; and the fabric specimen is properly aligned with the igniter tip during flame impingement. The specimen rack to be used in this test method is illustrated in Figures 1 through 3 of this part. Movable rack: Refer to the manufacturers' instruction in relation to the adjustment procedure to move the rack into the appropriate position for the indicator finger alignment.

(iii) Specimen holder. The specimen holder supports and holds the fabric specimen. The specimen holder shall consist of two 2 mm (0.06 in) thick U-shaped matched metal plates. The plates are slotted and loosely pinned for alignment. The specimen shall be firmly sandwiched in between the metal plates with clamps mounted along the sides. The two plates of the holder shall cover all but 3.8 cm (1.5 in) of the width of the specimen for its full length. See Figures 1 and 3 of this part. The specimen holder shall be supported in the draft-proof chamber on the rack at an angle of 45[deg].

(iv) Indicator finger. The position of the specimen rack (described in paragraph (a)(1)(ii) of this section) shall be adjusted, so the tip of the indicator finger just touches the surface of the specimen. An indicator finger is necessary to ensure that the tip of the test flame will impinge on the specimen during testing. The indicator finger to be used in this test method is illustrated in Figures 1, 2 and 4 of this part.

(v) Ignition mechanism. The ignition mechanism shall consist of a motor driven butane gas jet formed around a 26-gauge hypodermic needle and creates the test flame. The test flame shall be protected by a shield. See Figure 5. The test flame is adjusted to 16 mm (0.625 in) and applied to the specimen for 1 second. A trigger device is located in the front of the apparatus, the pulling or pushing of which activates the test flame impingement and timing device. Electro-mechanical devices (i.e., servo-motors, solenoids, micro-switches, and electronic circuits, in addition to miscellaneous custom made cams and rods, shock absorbing linkages, and various other mechanical components) can be used to control and apply the flame impingement. See Figure 6 of this part.

(vi) Draft ventilator strip. A draft ventilator strip shall be placed across the front opening, sealing the space between the sliding door when in lowered position and the base on which the grid rack is attached. (See Figure 1 of this part.)

(vii) Stop weight. The weight, attached by means of a clip to the stop thread, in dropping actuates the stop motion for the timing mechanism. The weight shall be at least 30g (1.16 oz).

(viii) Door. The door shall be a clear (i.e. glass or plexiglass) door, close fitting and allows for viewing of the entire test.

(ix) Hood. The hood or other suitable enclosure shall provide a draft-proof environment surrounding the test chamber. The hood or other suitable enclosure shall have a fan or other means for exhausting smoke and/or fumes produced by testing.

(2) Stop thread and thread guides--(i) Stop thread. The stop thread shall be stretched from the spool through suitable thread guides provided on the specimen holder and chamber walls.

(ii) Stop thread supply. This supply, consisting of a spool of No. 50, white, mercerized, 100% cotton sewing thread, shall be fastened to the side of the chamber and can be withdrawn by releasing the thumbscrew holding it in position.

(iii) Thread Guides. The thread guides permit the lacing of the stop thread in the proper position exactly 127 mm (5 in) from the point where the center of the ignition flame impinges on the test specimen. The stop thread shall be 9.5 mm (0.37 in) above and parallel to the lower surface of the top plate of the specimen holder. This condition can be achieved easily and reproducibly with the use of a thread guide popularly referred to as a ``sky hook'' suspended down from the top panel along with two L-shaped thread guides attached to the upper end of the top plate of the specimen holder. Two other thread guides can be installed on the rear panel to draw the thread away from directly over the test flame. The essential condition, however, is the uniform height of 9.5 mm (0.37 in) for the stop thread and not the number, placement or design of the thread guides.

(iv) Stop weight thread guide. This thread guide shall be used to guide the stop thread when attaching the stop weight.

(3) Supply for test flame. (i) The fuel supply shall be a cylinder of chemically pure (c. p.) butane.

(ii) The fuel-tank control valve shall consist of a sensitive control device for regulating the fuel supply at the tank.

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(iii) The flow control device, such as a manometer or flow meter, shall be sufficient to maintain a consistent flame length of 16 mm ( $\frac{5}{8}$  in).

(4) Timing Device. The timing device consists of a timer, driving mechanism and weight. The timer, by means of special attachments, is actuated to start by connection with the gas jet. A trigger device (described in paragraph (a)(1)(v) of this section) activates the flame impingement, causing the driving mechanism to move the gas jet to its most forward position and automatically starts the timer at the moment of flame impact with the specimen. The falling weight, when caused to move by severance of the stop thread, stops the timer. Time shall be read directly and recorded as a burn time. Read burn time to 0.1 second. An electronic or mechanical timer can be used to record the burn time, and electro-mechanical devices (i.e., servo-motors, solenoids, micro-switches, and electronic circuits, in addition to miscellaneous custom made cams and rods, shock absorbing linkages, and various other mechanical components) can be used to control and apply the flame impingement.

(b) Specimen preparation equipment and materials.

(1) Laboratory drying oven. This shall be a forced circulation drying oven capable of maintaining 105[deg] 3[deg] C (221[deg] 5[deg] F) for 30 2 minutes to dry the specimens while mounted in the specimen holders.

(2) Desiccator. This shall be an airtight and moisture tight chamber capable of holding the specimens horizontally without contacting each other during the cooling period following drying, and shall contain silica gel desiccant.

(3) Desiccant. Anhydrous silica gel shall be used as the desiccant.

(4) Automatic washing machine. The automatic washing machine shall be as described in Sec. 1610.6(b)(1)(ii).

(5) Automatic tumble dryer. The automatic tumble dryer shall be as described in Sec. 1610.6(b)(1)(ii).

(6) Commercial dry cleaning machine. The commercial dry cleaning machine shall be capable of providing a complete automatic dry-to-dry cycle using perchloroethylene solvent and a cationic drycleaning detergent as specified in Sec. 1610.6(b)(1)(i).

(7) Dry cleaning solvent. The solvent shall be perchloroethylene, commercial grade.

(8) Dry cleaning detergent. The dry cleaning detergent shall be cationic class.

(9) Laundering detergent. The laundering detergent shall be as specified in Sec. 1610.6(b)(1)(ii).

(10) Brushing device. The brushing device shall consist of a base board over which a small carriage is drawn. See Figure 7 of this part. This carriage runs on parallel tracks attached to the edges of the upper surface of the base board. The brush is hinged with pin hinges at the rear edge of the base board and rests on the carriage vertically with a pressure of 150 gf (0.33 lbf). The brush shall consist of two rows of stiff nylon bristles mounted with the tufts in a staggered position. The bristles are 0.41 mm (0.016 in) in diameter and 19 mm (0.75 in) in length. There are 20 bristles per tuft and 4 tufts per inch. See Figure 8 of this part. A clamp is attached to the forward edge of the movable carriage to permit holding the specimen on the

carriage during the brushing operation. The purpose of the metal plate or ``template'' on the carriage of the brushing device is to support the specimen during the brushing operation. The template shall be 3.2 mm (0.13 in) thick. See Figure 9 of this part.

#### Sec. 1610.6 Test procedure.

The test procedure is divided into two steps. Step 1 is testing in the original state; Step 2 is testing after the fabric has been refurbished according to paragraph (b)(1) of this section.

(a) Step 1--Testing in the original state.

(1) Tests shall be conducted on the fabric in a form or state ready for use in wearing apparel. Determine whether the fabric to be tested is a plain surface textile fabric or a raised surface textile fabric as defined in Sec. 1610.2 (k) and (l). There are some fabrics that require extra attention when preparing test specimens because of their particular construction characteristics. Examples of these fabrics are provided in paragraphs (a)(1)(i) through (vi) of this section along with guidelines for preparing specimens from these fabrics. This information is not intended to be all-inclusive.

(i) Flocked fabrics. Fabrics that are flocked overall are treated as raised surface textile fabrics as defined in Sec. 1610.2(1). Flock printed fabrics (usually in a pattern and not covering the entire surface) shall be treated as plain surface textile fabrics as defined in Sec. 1610.2(k).

(ii) Cut velvet fabrics. Cut velvet fabrics with a patterned construction shall be considered a raised surface textile fabric as defined in Sec. 1610.2(1).

(iii) Metallic thread fabrics. Metallic thread fabrics shall be considered plain surface textile fabrics provided the base fabric is smooth. The specimens shall be cut so that the metallic thread is parallel to the long dimension of the specimen and arranged so the test flame impinges on a metallic thread.

(iv) Embroidery. Embroidery on netting material shall be tested with two sets of preliminary specimens to determine the most flammable area (which offers the greatest amount of netting or embroidery in the 150 mm (6 in.) direction). One set of netting only shall be tested and the other set shall consist mainly of embroidery with the specimens cut so that the test flame impinges on the embroidered area. Test the most flammable area according to the plain surface textile fabric requirements. The full test shall be completed on a sample cut from the area that has the fastest burn rate.

(v) Burn-out patterns. Flat woven constructions with burn-out patterns shall be considered plain surface textile fabrics as defined in Sec. 1610.2(k).

(vi) Narrow fabrics and loose fibrous materials. Narrow fabrics and loose fibrous materials manufactured less than 50 mm (2 in) in width in either direction shall not be tested. If a 50 mm by 150 mm (2 in by 6 in) specimen cannot be cut due to the nature of the item, i.e. hula skirts, leis, fringe, loose feathers, wigs, hairpieces, etc., do not conduct a test.

(2) Plain surface textile fabrics: (i) Preliminary trials. Conduct preliminary trials to determine the quickest burning direction. The specimen size shall be 50 mm by 150 mm (2 in by 6 in). Cut one specimen from each direction of the fabric. Identify the fabric direction being careful not to make any identifying marks in the exposed area to be tested. Preliminary specimens shall be mounted and conditioned as described in paragraphs (a)(2)(ii) through (iv) of this section and then tested following the procedure in paragraph (c) of this section to determine if there is a difference in the burning characteristics with respect to the direction of the fabric.

(ii) Identify and cut test specimens. Cut the required number of test specimens to be tested (refer to Sec. 1610.7(b)(1)). Each specimen shall be 50 mm by 150 mm (2 in by 6 in), with the long dimension in the direction in which burning is most rapid as established in the preliminary trials. Be careful not to make any identifying marks in the exposed area to be tested.

(iii) Mount specimens. Specimens shall be placed in the holders, with the side to be burned face up. Even though plain surface textile fabrics are not brushed, all specimens shall be mounted in a specimen holder placed on the carriage that rides on the

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brushing device to ensure proper position in the holder. A specimen shall be placed between the two metal plates of a specimen holder and clamped. Each specimen shall be mounted and clamped prior to conditioning and testing.

(iv) Condition specimens. All specimens mounted in the holders shall then be placed in a horizontal position on an open metal shelf in the oven to permit free circulation of air around them. The specimens shall be dried in the oven for 30 2 minutes at 105[deg]

3[deg] C (221[deg] 5[deg] F), removed from the oven and placed over a bed of anhydrous silica gel desiccant in a desiccator until cool, but not less than 15 minutes.

(v) Flammability test. Follow the test procedure in paragraph (c) of this section and also follow the test sequence in Sec. 1610.7(b)(1).

(3) Raised surface textile fabrics--(i) Preliminary trials. The most flammable surface of the fabric shall be tested. Conduct preliminary trials and/or visual examination to determine the quickest burning area. The specimen size shall be 50 mm by 150 mm (2 in by 6 in). For raised surface textile fabrics, the direction of the lay of the surface fibers shall be parallel with the long dimension of the specimen. Specimens shall be taken from that part of the raised-fiber surface that appears to have the fastest burn time. For those fabrics where it may be difficult to visually determine the correct direction of the lay of the raised surface fibers, preliminary tests can be done to determine the direction of the fastest burn time. For textiles with varying depths of pile, tufting, etc., the preliminary test specimens are taken from each depth of pile area to determine which exhibits the quickest rate of burning. A sufficient number of preliminary specimens shall be tested to provide adequate assurance that the raised surface textile fabric will be tested in the quickest burning area. Preliminary specimens shall be mounted and conditioned as described below and tested following the procedure in paragraph (c) of this section.

(ii) Identify and cut test specimens. Cut the required number of specimens (refer to Sec. 1610.7(b)(3)) to be tested. Each specimen shall be 50 mm by 150 mm (2 in by 6 in), with the specimen taken from the direction in which burning is most rapid as established in the preliminary trials and/or visual examination. Be careful not to make any identifying marks in the exposed area to be tested.

(iii) Mount specimens. Prior to mounting the specimen, run a fingernail along the 150 mm (6 in) edge of the fabric not more than 6.4 mm (0.25 in) in from the side to determine the lay of the surface fibers. All specimens shall be mounted in a specimen holder placed on the carriage that rides on the brushing device. The specimens shall be mounted with the side to be burned face up and positioned so the lay of the surface fibers is going away from the closed end of the specimen holder. The specimen must be positioned in this manner so that the brushing procedure described in paragraph (a)(3)(iv) of this section will raise the surface fibers, i.e., the specimen is brushed against the direction of the lay of the surface fibers. The specimen shall be placed between the two metal plates of the specimen holder and clamped.

(iv) Brush specimens. After mounting in the specimen holder (and with the holder still on the carriage that rides on the brushing device) each specimen shall be brushed one time. The carriage is pushed to the rear of the brushing device, see Figure 7, and the brush, see Figure 8, lowered to the face of the specimen. The carriage shall be drawn forward by hand once against the lay of the surface fibers at a uniform rate. Brushing of a specimen shall be performed with the specimen mounted in a specimen holder. The purpose of the metal plate or "template" on the carriage of the brushing device is to support the specimen during the brushing operation. See Figure 9.

(v) Condition specimens. All specimens (mounted and brushed) in the holders shall be then placed in a horizontal position on an open metal shelf in the oven to permit free circulation of air around them. The specimens shall be dried in the oven for 30 2 minutes at 105[deg] 3[deg] C (221 [deg] 5[deg] F)

removed from the oven and placed over a bed of anhydrous silica gel dessiccant in a desiccator until cool, but not less than 15 minutes.

(vi) Conduct flammability test. Follow the procedure in paragraph (c) of this section and follow the test sequence in Sec. 1610.7(b)(3).

(b) Step 2--Refurbishing and testing after refurbishing.

(1) The refurbishing procedures are the same for both plain surface textile fabrics and raised fiber surface textile fabrics. Those samples that result in a Class 3, Rapid and Intense Burning after Step 1 testing in the original state shall not be refurbished and shall not undergo Step 2.

(i) Dry cleaning procedure. (A) All samples shall be dry cleaned before they undergo the laundering procedure. Samples shall be dry cleaned in a commercial dry cleaning machine, using the following prescribed conditions:

Solvent: Perchloroethylene, commercial grade  
 Detergent class: Cationic.  
 Cleaning time: 10-15 minutes.  
 Extraction time: 3 minutes.  
 Drying Temperature: 60-66[deg] C (140-150[deg] F).  
 Drying Time: 18-20 minutes.  
 Cool Down/Deodorization time: 5 minutes.

Samples shall be dry cleaned in a load that is 80% of the machine's capacity.

(B) If necessary, ballast consisting of clean textile pieces or garments, white or light in color and consisting of approximately 80% wool fabric pieces and 20% cotton fabric pieces, shall be used.

(ii) Laundering procedure. The sample, after being subjected to the dry cleaning procedure, shall be washed and dried one time in accordance with sections 8.2.2, 8.2.3 and 8.3.1(A) of AATCC Test Method 124-2006 ``Appearance of Fabrics after Repeated Home Laundering'' (incorporated by reference at Sec. 1610.6(b)(1)(B)(iii)). Washing shall be performed in accordance with sections 8.2.2 and 8.2.3 of AATCC Test Method 124-2006 using AATCC 1993 Standard Reference Detergent, powder and wash water temperature (IV) (120[deg] \* 50\* F; 49\* \* 30\* C) specified in Table II of that method, and the water level, agitator speed, washing time, spin speed and final spin cycle specified for ``Normal/Cotton Sturdy'' in Table III. A maximum wash load shall be 8 pounds (3.63 kg) and may consist of any combination of test samples and dummy pieces. Drying shall be performed in accordance with section 8.3.1(A) of that test method, Tumble Dry, using the exhaust temperature (150[deg] \* 10 [deg]F; 66[deg] \* 5 [deg]C) and cool down time of 10 minutes specified in the ``Durable Press'' conditions of Table IV.

(iii) AATCC Test Method 124-2006 ``Appearance of Fabrics after Repeated Home Laundering,'' is incorporated by reference. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, North Carolina 27709. You may inspect a copy at the Office of the Secretary, Consumer Product Safety Commission, Room 502, 4330 East West Highway, Bethesda, Maryland 20814 or at the National Archives and Records Administration (NARA). For

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information on the availability of this material at NARA, call 202-741-6030, or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(2) Testing plain surface textile fabrics after refurbishing. The test procedure is the same as for Step 1--Testing in the original state described in paragraph (a)(1) of this section; also follow the test sequence Sec. 1610.7(b)(2).

(3) Testing raised fiber surface textile fabrics after refurbishing. The test procedure is the same as for Step 1--Testing in the original state as described in paragraph (a)(3) of this section; also follow the test sequence in Sec. 1610.7(b)(4).

(c) Procedure for testing flammability. (1) The test chamber shall be located under the hood (or other suitable enclosure) with the fan turned off. Open the control valve in the fuel supply. Allow approximately 5 minutes for the air to be drawn from the fuel line, ignite the gas and adjust the test flame to a length of 16 mm ( $\frac{5}{8}$  in), measured from its tip to the opening in the gas nozzle.

(2) Remove one mounted specimen from the desiccator at a time and place it in position on the specimen rack in the chamber of the apparatus. Thick fabrics may require adjustment of the specimen rack so that the tip of the indicator finger just touches the surface of the specimen.

(3) Adjust the position of the specimen rack of the flammability test chamber so that the tip of the indicator finger just touches the face of the mounted specimen.

(4) String the stop thread through the guides in the upper plate of the specimen holder across the top of the specimen, and through any other thread guide(s) of the chamber. Hook the stop weight in place

close to and just below the stop weight thread guide. Set the timing mechanism to zero. Close the door of the flammability test chamber.

(5) Begin the test within 45 seconds of the time the specimen was removed from the desiccator. Activate the trigger device to impinge the test flame. The trigger device controls the impingement of the test flame onto the specimen and starts the timing device. The timing is automatic and stops when the weight is released by the severing of the stop thread.

(6) At the end of each test, turn on the hood fan to exhaust any fumes or smoke produced during the test.

(7) Record the burn time (reading of the timer) for each specimen, along with visual observation using the test result codes given in Sec. 1610.8. If there is no burn time, record the visual observation using the test result codes. Please note for raised-fiber surface textile fabrics, specimens should be allowed to continue burning, even though a burn rate is measured, to determine if the base fabric will fuse.

(8) After exhausting all fumes and smoke produced during the test, turn off the fan before testing the next specimen.

#### Sec. 1610.7 Test sequence and classification criteria.

(a) Preliminary and final classifications. Preliminary classifications are assigned based on the test results both before and after refurbishing. The final classification shall be the preliminary classification before or after refurbishing, whichever is the more severe flammability classification.

(b) Test sequence and classification criteria.

(1) Step 1, Plain Surface Textile Fabrics in the original state.

(i) Conduct preliminary tests in accordance with Sec.

1610.6(a)(2)(i) to determine the fastest burning direction of the fabric.

(ii) Prepare and test five specimens from the fastest burning direction. The burn times determine whether to assign the preliminary classification and proceed to Sec. 1610.6(b) or to test five additional specimens.

(iii) Assign the preliminary classification of Class 1, Normal Flammability and proceed to Sec. 1610.6(b) when:

(A) There are no burn times; or

(B) There is only one burn time and it is equal to or greater than 3.5 seconds; or

(C) The average burn time of two or more specimens is equal to or greater than 3.5 seconds.

(iv) Test five additional specimens when there is either only one burn time, and it is less than 3.5 seconds; or there is an average burn time of less than 3.5 seconds. Test these five additional specimens from the fastest burning direction as previously determined by the preliminary specimens. The burn times for the 10 specimens determine whether to:

(A) Stop testing and assign the final classification as Class 3, Rapid and Intense Burning only when there are two or more burn times with an average burn time of less than 3.5 seconds; or

(B) Assign the preliminary classification of Class 1, Normal Flammability and proceed to Sec. 1610.6(b) when there are two or more burn times with an average burn time of 3.5 seconds or greater.

(v) If there is only one burn time out of the 10 test specimens, the test is inconclusive. The fabric cannot be classified.

(2) Step 2, Plain Surface Textile Fabrics after refurbishing in accordance with Sec. 1610.6(b)(1).

(i) Conduct preliminary tests in accordance with Sec.

1610.6(a)(2)(i) to determine the fastest burning direction of the fabric.

(ii) Prepare and test five specimens from the fastest burning direction. The burn times determine whether to stop testing and assign the preliminary classification or to test five additional specimens.

(iii) Stop testing and assign the preliminary classification of Class 1, Normal Flammability, when:

(A) There are no burn times; or

(B) There is only one burn time, and it is equal to or greater than 3.5 seconds; or

(C) The average burn time of two or more specimens is equal to or greater than 3.5 seconds.

(iv) Test five additional specimens when there is only one burn time, and it is less than 3.5 seconds; or there is an average burn time

less than 3.5 seconds. Test five additional specimens from the fastest burning direction as previously determined by the preliminary specimens. The burn times for the 10 specimens determine the preliminary classification when:

(A) There are two or more burn times with an average burn time of 3.5 seconds or greater. The preliminary classification is Class 1, Normal Flammability; or

(B) There are two or more burn times with an average burn time of less than 3.5 seconds. The preliminary and final classification is Class 3, Rapid and Intense Burning; or

(v) If there is only one burn time out of the 10 specimens, the test results are inconclusive. The fabric cannot be classified.

(3) Step 1, Raised Surface Textile Fabric in the original state.

(i) Determine the area to be most flammable per Sec.

1610.6(a)(3)(i).

(ii) Prepare and test five specimens from the most flammable area.

The burn times and visual observations determine whether to assign a preliminary classification and proceed to Sec. 1610.6(b) or to test five additional specimens.

(iii) Assign the preliminary classification and proceed to Sec.

1610.6(b) when:

(A) There are no burn times. The preliminary classification is Class 1, Normal Flammability; or

(B) There is only one burn time and it is less than 4 seconds without a base burn, or it is 4 seconds or greater with or without a base burn. The preliminary

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classification is Class 1, Normal Flammability; or

(C) There are no base burns regardless of the burn time(s). The preliminary classification is Class 1, Normal Flammability; or

(D) There are two or more burn times with an average burn time of 0-7 seconds with a surface flash only. The preliminary classification is Class 1, Normal Flammability; or

(E) There are two or more burn times with an average burn time greater than 7 seconds with any number of base burns. The preliminary classification is Class 1, Normal Flammability; or

(F) There are two or more burn times with an average burn time of 4 through 7 seconds (both inclusive) with no more than one base burn. The preliminary classification is Class 1, Normal Flammability; or

(G) There are two or more burn times with an average burn time less than 4 seconds with no more than one base burn. The preliminary classification is Class 1, Normal Flammability; or

(H) There are two or more burn times with an average burn time of 4 through 7 seconds (both inclusive) with two or more base burns. The preliminary classification is Class 2, Intermediate Flammability.

(iv) Test five additional specimens when the tests of the initial five specimens result in either of the following: There is only one burn time and it is less than 4 seconds with a base burn; or the average of two or more burn times is less than 4 seconds with two or more base burns. Test these five additional specimens from the most flammable area. The burn times and visual observations for the 10 specimens will determine whether to:

(A) Stop testing and assign the final classification only if the average burn time for the 10 specimens is less than 4 seconds with three or more base burns. The final classification is Class 3, Rapid and Intense Burning; or

(B) Assign the preliminary classification and continue on to Sec. 1610.6(b) when:

(1) The average burn time is less than 4 seconds with no more than two base burns. The preliminary classification is Class 1, Normal Flammability; or

(2) The average burn time is 4-7 seconds (both inclusive) with no more than 2 base burns. The preliminary classification is Class 1, Normal Flammability, or

(3) The average burn time is greater than 7 seconds. The preliminary classification is Class 1, Normal Flammability; or

(4) The average burn time is 4 through 7 seconds (both inclusive) with three or more base burns. The preliminary classification is Class 2, Intermediate Flammability, or

(v) If there is only one burn time out of the 10 specimens, the test is inconclusive. The fabric cannot be classified.

(4) Step 2, Raised Surface Textile Fabric After Refurbishing in accordance with Sec. 1610.6(b).

- (i) Determine the area to be most flammable in accordance with Sec. 1610.6(a)(3)(i).
- (ii) Prepare and test five specimens from the most flammable area. Burn times and visual observations determine whether to stop testing and determine the preliminary classification or to test five additional specimens.
- (iii) Stop testing and assign the preliminary classification when:
- (A) There are no burn times. The preliminary classification is Class 1, Normal Flammability; or
- (B) There is only one burn time, and it is less than 4 seconds without a base burn; or it is 4 seconds or greater with or without a base burn. The preliminary classification is Class 1, Normal Flammability; or
- (C) There are no base burns regardless of the burn time(s). The preliminary classification is Class 1, Normal Flammability; or
- (D) There are two or more burn times with an average burn time of 0 to 7 seconds with a surface flash only. The preliminary classification is Class 1, Normal Flammability; or
- (E) There are two or more burn times with an average burn time greater than 7 seconds with any number of base burns. The preliminary classification is Class 1, Normal Flammability; or
- (F) There are two or more burn times with an average burn time of 4 through 7 seconds (both inclusive) with no more than one base burn. The preliminary classification is Class 1, Normal Flammability; or
- (G) There are two or more burn times with an average burn time less than 4 seconds with no more than one base burn. The preliminary classification is Class 1, Normal Flammability; or
- (H) There are two or more burn times with an average burn time of 4 through 7 seconds (both inclusive) with two or more base burns. The preliminary classification is Class 2, Intermediate Flammability.
- (iv) Test five additional specimens when the tests of the initial five specimens result in either of the following: There is only one burn time, and it is less than 4 seconds with a base burn; or the average of two or more burn times is less than 4 seconds with two or more base burns.
- (v) If required, test five additional specimens from the most flammable area. The burn times and visual observations for the 10 specimens determine the preliminary classification when:
- (A) The average burn time is less than 4 seconds with no more than two base burns. The preliminary classification is Class 1, Normal Flammability; or
- (B) The average burn time is less than 4 seconds with three or more base burns. The preliminary and final classification is Class 3, Rapid and Intense Burning; or
- (C) The average burn time is greater than 7 seconds. The preliminary classification is Class 1, Normal Flammability; or
- (D) The average burn time is 4-7 seconds (both inclusive), with no more than two base burns. The preliminary classification is Class 1, Normal Flammability; or
- (E) The average burn time is 4-7 seconds (both inclusive), with three or more base burns. The preliminary classification is Class 2, Intermediate Flammability; or
- (vi) If there is only one burn time out of the 10 specimens, the test is inconclusive. The fabric cannot be classified.

#### Sec. 1610.8 Reporting results.

- (a) The reported result shall be the classification before or after refurbishing, whichever is the more severe; and based on this result, the textile shall be placed in the proper final classification as described in Sec. 1610.4.
- (b) Test result codes. The following are the definitions for the test result codes, which shall be used for recording flammability results for each specimen that is burned.
- (1) For Plain Surface Textile Fabrics:

DNI Did not ignite.

IBE Ignited, but extinguished.

--.-- sec. Actual burn time measured and recorded by the timing device.

- (2) For Raised Surface Textile Fabrics:

SF uc Surface flash, under the stop thread, but does not break the stop thread.

SF pw Surface flash, part way. No time shown because the surface flash did not reach the stop thread.

SF poi Surface flash, at the point of impingement only (equivalent to ``did not ignite'' for plain surfaces).

--.-- sec. Actual burn time measured by the timing device in 0.0 seconds.

--.-- SF only Time in seconds, surface flash only. No damage to the base fabric.

--.-- SFBB Time in seconds, surface flash base burn starting at places other

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than the point of impingement as a result of surface flash.

--.-- SFBB poi Time in seconds, surface flash base burn starting at the point of impingement.

--.-- SFBB poi\* Time in seconds, surface flash base burn possibly starting at the point of impingement. The asterisk is accompanied by the following statement: ``Unable to make absolute determination as to source of base burns.'' This statement is added to the result of any specimen if there is a question as to origin of the base burn.

#### Subpart B--Rules and Regulations

##### Sec. 1610.31 Definitions.

In addition to the definitions provided in section 2 of the Flammable Fabrics Act as amended (15 U.S.C. 1191), and in Sec. 1610.2 of the Standard, the following definitions apply for this subpart.

(a) Act means the ``Flammable Fabrics Act'' (approved June 30, 1953, Pub. Law 88, 83d Congress, 1st sess., 15 U.S.C. 1191; 67 Stat. 111) as amended, 68 Stat. 770, August 23, 1954.

(b) Rule, rules, regulations, and rules and regulations, mean the rules and regulations prescribed by the Commission pursuant to section 5(c) of the act.

(c) United States means, the several States, the District of Columbia, the Commonwealth of Puerto Rico and the Territories, and Possessions of the United States.

(d) Marketing or handling means the transactions referred to in section 3 of the Flammable Fabrics Act, as amended in 1967.

(e) Test means the application of the relevant test method prescribed in the procedures provided under section 4(a) of the Act (16 CFR Part 1609).

(f) Finish type means a particular finish, but does not include such variables as changes in color, pattern, print, or design, or minor variations in the amount or type of ingredients in the finish formulation. Examples of finish types would be starch finishes, resin finishes or parchmented finishes.

(g) Uncovered or exposed part means that part of an article of wearing apparel that might during normal wear be open to flame or other means of ignition. The outer surface of an undergarment is considered to be an uncovered or exposed part of an article of wearing apparel, and thus subject to the Act. Other examples of exposed parts of an article of wearing apparel subject to the Act include, but are not limited to:

(1) Linings, with exposed areas, such as full front zippered jackets;

(2) Sweatshirts with exposed raised fiber surface inside and capable of being worn napped side out;

(3) Unlined hoods;

(4) Rolled cuffs.

(h) Coated fabrics means a flexible material composed of a fabric and any adherent polymeric material applied to one or both surfaces.

##### Sec. 1610.32 General requirements.

No article of wearing apparel or fabric subject to the Act and regulations shall be marketed or handled if such article or fabric, when tested according to the procedures prescribed in section 4(a) of the Act (16 CFR 1609), is so highly flammable as to be dangerous when worn by individuals.

Sec. 1610.33 Test procedures for textile fabrics and film.

(a)(1) All textile fabrics (except those with a nitro-cellulose fiber, finish or coating) intended or sold for use in wearing apparel, and all such fabrics contained in articles of wearing apparel, shall be subject to the requirements of the Act, and shall be deemed to be so highly flammable as to be dangerous when worn by individuals if such fabrics or any uncovered or exposed part of such articles of wearing apparel exhibits rapid and intense burning when tested under the conditions and in the manner prescribed in subpart A of this part 1610.

(2) Notwithstanding the provisions of paragraph (a)(1) of this section, coated fabrics, except those with a nitro-cellulose coating, may be tested under the procedures outlined in part 1611, Standard for the Flammability of Vinyl Plastic Film, and if such coated fabrics do not exhibit a rate of burning in excess of that specified in Sec. 1611.3 they shall not be deemed to be so highly flammable as to be dangerous when worn by individuals.

(b) All film, and textile fabrics with a nitro-cellulose fiber, finish or coating intended or sold for use in wearing apparel, and all film and such textile fabrics referred to in this rule which are contained in articles of wearing apparel, shall be subject to the requirements of the Act, and shall be deemed to be so highly flammable as to be dangerous when worn by individuals if such film or such textile fabrics or any uncovered or exposed part of such articles of wearing apparel exhibit a rate of burning in excess of that specified in part 1611, Standard for the Flammability of Vinyl Plastic Film.

Sec. 1610.34 Only uncovered or exposed parts of wearing apparel to be tested.

(a) In determining whether an article of wearing apparel is so highly flammable as to be dangerous when worn by individuals, only the uncovered or exposed part of such article of wearing apparel shall be tested according to the applicable procedures set forth in Sec. 1610.6.

(b) If the outer layer of plastic film or plastic-coated fabric of a multilayer fabric separates readily from the other layers, the outer layer shall be tested under part 1611--Standard for the Flammability of Vinyl Plastic Film. If the outer layer adheres to all or a portion of one or more layers of the underlying fabric, the multi-layered fabric may be tested under either part 1610--Standard for the Flammability of Clothing Textiles or part 1611. However, if the conditioning procedures required by Sec. 1610.6(a)(2)(iv) and Sec. 1610.6(a)(3)(v) would damage or alter the physical characteristics of the film or coating, the uncovered or exposed layer shall be tested in accordance with part 1611.

(c) Plastic film or plastic-coated fabric used, or intended for use as the outer layer of disposable diapers is exempt from the requirements of the Standard, provided that a sample taken from a full thickness of the assembled article passes the test in the Standard (part 1610 or part 1611) otherwise applicable to the outer fabric or film when the flame is applied to the exposed or uncovered surface. See Sec. 1610.36(f) and Sec. 1611.36(f).

Sec. 1610.35 Procedures for testing special types of textile fabrics under the standard.

(a) Fabric not customarily washed or dry cleaned. (1) Except as provided in paragraph (a)(2) of this section, any textile fabric or article of wearing apparel which, in its normal and customary use as wearing apparel would not be dry cleaned or washed, need not be dry cleaned or washed as prescribed in Sec. 1610.6(b) when tested under the Standard if such fabric or article of wearing apparel, when marketed or handled, is marked in a clear and legible manner with the statement: ``Fabric may be dangerously flammable if dry cleaned or washed.'' An example of the type of fabric referred to in this paragraph is bridal illusion.

(2) Section 1610.3, which requires that all textiles shall be refurbished before testing, shall not apply to disposable fabrics and garments. Additionally, such disposable fabrics and garments shall not be subject to the labeling requirements set forth in paragraph (a)(1) of this section.

(b) A coated fabric need not, upon test under the procedures

outlined in subpart A of part 1610, be dry cleaned as set forth in Sec. 1610.6(b)(1)(i).

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(c) In determining whether a textile fabric having a raised-fiber surface, which surface is to be used in the covered or unexposed parts of articles of wearing apparel, is so highly flammable as to be dangerous when worn by individuals, only the opposite surface or surface intended to be exposed need be tested under the applicable procedures set forth in Sec. 1610.6, providing an invoice or other paper covering the marketing or handling of such fabric is given which clearly designates that the raised-fiber surface is to be used only in the covered or unexposed parts of articles of wearing apparel.

Sec. 1610.36 Application of Act to particular types of products.

(a) Interlinings. Fabrics intended or sold for processing into interlinings or other covered or unexposed parts of articles of wearing apparel shall not be subject to the provisions of section 3 of the Act: Provided, that an invoice or other paper covering the marketing or handling of such fabrics is given which specifically designates their intended end use: And provided further, that with respect to fabrics which under the provisions of section 4 of the Act, as amended, are so highly flammable as to be dangerous when worn by individuals, any person marketing or handling such fabrics maintains records which show the acquisition, disposition and intended end use of such fabrics, and any person manufacturing articles of wearing apparel containing such fabrics maintains records which show the acquisition, and use and disposition of such fabrics. Any person who fails to maintain such records or to furnish such invoice or other paper shall be deemed to have engaged in the marketing or handling of such products for purposes subject to the requirements of the Act and such person and the products shall be subject to the provisions of sections 3, 6, 7, and 9 of the Act.

(b) Hats, gloves, and footwear. Fabrics intended or sold for use in those hats, gloves, and footwear which are excluded under the definition of articles of wearing apparel in section 2(d) of the Act shall not be subject to the provisions of section 3 of the Act: Provided, that an invoice or other paper covering the marketing or handling of such fabrics is given which specifically designates their intended use in such products: And provided further, that with respect to fabrics which under the provisions of section 4 of the Act, as amended, are so highly flammable as to be dangerous when worn by individuals, any person marketing or handling such fabrics maintains records which show the acquisition, disposition, and intended end use of such fabrics, and any person manufacturing hats, gloves, or footwear containing such fabrics maintains records which show the acquisition, end use and disposition of such fabrics. Any person who fails to maintain such records or to furnish such invoice or other paper shall be deemed to have engaged in the marketing or handling of such products for purposes subject to the requirements of the Act and such person and the products shall be subject to the provisions of sections 3, 6, 7, and 9 of the Act.

(c) Veils and hats. (1) Ornamental millinery veils or veilings when used as a part of, in conjunction with, or as a hat, are not to be considered such a ``covering for the neck, face, or shoulders'' as would, under the first proviso of section 2(d) of the Act, cause the hat to be included within the definition of the term ``article of wearing apparel'' where such ornamental millinery veils or veilings do not extend more than nine (9) inches from the tip of the crown of the hat to which they are attached and do not extend more than two (2) inches beyond the edge of the brim of the hat.

(2) Where hats are composed entirely of ornamental millinery veils or veilings such hats will not be considered as subject to the Act if the veils or veilings from which they are manufactured were not more than nine (9) inches in width and do not extend more than nine (9) inches from the tip of the crown of the completed hat.

(d) Handkerchiefs. (1) Except as provided in paragraph (d)(2) of this section, handkerchiefs not exceeding a finished size of twenty-four (24) inches on any side or not exceeding five hundred seventy-six (576) square inches in area are not deemed ``articles of wearing apparel'' as that term is used in the Act.

(2) Handkerchiefs or other articles affixed to, incorporated in, or

sold as a part of articles of wearing apparel as decoration, trimming, or for any other purpose, are considered an integral part of such articles of wearing apparel, and the articles of wearing apparel and all parts thereof are subject to the provisions of the Act. Handkerchiefs or other articles intended or sold to be affixed to, incorporated in or sold as a part of articles of wearing apparel as aforesaid constitute ``fabric'' as that term is defined in section 2(e) of the Act and are subject to the provisions of the Act, such handkerchiefs or other articles constitute textile fabrics as the term ``textile fabric'' is defined in Sec. 1610.2(r).

(3) If, because of construction, design, color, type of fabric, or any other factor, a piece of cloth of a finished type or any other product of a finished type appears to be likely to be used as a covering for the head, neck, face, shoulders, or any part thereof, or otherwise appears likely to be used as an article of clothing, garment, such product is not a handkerchief and constitutes an article of wearing apparel as defined in and subject to the provisions of the Act, irrespective of its size, or its description or designation as a handkerchief or any other term.

(e) Raised-fiber surface wearing apparel. Where an article of wearing apparel has a raised-fiber surface which is intended for use as a covered or unexposed part of the article of wearing apparel but the article of wearing apparel is, because of its design and construction, capable of being worn with the raised-fiber surface exposed, such raised-fiber surface shall be considered to be an uncovered or exposed part of the article of wearing apparel. Examples of the type of products referred to in this paragraph are athletic shirts or so-called ``sweat shirts'' with a raised-fiber inner side.

(f) Multilayer fabric and wearing apparel with a film or coating on the uncovered or exposed surface. Plastic film or plastic-coated fabric used, or intended for use, as the outer layer of disposable diapers is exempt from the requirements of the standard, provided that a full thickness of the assembled article passes the test in the Standard otherwise applicable to the outer fabric or film when the flame is applied to the exposed or uncovered surface.

Sec. 1610.37 Reasonable and representative tests to support guaranties.

(a) Purpose. The purpose of this Sec. 1610.37 is to establish requirements for reasonable and representative tests to support initial guaranties of products, fabrics, and related materials which are subject to the Standard for the Flammability of Clothing Textiles (the Standard, 16 CFR part 1610).

(b) Statutory provisions. (1) Section 8(a) of the Act (15 U.S.C. 1197(a)) provides that no person shall be subject to criminal prosecution under section 7 of the Act (15 U.S.C. 1196) for a violation of section 3 of the Act (15 U.S.C. 1192) if such person establishes a guaranty received in good faith to the effect that the product, fabric, or related material complies with the applicable flammability standard. A guaranty does not provide the holder any defense to an administrative action for an order to cease and desist from violation of the applicable standard, the Act, and the Federal Trade Commission Act (15 U.S.C. 45), nor to any civil action for

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injunction or seizure brought under section 6 of the Act (15 U.S.C. 1195).

(2) Section 8 of the Act provides for two types of guaranties:

(i) An initial guaranty based on ``reasonable and representative tests'' made in accordance with the applicable standard issued under the Act; and

(ii) A guaranty based on a previous guaranty, received in good faith, to the effect that reasonable and representative tests show conformance with the applicable standard.

(c) Requirements. (1) Each person or firm issuing an initial guaranty of a product, fabric, or related material subject to the Standard shall devise and implement a program of reasonable and representative tests to support such a guaranty.

(2) The term program of reasonable and representative tests as used in this Sec. 1610.37 means at least one test with results demonstrating conformance with the Standard for the product, fabric or related material which is the subject of an initial guaranty. The

program of reasonable and representative tests required by this Sec. 1610.37 may include tests performed before the effective date of this section, and may include tests performed by persons or firms outside of the territories of the United States or other than the one issuing the initial guaranty. The number of tests and the frequency of testing shall be left to the discretion of the person or firm issuing the initial guaranty.

(3) In the case of an initial guaranty of a fabric or related material, a program of reasonable and representative tests may consist of one or more tests of the particular fabric or related material which is the subject of the guaranty, or of a fabric or related material of the same ``class'' of fabrics or related materials as the one which is the subject of the guaranty. For purposes of this Sec. 1610.37, the term class means a category of fabrics or related materials having general constructional or finished characteristics, sometimes in association with a particular fiber, and covered by a class or type description generally recognized in the trade.

Sec. 1610.38 Maintenance of records by those furnishing guaranties.

(a) Any person or firm issuing an initial guaranty of a product, fabric, or related material which is subject to the Standard for the Flammability of Clothing Textiles (the Standard, 16 CFR part 1610) shall keep and maintain a record of the test or tests relied upon to support that guaranty. The records to be maintained shall show:

(1) The style or range number, fiber composition, construction and finish type of each textile fabric or related material covered by an initial guaranty; or the identification, fiber composition, construction and finish type of each textile fabric (including those with a nitrocellulose fiber, finish or coating), and of each related material, used or contained in a product of wearing apparel covered by an initial guaranty.

(2) The results of the actual test or tests made of the textile fabric or related material covered by an initial guaranty; or of any fabric or related material used in the product of wearing apparel covered by an initial guaranty.

(3) When the person or firm issuing an initial guaranty has conducted the test or tests relied upon to support that guaranty, that person or firm shall also include with the information required by paragraphs (a) (1) and (2) of this section, a sample of each fabric or related material which has been tested.

(b) Persons furnishing guaranties based upon class tests shall maintain records showing:

(1) Identification of the class test.

(2) Fiber composition, construction and finish type of the fabrics, or the fabrics used or contained in articles of wearing apparel so guaranteed.

(3) A swatch of each class of fabrics guaranteed.

(c) Persons furnishing guaranties based upon guaranties received by them shall maintain records showing the guaranty received and identification of the fabrics or fabrics contained in articles of wearing apparel guaranteed in turn by them.

(d) The records referred to in this section shall be preserved for a period of 3 years from the date the tests were performed, or in the case of paragraph (c) of this section from the date the guaranties were furnished.

(e) Any person furnishing a guaranty under section 8(a) of the Act who neglects or refuses to maintain and preserve the records prescribed in this section shall be deemed to have furnished a false guaranty under the provisions of section 8(b) of the Act.

Sec. 1610.39 Shipments under section 11(c) of the Act.

(a) The invoice or other paper relating to the shipment or delivery for shipment in commerce of articles of wearing apparel or textile fabrics for the purpose of finishing or processing to render them not so highly flammable as to be dangerous when worn by individuals, shall contain a statement disclosing such purpose.

(b) An article of wearing apparel or textile fabric shall not be deemed to fall within the provisions of section 11(c) of the Act as being shipped or delivered for shipment in commerce for the purpose of finishing or processing to render such article of wearing apparel or textile fabric not so highly flammable under section 4 of the Act, as

to be dangerous when worn by individuals, unless the shipment or delivery for shipment in commerce of such article of wearing apparel or textile fabric is made directly to the person engaged in the business of processing or finishing textile products for the prearranged purpose of having such article of apparel or textile fabric processed or finished to render it not so highly flammable under section 4 of the Act, as to be dangerous when worn by individuals, and any person shipping or delivering for shipment the article of wearing apparel or fabric in commerce for such purpose maintains records which establish that the textile fabric or article of wearing apparel has been shipped for appropriate flammability treatment, and that such treatment has been completed, as well as records to show the disposition of such textile fabric or article of wearing apparel subsequent to the completion of such treatment.

(c) The importation of textile fabrics or articles of wearing apparel may be considered as incidental to a transaction involving shipment or delivery for shipment for the purpose of rendering such textile fabrics or articles of wearing apparel not so highly flammable under the provisions of section 4 of the Act, as to be dangerous when worn by individuals, if:

(1) The importer maintains records which establish that: (i) The imported textile fabrics or articles of wearing apparel have been shipped for appropriate flammability treatment, and

(ii) Such treatment has been completed, as well as records to show the disposition of such textile fabrics or articles of wearing apparel subsequent to the completion of such treatment.

(2) The importer, at the time of importation, executes and furnishes to the U.S. Customs and Border Protection an affidavit stating: These fabrics (or articles of wearing apparel) are dangerously flammable under the provisions of section 4 of the Act, and will not be sold or used in their present condition but will be processed or finished by the undersigned or by a duly authorized agent so as to render them not so highly flammable under the provisions of section 4 of the Flammable Fabrics Act, as to be dangerously flammable when worn by individuals. The importer agrees to maintain the records required by 16 CFR 1610.39(c)(1).

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(3) The importer, if requested to do so by the U.S. Customs and Border Protection, furnishes an adequate specific-performance bond conditioned upon the complete discharge of the obligations assumed in paragraphs (c)(1) and (2) of this section.

(d) The purpose of section 11(c) of the Act is only to permit articles of wearing apparel or textile fabrics which are dangerously flammable to be shipped or delivered for shipment in commerce for the purpose of treatment or processing to render them not dangerously flammable. Section 11(c) of the Act does not in any other respect limit the force and effect of sections 3, 6, 7, and 9 of the Act. In particular, section 11(c) of the Act does not authorize the sale or offering for sale of any article of wearing apparel or textile fabric which is in fact dangerously flammable at the time of sale or offering for sale, even though the seller intends to ship the article for treatment prior to delivery to the purchaser or has already done so. Moreover, under section 3 of the Act a person is liable for a subsequent sale or offering for sale if, despite the purported completion of treatment to render it not dangerously flammable, the article in fact remains dangerously flammable.

Sec. 1610.40 Use of alternate apparatus, procedures, or criteria for tests for guaranty purposes.

(a) Section 8(a) of the Act provides that no person shall be subject to criminal prosecution under section 7 of the Act (15 U.S.C. 1196) for a violation of section 3 of the Act (15 U.S.C. 1192) if that person establishes a guaranty received in good faith which meets all requirements set forth in section 8 the Act. One of those requirements is that the guaranty must be based upon "reasonable and representative tests" in accordance with the applicable standard.

(b) Subpart A of this part 1610 prescribes apparatus and procedures for testing fabrics and garments subject to its provisions. See Sec. Sec. 1610.5 & 1610.6. Subpart A prescribes criteria for classifying the flammability of fabrics and garments subject to its provisions as "Normal flammability, Class 1," "Intermediate

flammability, Class 2,' and ``Rapid and Intense Burning, Class 3.'' See Sec. 1610.4. Sections 3 and 4 of the Act prohibit the manufacture for sale, importation into the United States, or introduction in commerce of any fabric or article of wearing apparel subject to the Standard which exhibits ``rapid and intense burning'' when tested in accordance with the Standard. See 16 CFR part 1609.

(c) The Commission recognizes that for purposes of supporting guaranties, ``reasonable and representative tests'' could be either the test in Subpart A of this part, or alternate tests which utilize apparatus or procedures other than those in Subpart A of this part. This Sec. 1610.40 sets forth conditions under which the Commission will allow use of alternate tests with apparatus or procedures other than those in Subpart A of this part to serve as the basis for guaranties.

(d)(1) Persons and firms issuing guaranties that fabrics or garments subject to the Standard meet its requirements may base those guaranties on any alternate test utilizing apparatus or procedures other than those in Subpart A of this part, if such alternate test is as stringent as, or more stringent than, the test in Subpart A of this part. The Commission considers an alternate test to be ``as stringent as, or more stringent than'' the test in Subpart A of this part if, when testing identical specimens, the alternate test yields failing results as often as, or more often than, the test in Subpart A of this part. Any person using such an alternate test must have data or information to demonstrate that the alternate test is as stringent as, or more stringent than, the test in Subpart A of this part.

(2) The data or information required by this paragraph (d) of this section to demonstrate equivalent or greater stringency of any alternate test using apparatus or procedures other than those in Subpart A of this part must be in the possession of the person or firm desiring to use such alternate test before the alternate test may be used to support guaranties of items subject to the Standard.

(3) The data or information required by paragraph (d) of this section to demonstrate equivalent or greater stringency of any alternate test using apparatus or procedures other than those in Subpart A of this part must be retained for as long as that alternate test is used to support guaranties of items subject to the Standard, and for one year thereafter.

(e) Specific approval from the Commission in advance of the use of any alternate test using apparatus or procedures other than those in Subpart A is not required. The Commission will not approve or disapprove any specific alternate test utilizing apparatus or procedures other than those in Subpart A of this part.

(f) Use of any alternate test to support guaranties of items subject to the Standard without the information required by this section may result in violation of section 8(b), of the Act (15 U.S.C. 1197(b)), which prohibits the furnishing of a false guaranty.

(g) The Commission will test fabrics and garments subject to the Standard for compliance with the Standard using the apparatus and procedures set forth in Subpart A of this part. The Commission will consider any failing results from compliance testing as evidence that:

(1) The manufacture for sale, importation into the United States, or introduction in commerce of the fabric or garment which yielded failing results was in violation of the Standard and of section 3 of the Act; and

(2) The person or firm using the alternate test as the basis for a guaranty has furnished a false guaranty, in violation of section 8(b) of the Act. (Reporting requirements contained in paragraph (d) were approved by Office of Management and Budget under control number 3041-0024.)

#### Subpart C--Interpretations and Policies

Sec. 1610.61 Reasonable and representative testing to assure compliance with the standard for the clothing textiles.

(a) Background. (1) The CPSC administers the Flammable Fabrics Act (``the Act''), 15 U.S.C. 1191-1204. Under the Act, among other things, the Commission enforces the Standard for the Flammability of Clothing Textiles (``the Standard''), 16 CFR part 1610. That Standard establishes requirements for the flammability of clothing and textiles intended to be used for clothing (hereinafter ``textiles'').

(2) The Standard applies both to fabrics and finished garments. The Standard provides methods of testing the flammability of textiles, and

sets forth the requirements that textiles must meet to be classified into one of three classes of flammability (classes 1, 2 and 3). Sec. 1610.4. Class 1 textiles, those that exhibit normal flammability, are acceptable for use in clothing. Sec. 1610.4(a)(1) & (2). Class 2 textiles, applicable only to raised-fiber surfaces, are considered to be of intermediate flammability, but may be used in clothing. Sec. 1610.4(b)(1) & (2). Finally, Class 3 textiles, those that exhibit rapid and intense burning, are dangerously flammable and may not be used in clothing. Sec. 1610.4(c)(1) & (2). The manufacture for sale, offering for sale, importation into the U.S., and introduction or delivery for introduction of Class 3 articles of wearing apparel are among the acts prohibited by section 3(a) of the Act, 15 U.S.C. 1192(a).

(3) CPSC currently uses retail surveillance, attends appropriate trade shows, follows up on reports of

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noncompliance and previous violations, and works with U.S. Customs and Border Protection in an effort to find textiles that violate CPSC's standards. The Commission has a number of enforcement options to address prohibited acts. These include bringing seizure actions in federal district court against violative textiles, seeking an order through an administrative proceeding that a firm cease and desist from selling violative garments, pursuing criminal penalties, or seeking the imposition of civil penalties for ``knowing'' violations of the Act. Of particular relevance to the latter two remedies is whether reasonable and representative tests were performed demonstrating that a textile or garment meets the flammability standards for general wearing apparel. Persons who willfully violate flammability standards are subject to criminal penalties.

(4) Section 8(a) of the Act, 15 U.S.C. 1197(a), exempts a firm from the imposition of criminal penalties if the firm establishes that a guaranty was received in good faith signed by and containing the name and address of the person who manufactured the guaranteed wearing apparel or textiles or from whom the apparel or textiles were received. A guaranty issued by a person who is not a resident of the United States may not be relied upon as a bar to prosecution. 16 CFR 1608.4. The guaranty must be based on the exempted types of fabrics or on reasonable and representative tests showing that the fabric covered by the guaranty or used in the wearing apparel covered by the guaranty is not so highly flammable as to be dangerous when worn by individuals, i.e., is not a Class 3 material. (The person proffering a guaranty to the Commission must also not, by further processing, have affected the flammability of the fabric, related material or product covered by the guaranty that was received.) Under Sec. 1610.37, a person, to issue a guaranty, should first evaluate the type of fabric to determine if it meets testing exemptions in accordance with Sec. 1610.1(d). (Some textiles never exhibit unusual burning characteristics and need not be tested.)

Sec. 1610.1(d). Such textiles include plain surface fabrics, regardless of fiber content, weighing 2.6 oz. or more per sq. yd., and plain and raised surface fabrics made of acrylic, modacrylic, nylon, olefin, polyester, wool, or any combination of these fibers, regardless of weight.) If no exemptions apply, the person issuing the guaranty must devise and implement a program of reasonable and representative tests to support the guaranty. The number of tests and frequency of testing is left to the discretion of that person, but at least one test is required.

(5) In determining whether a firm has committed a ``knowing'' violation of a flammability standard that warrants imposition of a civil penalty, the CPSC considers whether the firm had actual knowledge that its products violated the flammability requirements. The CPSC also considers whether the firm should be presumed to have the knowledge that would be possessed by a reasonable person acting in the circumstances, including knowledge that would have been obtainable upon the exercise of due care to ascertain the truth of representations. 15 U.S.C. 1194(e). The existence of results of flammability testing based on a reasonable and representative program and, in the case of tests performed by another entity (such as a guarantor), the steps, if any, that the firm took to verify the existence and reliability of such tests, bear directly on whether the firm acted reasonably in the circumstances.

(b) Applicability. (1) When tested for flammability, a small number of textile products exhibit variability in the test results; that is, even though they may exhibit Class 1 or Class 2 burning characteristics

in one test, a third test may result in a Class 3 failure. Violative products that the Commission has discovered between 1994 and 1998 include sheer 100% rayon skirts and scarves; sheer 100% silk scarves; 100% rayon chenille sweaters; rayon/nylon chenille and long hair sweaters; polyester/cotton and 100% cotton fleece/sherpa garments, and 100% cotton terry cloth robes. Between August 1994 and August 1998, there have been 21 recalls of such dangerously flammable clothing, and six retailers have paid civil penalties to settle Commission staff allegations that they knowingly sold garments that violated the general wearing apparel standard.

(2) The violations and resulting recalls and civil penalties demonstrate the critical necessity for manufacturers, distributors, importers, and retailers to evaluate, prior to sale, the flammability of garments made from the materials described above, or to seek appropriate guaranties that assure that the garments comply. Because of the likelihood of variable flammability in the small group of textiles identified above, one test is insufficient to assure reasonably that these products comply with the flammability standards. Rather, a person seeking to evaluate garments made of such materials should assure that the program tests a sufficient number of samples to provide adequate assurance that such textile products comply with the general wearing apparel standard. The number of samples to be tested, and the corresponding degree of confidence that products tested will comply, are to be specified by the individual designing the test program. However, in assessing the reasonableness of a test program, the Commission staff will specifically consider the degree of confidence that the program provides.

(c) Suggestions. The following are some suggestions to assist in complying with the Standard:

(1) Purchase fabrics or garments that meet testing exemptions listed in Sec. 1610.1(d). (If buyers or other personnel do not have skills to determine if the fabric is exempted, hire a textile consultant or a test lab for an evaluation.)

(2) For fabrics that are not exempt, conduct reasonable and representative testing before cutting and sewing, using standard operating characteristic curves for acceptance sampling to determine a sufficient number of tests.

(3) Purchase fabrics or garments that have been guaranteed and/or tested by the supplier using a reasonable and representative test program that uses standard operating characteristic curves for acceptance sampling to determine a sufficient number of tests. Firms should also receive and maintain a copy of the guaranty.

(4) Periodically verify that your suppliers are actually conducting appropriate testing.

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Dated: March 13, 2008.  
 Todd A. Stevenson,  
 Secretary, Consumer Product Safety Commission.

Note: The following appendix will not appear in the Code of Federal Regulations.

#### Appendix--List of Relevant Documents

(The following documents are available from the Commission's Office of the Secretary, Consumer Product Safety Commission, Room 502, 4330 East West Highway, Bethesda, Maryland 20814-4408; telephone (301) 504-7923 or from the Commission's Web site (<http://www.cpsc.gov/library/foia/foia.html>)).

1. Briefing memorandum from Robert J. Howell, Acting Assistant Executive Director, EXHR and Patricia K. Adair, Project Manager, Directorate for Engineering Sciences, to the Commission, ``Draft Final Amendments to the Standard for the Flammability of Clothing Textiles, 16 CFR Part 1610,`` January 11, 2008.
2. Memorandum from David Miller, EPHA, Directorate for Epidemiology, to Patricia K. Adair, Project Manager, ``General Wearing Apparel Fires--Fatalities and Emergency Department Treated Injuries,`` December 27, 2007.
3. Memorandum from Dale R. Ray, Directorate for Economic Analysis, to Patricia K. Adair, Project Manager, ``Final Regulatory Analyses--Clothing Textiles Standard Amendment,`` August 6, 2007.
4. Memorandum from Gail Stafford and Weiyang Tao, Directorate for Laboratory Sciences, to Patricia K. Adair, Project Manager, ``Response to Comments Received on Notice of Proposed Rulemaking (NPR) for Updating the Standard for the Flammability of Clothing Textiles,`` October 22, 2007.
5. Memorandum from John R. Murphy, Division of Mechanical Engineering, to Patricia K. Adair, Project Manager, ``Response to Comments Received as a Result of the Notice of Proposed Rulemaking (NPR) for Updating the Standard for the Flammability of Clothing Textiles,`` November 16, 2007.
6. Memorandum from Martha A. Kosh, Office of the Secretary, to ES, ``Proposed Changes to Textile Flammability Standard Comments,`` May 15, 2007.

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