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TECHNICAL BULLETIN 116

Requirements, Test Procedure and Apparatus  
for Testing the Flame Retardance  
of Upholstered Furniture

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### Requirements, Test Procedure and Apparatus for Testing the Flame Retardance of Upholstered Furniture

- I. Upholstered furniture means any product as set forth in Section 19006 of the State of California Home Furnishings Act.

#### Requirements:

1. An article of upholstered furniture fails to meet the provisions of law if any of the following conditions occur:
  - A. If obvious flaming combustion occurs.
  - B. If a char develops more than two inches in any direction from the cigarette, measured from its nearest point.
2. Flame retardant properties shall be retained by the furniture under all normal conditions of temperature, humidity and use.

#### II. Test Materials

1. Cigarettes. Cigarettes shall be made from natural tobacco and shall be  $85 \pm 2$  mm long with a diameter of  $0.3 \pm 0.02$  inches and a weight of  $1.1 \text{ gms} \pm 0.1$  gms. Filter tip cigarettes shall not be used.
2. Furniture. The article of upholstered furniture tested shall be: (a) the finished product ready for sale to the consumer; or (b) a prototype mock-up of actual components which duplicate the design and structure of the finished product.

#### III. Preparation of Test Materials

Furniture and cigarettes shall be conditioned for not less than 48 hours at a temperature of 65 - 80°F and a relative humidity of less than 55% immediately prior to test. Furniture shall be positioned so as to allow for maximum surface exposure to conditioning environment.

#### IV. General Requirements

1. The furniture shall be tested under conditions of between 65 - 80°F temperature and less than 55% relative humidity.
2. Test shall be performed in such a manner that each differently-dyed area of the furniture fabric is included in the test locations.
3. If a cigarette extinguishes before burning its full length, the test is considered "no test" and must be repeated with a freshly lit cigarette on a different portion of the same type of location on the furniture.
4. Location of the test cigarettes on the furniture shall be no less than 6 inches apart.
5. All exposed horizontal surfaces (including smooth, welted, quilted, decking, tops of arms and backs, tufted, or button locations plus all crevices created by the orientation of seat cushions and furniture side and back panels) shall be tested.

6. Horizontal surfaces include all surfaces which may be vertical in normal use but which are designed to become horizontal surfaces in special use, e.g., recliners, etc.

7. Horizontal surfaces which are not of sufficient size to support a cigarette need not be tested.

#### V. Testing

Each furniture surface shall be tested until either (a) three cigarettes have burned their full length, (b) three cigarettes have extinguished before burning their full length, or (c) one cigarette has resulted in failure as outlined in (I), (A) and (B).

- VI. 1. Smooth Surface and Decking Tests. Three burning cigarettes (well lighted but not burned more than 4 mm, (0.16 inch)) shall be placed directly on a smooth surface location on the test furniture. The cigarettes should burn their full lengths on a smooth surface without burning across a tuft or stitching of a quilted area. However, if this is not possible because of furniture design, then the cigarettes shall be positioned on the furniture in a manner which will allow as much of the butt ends as possible to burn on smooth surfaces.
2. Welt Test. Three burning cigarettes shall be placed in the depression created by the upholstered furniture and the welt, parallel to the welt. If there is no depression at the welt, hold the cigarettes in place along the edge and parallel to the edge with straight pins. Three straight pins may be inserted through the edge at a 45° angle such that one pin supports the cigarette at the top, one at the center, and one at the butt. The heads of the pins must be below the upper surface of the cigarette.
  3. Quilted Location Test. Three burning cigarettes shall be placed on quilted locations of the test furniture. The cigarettes shall be positioned directly over the thread in the depression created by the quilting process. If the quilt design is such that the cigarettes cannot burn their full lengths over the thread, then the cigarettes shall be positioned in a manner which will allow as much of the butt ends as possible to burn on the thread.
  4. Tufted Location Test. Three burning cigarettes shall be placed on tufted locations of the test furniture. The cigarettes shall be positioned so that they burn down into the depression caused by the tufts and so that the butt ends of the cigarettes burn out over the buttons or laces used in the tufts.
  5. Crevices. If crevices exist, created by the orientation of seat cushions and side or/and back panels, then at least three cigarettes shall be placed at the crevice location so that it burns between the seat cushion and the upholstered panel.

6. Tops of Arms and Backs. Three burning cigarettes shall be placed on tops of arms and tops of backs where present.

VII. Covering Material

All test cigarettes shall be covered with one layer of sheeting material during test. Cotton or cotton/polyester blend bed sheeting material  $3.7 \pm 0.8$  oz/yd<sup>2</sup>, white in color, and not treated with flame retardants shall be used. The sheeting shall be laundered and dried at least once before use. 6 x 6 inch pieces of sheeting shall be used for test.