1 SCOPE

1.1 This method describes procedures for evaluating the flammability of tents including camping tents, play tents, ice-fishing tents and dining shelters but not including canopies, awnings, tarpaulins, tent trailers, air-supported structures or tents subject to the National Building Code of Canada, 1985. It is applicable to item 31.1 of Part II of Schedule I of the Hazardous Products Act (HPA).

2 APPLICABLE DOCUMENTS

2.1 Hazardous Products (Tents) Regulations SOR/90-245 (Appendix II).


2.3 Product Safety Reference Manual: Book 4 - Flammable Products.


2.5 Standard Operating Procedure (SOP) for the Accelerated Weathering of Tents using the Weather-Ometer Ci5000.


3 DEFINITIONS

3.1 See section 2 of the Hazardous Products (Tents) Regulations (Appendix II).

3.2 Flaming residue: portions of the specimen that break off or residues that drip from the specimen and that continue to flame after reaching the floor of the test cabinet.

4 APPARATUS

4.1 Wall and Top Materials Test Apparatus

4.1.1 Vertical Flammability Tester - Model 7650 from United testing Co. Ltd. See Appendix I for specifications.

4.1.2 Methane gas - 97% (or greater) purity.
4.1.3 Four (4) weights with hooks - Having total masses of 50 g; 100 g; 200 g and 300 g.

4.1.4 Stop watch - Capable of measuring time to 0.1 seconds.

4.1.5 Ruler - Graduated in millimetres.

4.1.6 Clamps - To secure the specimen between the test frame.

4.2 Flooring Materials Test Apparatus

4.2.1 Test Chamber - A box with inside dimensions of 30 cm x 30 cm x 30 cm made from hard-pressed asbestos cement board or similar material, not less than 6 mm thick, open at the top and with all joints tightly sealed.

4.2.2 Secondary floor - A rigid, removable, asbestos board or similar material approximately 28 cm x 28 cm and 3 mm thick, to fit the inside bottom of the box.

4.2.3 Supporting Frame - A steel plate, 23 cm x 23 cm, 6 mm thick with a 20 cm diameter hole in its centre and a 25 mm x 25 mm x 1.5 mm thick shim affixed to the underside of each corner.

4.2.4 Flattening Frame - as in 4.2.3, without the shims.

4.2.5 Punch - Capable of making a 6 mm diameter hole in the centre of the specimen of flooring material to be tested.

4.2.6 Methenamine timed burning tablets - Stored in a desiccator over a desiccant for 24 hours prior to use. Note: Tablets are available from Vesta Pharmaceuticals, Inc., wwwvestapharm.com.

4.3 Xenon Arc Weather-Ometer - Having an automatic light monitor and capable of automatically controlling irradiance, temperature and humidity. Note: Model Ci5000 from Atlas Material Testing Solutions meets these specifications.

4.4 Environmental chamber - Capable of maintaining standard atmospheric conditions of 21 ± 1°C and 65 ± 5% relative humidity for at least 12 hours.

4.5 Graduated measuring magnifier - Graduated in millimetres, to verify the height of the letters on the labels.

4.6 Leaching racks - Frames with a screen to support the specimens immersed in water.

4.7 Pick counter - to confirm the warp or weft direction of a wavelength fabric.
4.8 Specimen templates - One measuring 70 cm x 30 cm for wall and top materials, another measuring 23 cm x 23 cm for flooring materials and another measuring 30 cm x 30 cm for the fabric mass.

4.9 Balance - Capable of measuring to 0.0001g.

5 PROCEDURE

5.1 General Requirements and Guidelines

5.1.1 Setup the tent and take a picture.

5.1.2 Sample Labels

5.1.2.1 Remove all labels containing warning statements.

5.1.2.2 Copy or take notes from any other label or information that accompanies the sample.

5.1.2.3 Verify that the labels and warning statements meet the requirements, in both English and French, of section 4 of the Hazardous Products (Tents) Regulations (Appendix II).

5.1.3 Wall and Top Materials

5.1.3.1 Types of materials - Each unique material shall be tested separately. For example: materials of different constructions, weights, colour, logos, plastic windows, netting, and any other flexible material forming part of the wall and top.

5.1.3.2 Specimens - Four specimens from the warp/wales direction having different warp/wales yarns or filaments and 4 specimens from the weft/courses direction having different weft/courses yarns or filaments. If there is insufficient material of a type to produce 3 sets of 8 specimens, cut as many as possible in each directions and prioritize as follows: 1) after weathering, 2) after leaching and 3) as received. Report that there was insufficient material to produce 8 specimens for each incomplete set of specimens.

5.1.3.3 Fabric directions - The warp and weft (filling) directions of a woven fabric can be determined using a pick counter. Generally, the warp direction runs lengthwise and contains more yarns per unit length than the weft direction. Note: Directionality for knits is done visually and does not apply to plastic windows.
5.1.3.4 **Fabric mass** - Cut a specimen using the appropriate template and determine the mass after conditioning at 21 ± 1°C and 65 ± 5% for at least 12 hours. If there is insufficient material, use the specimens that have been cut for testing and weigh an equal number cut from each direction (2 wrap/wales and 2 weft/courses). **Note**: This is not applicable to plastic windows as they have no warp and weft directions.

5.1.3.5 **Damage length** - Distance from the end of the specimen, which was exposed to the flame, to the end of a tear of the specimen. The specimen is fold lengthwise and creased by hand along a line through the highest peak of the damaged area. A hole of 6 mm, is punched at one side of the damaged area 6 mm from the adjacent outside edge and 6 mm in from the lower end and the hook of the appropriate weight (see Table 1 below) is inserted in the specimen. The specimen is gently raised by grasping the corner of the cloth at the opposite edge of the char from the load raising the specimen and weight clear of the supporting surface. The end of the tear is marked and the damage length measured along the undamaged edge.

**Table 1: Loads for Determining Damaged Length**

<table>
<thead>
<tr>
<th>Mass per Unit area of Specimens Being Tested (g/m²)</th>
<th>Loads for Determining Damaged Length (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 of less</td>
<td>50</td>
</tr>
<tr>
<td>101 to 200</td>
<td>100</td>
</tr>
<tr>
<td>201 to 340</td>
<td>200</td>
</tr>
<tr>
<td>greater than 340</td>
<td>300</td>
</tr>
</tbody>
</table>

5.1.4 **Flooring Materials**

5.1.4.1 **Types of materials** - For flooring materials, only pliable materials shall be tested such as woven materials, carpeting, etc. Testing does not apply to rigid plastic flooring materials.

5.1.4.2 **Specimens** - Four specimens having different warp and weft yarns or filaments. If there is insufficient flooring material of a type to produce 3 sets of 4 specimens, cut as many as possible and prioritize as follows: 1) after leaching, 2) after weathering and 3) as received. Report that there was insufficient material to produce 4 specimens for each incomplete set of specimens. **Note**: The flooring material is tested on
the side that would be walked upon - mark a corner of each specimen on this side with indelible ink immediately after cutting.

5.1.5 Conditioning

5.1.5.1 Condition the specimens at 21 ± 1°C and 65 ± 5% relative humidity for at least 12 hours in the environmental chamber. Twelve hours has been determined to be sufficient to reach moisture equilibrium. **Note:** Moisture equilibrium shall be reached when, after free exposure of the material at 21 ± 1°C and 65 ± 5% relative humidity, the change in weight of successive weighings made at intervals of 1 hour is no greater than 0.25%.

5.1.6 Leaching

5.1.6.1 Leach the specimens for 72 hours in a sink by placing them in between leaching racks and immersing the racks in tap water.

5.1.6.2 Completely change the water six times over the 72 hour-period and ensure that the water temperature is within 15.5°C and 21.1°C.

5.1.7 Weathering

5.1.7.1 For the wall and top materials, the exterior face side shall be exposed to the light source.

5.1.7.2 For the flooring materials, the side that would be walked upon shall be exposed to the light source.

5.1.7.3 The materials shall be weathered for 105 hours.

5.1.7.4 The weathering cycle shall be 40 minutes of light; 20 minutes of light with water sprayed from inside the rack; 60 minutes of light; 60 minutes of darkness.

5.1.7.5 The irradiance level shall be 0.40 ± 0.01 W/m² at 340 nm and the glass filter combination shall be borosilicate type S filters in the inner and outer positions.

5.1.7.6 The relative humidity shall be 50 ± 5% during the light cycle and at least 95% during the dark cycle.

5.1.7.7 The black panel set point shall be 77°C for the light cycle and 38°C for the dark cycle. The chamber temperature set point shall be 65°C for the light cycle and 38°C for the dark cycle.
5.1.7.8 The materials shall fit the specimen rack of the apparatus with no wrinkles or gaps and have at least the dimensions specified in section 4.8 above to be able to perform flammability testing.

5.2 Specimens Preparation

5.2.1 As-Received

5.2.1.1 Wall and Top Materials

5.2.1.1.1 Cut specimens of each wall and top material using the appropriate template with the long dimension parallel to either the warp or weft direction. Proceed as described in paragraph 5.1.3.2 above.

5.2.1.1.2 Place a specimen in the test frame and secure it with 4 clamps. Two clamps 20 mm above the bottom edge and two clamps 38 mm above the first two.

5.2.1.1.3 Condition the specimens as per paragraph 5.1.5 above.

5.2.1.2 Flooring Materials

5.2.1.2.1 Cut specimens of each flooring material using the appropriate template. Proceed as described in paragraph 5.1.4.2 above.

5.2.1.2.2 Punch a hole in the centre of each specimen.

5.2.1.2.3 Condition the specimens as per paragraph 5.1.5 above.

5.2.2 Leaching

5.2.2.1 Wall and Top Materials

5.2.2.1.1 Cut specimens of each wall and top material using the appropriate template with the long dimension parallel to either the warp or weft direction. Proceed as described in paragraph 5.1.3.2 above.

5.2.2.1.2 Leach specimens of each wall and top material as described in paragraph 5.1.6 above. Air-dry the specimens overnight.
5.2.2.1.3 Place a specimen in the test frame and secure it with 4 clamps. Two clamps 20 mm above the bottom edge and two clamps 38 mm above the first two.

5.2.2.1.3 Condition the specimens as per paragraph 5.1.5 above.

5.2.2 Flooring Materials

5.2.2.2.1 Cut specimens of each flooring material using the appropriate template. Proceed as described in paragraph 5.1.4.2 above.

5.2.2.2 Leach specimens of each flooring material as described in paragraph 5.1.6 above. Air-dry the specimens overnight.

5.2.2.2.3 Punch a hole in the centre of each specimen.

5.2.2.2.4 Condition the specimens as per paragraph 5.1.5 above.

5.2.3 Weathering

5.2.3.1 Wall and Top Materials

5.2.3.1.1 Weather the wall and top materials as described in paragraph 5.1.7 above. Air-dry the materials overnight.

5.2.3.1.2 Cut specimens of each weathered wall and top material using the appropriate template with the long dimension parallel to either the warp or weft direction. Proceed as described in paragraph 5.1.3.2 above.

5.2.3.1.3 Place a specimen in the test frame and secure it with 4 clamps. Two clamps 20 mm above the bottom edge and two clamps 38 mm above the first two.

5.2.3.1.4 Condition the specimens as per paragraph 5.1.5 above.

5.2.3.2 Flooring Materials

5.2.3.2.1 Weather the flooring materials as described in paragraph 5.1.7 above. Air-dry the materials overnight.

5.2.3.2.2 Cut specimens of each weathered flooring material using the appropriate template. Proceed as described in paragraph 5.1.4.2 above.
5.2.3.2.3 Punch a hole in the centre of each specimen.

5.2.3.2.4 Condition the specimens as per paragraph 5.1.5 above.

5.3 Specimen Testing

5.3.1 Wall and Top Materials

5.3.1.1 Set up the apparatus in a draft free area. Adjust the pilot flame to approximately 3.5 mm in height measured from its lowest point to the tip. Adjust the burner flame by means of the needle valve in the base of the burner to give a flame height of 38 ± 3 mm with the stopcock fully open and the air supply to the burner shut off and taped. **Note:** The 38 mm flame height is obtained by adjusting the valve so that the uppermost portion (tip) of the flame is level with the tip of the metal prong.

5.3.1.2 Suspend the specimen vertically in the cabinet in such a manner that the lower end is 20 mm above the top of the gas burner. Apply the flame to the middle of the lower edge of the specimen for 12 ± 0.1 seconds and turn the burner off. The cabinet door must remain shut during testing.

5.3.1.3 Record the after-flame time of each specimen to the nearest 0.1 second. Observe and record whether any portions drip and continue to burn after reaching the bottom of the test cabinet. After flaming and glowing have ceased, remove the specimen from the cabinet.

5.3.1.4 Measure the damaged length as described in section 5.1.3.5 above.

5.3.2 Flooring Materials

5.3.2.1 Set up the test chamber in a draft free area with its bottom in place and the supporting frame centred in the bottom of the chamber, shimmed side down.

5.3.2.2 Place the specimen on the supporting frame in the position which it will be used, ensure that the specimen is horizontal and flat. Place the flattening frame on the specimen and trace a circle along the frame. Position a methenamine tablet on one of its flat sides with its edge within 3 mm of the hole in the centre of the specimen. Apply a flame to the top of the tablet.
5.3.2.3 Continue each test until the last flame glow disappears or the flaming or smouldering has reached the edge of the hole in the flattening frame at any point. **Note:** If the tablet extinguishes at the start of the test, reposition and relight the tablet.

5.3.2.4 When all combustion has ceased, measure the shortest distance between the edge of the hole in the flattening frame and the damaged area. Record the distance measured for each specimen.

5.3.2.5 Remove the specimen from the chamber and remove any residue from the floor of the chamber. Before proceeding to the next test, the floor must be cooled to normal room temperature or replaced by one that is at normal room temperature.

5.4 **Sample File**

5.4.1 Insert the fabric mass test specimens of the tent wall and top materials and window (if any) into the sample file for future reference.

5.4.2 Attach a swatch of each material tested to the inside cover of the sample file indicating the face side and the warp/wales direction of the wall and top, and the face side of the flooring.

6 **HEALTH AND SAFETY**

6.1 The fumehood should be set to low during the flammability tests.

6.2 After the wall and top test is completed, turn the fumehood to high and open the test chamber door slowly and only about 10 cm in order to evacuate the smoke.

6.3 The specimen holders will be hot - either allow them to cool in place or wear heat resistant gloves to remove them.

7 **QUALITY ASSURANCE**

7.1 The apparatus used for accelerated weathering shall be equipped with an automatic light monitor and shall be capable of automatically controlling irradiance, temperature and humidity. The apparatus shall be properly calibrated and maintained as per the manufacturer’s recommendations.

7.2 Ensure the specimens are flush and straight at the bottom of the test frames.

7.3 The test frames shall be properly aligned inside the flammability cabinet.
7.4 The flame must be adjusted to the specified height before testing.

7.5 The methane gas must be at least 97% pure.

7.6 Use a verified stopwatch capable of measuring the burn time to 0.1s.

7.7 Use verified weights (loads).

7.8 The ruler (scale) must be graduated in millimetres.

7.9 During conditioning maintain standard atmospheric conditions of 65 ± 5% relative humidity at a temperature of 21 ± 1°C.

7.10 Ensure testing is performed as soon as possible upon removal of the specimens from the standard conditions.

8 TEST REPORT

8.1 The test report shall contain, at a minimum, the following information:

8.1.1 The number and title of this method including the effective date.

8.1.2 The fibre content, if given, for the wall and top materials and flooring (analysis not required). In the case of flooring materials, also indicate the type of construction (i.e woven material or carpeting).

8.1.3 The average fabric mass of each type of wall and top materials.

8.1.4 Test results for each type of wall and top material ‘as-received, after leaching and after weathering.

8.1.5 Test results for each type of flooring material ‘as-received’, after leaching and after weathering.

8.1.6 Whether the labelling meets the requirements in both English and French of section 4 of the Hazardous Products (Tents) Regulations (scan the label if possible).

8.1.7 Scanned copy of the warning and information labels, where possible.

8.2 The report may be prepared in the format illustrated below.
Fibre content (from label / box / instructions):  
wall and top: 100% polyester  
flooring: polypropylene

Flooring construction: woven material or carpeting

Wall and top Average Fabric Mass  
colour 1: 61.7 g/m²  
colour 2: 73.1 g/m²  
window: 274.1 g/m²  
screen: 45.7 g/m²

Wall and Top Material - Colour 1

As received

<table>
<thead>
<tr>
<th>Specimen #</th>
<th>Direction of Test</th>
<th>After-flame Time (s)</th>
<th>Char Length (mm)</th>
<th>Flaming Residue (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>warp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>warp</td>
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<tr>
<td>3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>warp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>weft</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>weft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
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<tr>
<td>8</td>
<td>weft</td>
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</tr>
</tbody>
</table>

Average

After leaching

<table>
<thead>
<tr>
<th>Specimen #</th>
<th>Direction of Test</th>
<th>After-flame Time (s)</th>
<th>Char Length (mm)</th>
<th>Flaming Residue (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>warp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>warp</td>
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<td></td>
</tr>
<tr>
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<td>warp</td>
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</tr>
<tr>
<td>4</td>
<td>warp</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>weft</td>
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</table>
### TEST METHOD FOR THE FLAME RESISTANCE OF TENTS

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<th>Specimen</th>
<th>Direction of Test</th>
<th>After-flame Time (s)</th>
<th>Char Length (mm)</th>
<th>Flaming Residue (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>warp</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>warp</td>
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<td>warp</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>warp</td>
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</tr>
<tr>
<td>5</td>
<td>weft</td>
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<td>8</td>
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</table>

**Average**

### After weathering

<table>
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<th>Specimen</th>
<th>Direction of Test</th>
<th>After-flame Time (s)</th>
<th>Char Length (mm)</th>
<th>Flaming Residue (Y/N)</th>
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<tbody>
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</tr>
<tr>
<td>8</td>
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</tr>
</tbody>
</table>

**Average**

### Flooring Material

**As received**

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Closest distance to inside edge of ring (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
### After leaching

<table>
<thead>
<tr>
<th>Specimen #</th>
<th>Closest distance to inside edge of ring (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
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<td></td>
</tr>
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### After weathering

<table>
<thead>
<tr>
<th>Specimen #</th>
<th>Closest distance to inside edge of ring (mm)</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
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<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

### Labelling

The warning/information label was sewn to an inside seam of the tent.

**Statements:**

- **HP(T)R para 4(a):**
  - **wording:** [not] as required in English [not] as required in French
  - **letter height:** "WARNING" - bold, 4.0 mm; rest of statement (English) - 3.0 mm

- **para 4(b):**
  - **wording:** [not] as required in English [not] as required in French
    - "MISE EN GARDE" - bold, 4.0 mm; rest of statement (French) - 2.8 mm
**para 4(c): wording:** wording *does not* convey the same meaning as the information set out in Sch. I of the HP (Tents) R, in both English and French

*scan label*
APPENDIX I

Vertical Flammability Tester specifications

Cabinet: A cabinet and accessories, fabricated in accordance with the requirements specified in Figure A. Galvanized sheet metal or other suitable metal shall be used.

Burner: The burner shall be equipped with a variable orifice to adjust the flame height, a barrel having a 5 mm inside diameter, and a pilot light. The burner may be constructed by combining a 5 mm inside diameter barrel 75 mm long ± 6 mm long from a fixed orifice burner with a base from a variable orifice burner. The burner shall be fixed in a position so that the centre of the barrel of the burner is directly below the centre of the specimen.

Pilot light tube: The pilot light tube shall have a diameter of approximately 1.6 mm and shall be spaced 3 mm away from the burner edge with a pilot flame 3 mm long.

Gas connections: The gas connections and the applicable plumbing to which the burner is attached. The stopcock valve or solenoid valve, whichever is used, shall be capable of being fully opened or fully closed in 0.1 second.

Metal rod: A metal rod of approximately 3 mm diameter spaced 13 mm from the barrel and extending above the burner shall be on the side of the barrel of the burner, opposite the pilot light. The rod shall have two 8 mm prongs marking the distances of 20 mm and 38 mm above the top of the burner.

Control valve system: A control valve system with a delivery rate designed to furnish gas to the burner under a pressure of 2.5 psi ± 0.25 psi at the burner inlet. The manufacturer’s recommended delivery rate for the valve system shall include the required pressure.
TEST METHOD FOR THE FLAME RESISTANCE OF TENTS

FIGURE A - Vertical flame resistance textile apparatus.
APPENDIX II

Hazardous Products (Tents) Regulations

SOR/88-114, P.C. 1988-131
21 January, 1988

amended by

SOR/90-245  P.C. 1990-738

His Excellency the Governor General in Council, on the recommendation of the Minister of Consumer and Corporate Affairs, pursuant to section 5* of the Hazardous Products Act, is pleased hereby to revoke the Hazardous Products (Tents) Regulations, made by Order in Council P.C. 1988-131 of January 21, 1988**, and to make the annexed Regulations respecting the advertising, sale and importation of tents, in substitution therefor.

* R.S., c. 24 (3rd Supp.), s. 1

** SOR/88-114, 1988 Canada Gazette Part II, p. 1072

REGULATIONS RESPECTING THE ADVERTISING, SALE AND IMPORTATION OF TENTS

Short Title

1. These Regulations may be cited as the Hazardous Products (Tents) Regulations.

Interpretation

2. In these Regulations,

"after-flame time" means the length of time a wall and top material tested in accordance with the procedure set out in section 7 of CPAI-84 continues to flame after the ignition source has been removed;

"after-flame time" (durée de combustion résiduelle)

"CPAI-84" means A Specification for Flame Resistant Materials used in Camping Tentage, being specification CPAI-84, 1980, established by the Industrial Fabrics Association International (formerly the Canvas Products Association International), published in 1980; (norme CPAI-84)

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1 This consolidation is prepared for convenience only. For all purposes of interpreting and applying the law, users should consult the regulations, as registered by the Clerk of the Privy Council and published in Part II of the Canada Gazette.
"flooring material", with respect to a product, means the fabric or other pliable material that constitutes the floor of the product; (matériau de sol)

"product" means a tent that is included in item 31.1 of Part II of Schedule I to the Hazardous Products Act; (produit)

"sample unit" means
(a) in respect of flooring material, four specimens of the material that meet the requirements referred to in paragraphs 2(a) and (b) of Schedule II, and

(b) in respect of wall and top material, eight specimens of the material that meet the requirements referred to in paragraphs 3(a) and (b) of Schedule II; (unité d'échantillonnage)

"wall and top material", with respect to a product, means the fabric or other pliable material that constitutes a wall, roof, top, door, window, screen or awning of the product. (matériau pour murs et toits)

General

3. A person may advertise, sell or import a product if the information requirements set out in section 4 and the performance requirements set out in sections 5 and 6 are met.

Information requirements

4. A product shall have a label that is permanently affixed to the product at a prominent location and that displays in a legible manner in both official languages

(a) the following statement in upper-case letters not less than 3 mm in height:

"WARNING: KEEP ALL FLAME AND HEAT SOURCES AWAY FROM THIS TENT FABRIC/MISE EN GARDE : TENIR LE TISSU DE CETTE TENTE LOIN DE TOUTE FLAMME ET DE TOUTE SOURCE DE CHALEUR";

(b) the following statement:

"This tent is made of flame-resistant fabric. It is not fireproof. The fabric will burn if left in continuous contact with a flame source./Cette tente est fabriquée d'un tissu résistant au feu, mais qui n'est pas ininflammable. Ce tissu brûlera s'il est laissé en contact continu avec une source d'inflammation."; and

(c) the information set out in Schedule I, in the words used in that schedule or in other words that convey the same meaning.
Performance requirements

5. When a sample unit of flooring material of a product is prepared and tested in accordance with the procedures set out in Schedule II, no specimen of the sample unit shall display any damage within 25 mm of the edge of the hole in the flattening frame.

6. When a sample unit of wall and top material of a product is prepared and tested in accordance with the procedures set out in Schedule II,

   (a) no specimen of the sample unit shall have an after-flame time that exceeds four seconds and the average after-flame time of the specimens of the sample unit shall not exceed two seconds;

   (b) the maximum damaged length of each specimen of the sample unit and the maximum average damaged length of the specimens of the sample unit shall be as follows:

<table>
<thead>
<tr>
<th>Mass per Unit Area of Specimen Being Tested (g/m²)</th>
<th>Maximum Damaged Length of Each Specimen of the Sample Unit (mm)</th>
<th>Maximum Average Damaged Length of Each Specimen of the Sample Unit (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>greater than 340</td>
<td>255</td>
<td>115</td>
</tr>
<tr>
<td>271 to 340</td>
<td>255</td>
<td>140</td>
</tr>
<tr>
<td>201 to 270</td>
<td>255</td>
<td>165</td>
</tr>
<tr>
<td>136 to 200</td>
<td>255</td>
<td>190</td>
</tr>
<tr>
<td>51 to 135</td>
<td>255</td>
<td>215</td>
</tr>
<tr>
<td>less than 51</td>
<td>255</td>
<td>230</td>
</tr>
</tbody>
</table>

   (c) no specimen of the sample unit shall have portions that break, or residues that drip, from the specimen and that continue to flame after reaching the floor of the test cabinet.

SCHEDULE I
(Section 4)

INFORMATION

1. The following precautions should be taken when camping:

   (a) do not use candles, matches or open flames of any kind in or near a tent;
(b) do not cook inside a tent;

(c) build campfires downwind and several metres away from a tent and be sure to fully extinguish campfires before leaving a campsite or before retiring for the night;

(d) exercise extreme caution when using fuel-powered lanterns or heaters inside a tent and use battery-operated lanterns whenever possible;

(e) do not refuel lamps, heaters or stoves inside a tent;

(f) extinguish or turn off all lanterns before going to sleep;

(g) do not smoke in a tent; and

(h) do not store flammable liquids inside a tent.

ANNEXE I

4.(article 4)

RENSEIGNEMENTS

1. Les précautions suivantes doivent être prises en camping :

a) ne jamais utiliser de bougies, d'allumettes, ni aucune autre flamme nue à l'intérieur ou à proximité de la tente;

b) ne pas faire de cuisson à l'intérieur de la tente;

c) faire les feux de camp à plusieurs mètres de la tente, du côté autre que celui d'où souffle le vent; s'assurer de toujours bien éteindre les feux de camp avant de quitter le terrain ou de se coucher;

d) être extrêmement prudent lorsque des lanternes ou des appareils de chauffage à combustible sont utilisés à l'intérieur de la tente et se servir autant que possible de lanternes à piles;

e) ne jamais remplir le réservoir des lampes, des appareils de chauffage ou des poêles à l'intérieur de la tente;

f) éteindre toutes les lanternes avant de se coucher;

g) ne pas fumer à l'intérieur de la tente;

h) ne jamais ranger des liquides inflammables à l'intérieur de la tente.
SCHEDULE II
(Sections 2, 5 and 6)

PROCEDURES FOR TESTING TENTS

General

1. A flame test of a specimen shall be performed

   (a) under the standard atmospheric conditions specified in subsection 5.1.1 of CPAI-84, or immediately upon the removal of the specimen from such conditions; and

   (b) when the specimen is in moisture equilibrium, within the meaning of subsection 5.1.2 of CPAI-84.

Test of Flooring Material

2. The method to be followed in measuring the damage displayed by specimens of a sample unit of flooring material is as follows:

   (a) from the flooring material of the product to be tested, cut 12 specimens that meet the requirements set out in subsection 6.1 of CPAI-84;

   (b) divide the specimens into three sample units, ensuring that, where the flooring material is woven, none of the specimens within a sample unit contains the same warp, weft yarns or filaments as any other specimen in that sample unit;

   (c) prepare one sample unit in accordance with the leaching requirements set out in subsections 5.2.2 and 5.2.3 of CPAI-84;

   (d) prepare a second sample unit in accordance with the accelerated weathering requirements set out in subsections 5.3.2 and 5.3.3 of CPAI-84;

   (e) test the three sample units in accordance with the flame test method set out in section 6 of CPAI-84; and

   (f) record, for each specimen, the shortest distance between the damaged area and the edge of the hole in the flattening frame.

Test of Wall and Top Material
3. The method to be followed in measuring the after-flame time, the average after-flame time, the damaged length and the average damage length of specimens of a sample unit of wall and top material is as follows:

(a) from the wall and top material of the product to be tested, cut 24 specimens that meet the requirements for test specimens set out in subsection 7.1 of CPAI-84;

(b) divide the specimens into three sample units, ensuring that, where the wall and top material is woven, each sample unit contains four specimens from the warp direction and four specimens from the weft direction of the wall and top material and that none of the specimens from the warp direction contains the same warp yarns or filaments as any other specimen from the warp direction and none of the specimens from the weft direction contains the same weft yarns or filaments as any other specimen from the weft direction;

(c) condition the specimens according to the procedures set out in subsections 5.1.1 and 5.1.2 of CPAI-84;

(d) determine the mass per unit area of the specimens to the nearest g/m²;

(e) prepare one sample unit in accordance with the leaching requirements set out in subsections 5.2.2 and 5.2.3 of CPAI-84;

(f) prepare a second sample unit in accordance with the accelerated weathering requirements set out in subsections 5.3.2 and 5.3.3 of CPAI-84;

(g) test the three sample units in accordance with the flame test method set out in section 7 of CPAI-84, except that the loads for determining the damaged length set out in subsection 7.3.6.1 of CPAI-84 shall be replaced by the following:

<table>
<thead>
<tr>
<th>Mass per Unit area of Specimens Being Tested (g/m²)</th>
<th>Loads for Determining Damaged Length (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 of less</td>
<td>50</td>
</tr>
<tr>
<td>101 to 200</td>
<td>100</td>
</tr>
<tr>
<td>201 to 340</td>
<td>200</td>
</tr>
<tr>
<td>greater than 340</td>
<td>300</td>
</tr>
</tbody>
</table>

(h) record

(i) the after-flame time of each specimen,
(ii) the average after-flame time of the specimens of each sample unit,

(iii) the damaged length of each specimen,

(iv) the average damaged length of the specimens of each sample unit, and

(v) the presence of any portions that break, or any residues that drip, from a specimen and that continue to flame after reaching the floor of the test cabinet.
APPENDIX III


Only those sections of CPAI 84 that are referenced by the Regulations are reproduced here.

5. Conditioning

5.1 Standard Conditions for Testing. Flame tests shall be performed under or upon immediate removal from Standard Atmospheric Conditions and on specimens in moisture equilibrium under Standard Atmospheric Conditions.

5.1.1 Standard Atmospheric Conditions. Standard Atmospheric Conditions for testing are 65 percent ± 2 percent relative humidity at a temperature of 70°F. ± 2°F. (21.1°C ± 1.1°C.)

5.1.2 Moisture Equilibrium. Moisture equilibrium is considered to have been reached when, after free exposure of the material to air in motion controlled at Standard Atmospheric Conditions as defined above, the change in weight of successive weighings made at intervals of 1 hour is no greater than 0.25 percent.

5.1.3 Preconditioning. In the event of dispute concerning the results of tests that may be affected by the moisture content, the material shall be pre-conditioned by being brought to moisture equilibrium with an atmosphere having a relative humidity of not over 10 percent and a temperature not over 125°F. (52°C.). The material shall then be brought to moisture equilibrium under Standard Atmospheric Conditions as defined above and then tested.

5.2 Leaching. Tests in Sections 6 and 7 shall be performed both before and after leaching.

5.2.1 Test Specimen. Test specimens to be leached shall be of the following dimension:

5.2.1.1 Flooring Material. Each test specimen shall be a 9 inch by 9 inch (+ 1/16 inch) section of the flooring material to be tested.

5.2.1.2 Wall and Top Material. Test specimens shall be rectangles of cloth 2 3/4 inches by 12 inches (+ 1/16 inch) with the long dimensions parallel to either the warp or filling directions of the material.

5.2.2 Apparatus

5.2.2.1 Water container or tank of such shape and size that the specimen can be submerged therein with all surfaces of the specimen having full access to the water. For cloth specimens the container shall allow not less than 1/2 gallon of water for each square foot of specimen. The water shall be changed by a continuous flow or by emptying and refilling so that there shall be at least six complete changes of water in a 72-hour period.

5.2.2.2 Means of maintaining water at a temperature of 60°F. to 70°F. (15.5°C to 21.1°C.) and a pH of 6.0 to 8.0 during the test.

5.2.2.3 Means for holding the specimen submerged throughout the leaching period.

5.2.3 Procedure. The specimens shall be immersed in water at a temperature of 60°F. to 70°F. (15.5°C to 21.1°C.) and a pH of 6.0 to 8.0 for 72 hours. The specimen shall then be removed, air-dried and brought to Standard Atmospheric Conditions prior to further testing.

5.3 Accelerated Weathering. Tests in Sections 6 and 7 shall be performed both before and after accelerated weathering.

5.3.1 Test Specimen. Test specimens to be weathered shall be of the following dimensions:
5.3.1.1 Flooring material. Each test specimen shall be a 9 inch by 9 inch (± 1/16 inch) section of the flooring material to be tested.

5.3.1.2 Wall and Top Material. Test specimens shall be rectangles of cloth 2 3/4 inches by 12 inches (± 1/16 inch) with the long dimensions parallel to either the warp or filling directions of the material.

5.3.2 Apparatus

5.3.2.1 Vertical carbon arc mounted at the center of a vertical cylinder. The arc shall be designed to accommodate either two or three pairs of carbons but shall burn only one pair at a time, automatically transferring from one pair to another as the carbons are consumed. The carbons shall be Sunshine-cored and copper-coated, No. 22 for the upper pair and No. 13 for the lower pair. The arc shall be operated on 60 amperes and 50 volts across the arc for alternating current and on 50 amperes and 60 volts across the arc for direct current.

5.3.2.2 A rotating rack with holder in which the specimens are suspended vertically and normally to radiation from the arc with the center of the face of the specimen at a radial distance of approximately 18 inches from the arc.

5.3.2.3 Water-spray nozzles shall be mounted horizontally (the water-spray assembly vertically) in the test chamber inside the specimen rack and so placed that the water shall strike the specimens evenly over their entire length in the form of a fine spray in sufficient volume to cover specimens immediately on impact. The apparatus shall be so operated that the specimens are exposed to successive cycles of 102 minutes of light without spray and 18 minutes of light with spray.

5.3.2.4 Means for maintaining the required temperature of water in the spray.

5.3.2.5 Means for maintaining the required pressure of water entering the spray.

5.3.2.6 Means for delivering the required quantity of water per spray nozzle to the specimen.

5.3.2.7 Exhaust fan to ventilate the arc effectively.

5.3.2.8 Black panel thermometer unit for measuring the temperature within the machine. This unit shall consist of a metal panel to the base of which is attached the sensitive portion of a bimetallic dial-type thermometer. The entire base is then coated twice with long lasting baked enamel paint.

5.3.3 Procedure

5.3.3.1 The rack shall rotate about the arc at a uniform speed of one revolution per minute.

5.3.3.2 The temperature of water in the spray shall be 80°F ± 10°F (26.7°C ± 5.6°C).

5.3.3.3 The pressure of the water entering the spray shall be 1 - 18 psi inclusive.

5.3.3.4 The quantity of water delivered to the specimen shall be .12 to .25 gallons, inclusive, per hour per spray nozzle.
5.3.3.5 The black panel temperature at the exposure plane of the specimen rack shall be 155°F ± 10°F (68°C ± 5.7°C) when measured in the following manner:

Before reading the temperature the machine shall be full of specimens and shall be in operation long enough for thermal equilibrium to be established. The black panel shall be mounted in the test-panel rack and readings taken at the point where water spray is not striking the panel.

5.3.3.6 The specimen shall be suspended on the rotating rack with tension in such a way that the ends or corners cannot curl. The long dimension of the specimen shall be in the vertical position and shall be indicated on the reverse side of the cloth. No test portion of the specimen shall be over 7 inches above or below the horizontal plane of the arc.

5.3.3.7 The specimen shall be exposed to normal radiation from the arc for 100 hours.

5.3.3.8 At the end of the exposure period, the specimen shall be removed from the machine, allowed to dry, and brought to Standard Atmospheric Conditions prior to further testing.

6. Test Method. Flooring Material

6.1 Test Specimen. Each test specimen shall be a 9 inch by 9 inch (+1/16 inch) section of the flooring material to be tested.

6.2 Apparatus

6.2.1 Test Chamber. The test chamber shall consist of an open top hollow cube made of noncombustible material with inside dimensions 12 x 12 x 12 inches and a minimum of 1/4 inch wall thickness. The flat bottom of the box shall be made of the same material as the sides and shall be easily removable. The sides shall be fastened together with screws or brackets and taped to prevent air leakage into the box during use.

6.2.2 Supporting Frame. A steel plate, 9 inches by 9 inches, 1/4 inch thick with an 8 inch diameter hole in its center and a 1 inch by 1/8 inch thick shim affixed to the underside of each corner is required to support the material above the floor of the chamber during the course of the test. The edge of the supporting frame must be kept clean.

6.2.3 Flattening Frame. A steel plate 9 inches by 9 inches, 1/4 inch thick with an 8 inch diameter hole in its center is required to hold the flooring material flat during the course of the test.

6.2.4 Punch. A punch capable of making a 1/4 inch diameter hole in the center of the specimen of flooring material to be tested.

6.2.5 Standard Igniting Source. No. 1588 methenamine timed burning tablet or an equal tablet. These tablets shall be stored in a desiccator over a desiccant for 24 hours prior to use. (Small quantities of sorbed water may cause the tablets to fracture when first ignited. If a major fracture occurs, any results from the test shall be ignored, and it shall be repeated.)

6.2.6 Hood. A hood capable of being closed and having its draft turned off during each test and capable of rapidly removing the products of combustion following each test. The front or sides of the hood should be transparent to permit observation of the tests in progress.
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6.2.7 **Mirror:** A small mirror mounted above the test chamber at an angle to permit observation of the specimen from outside of the hood.

6.3 **Procedure**

6.3.1 Place the test chamber in the draft-protected environment (hood with draft off) with its bottom in place and the supporting frame centered in the bottom of the chamber, shimmed side down.

6.3.2 Punch a 1/4 inch diameter hole in the center of the specimen of flooring material to be tested.

6.3.3 Place the specimen on the supporting frame in the position in which it will be used, exercising care that the specimen is horizontal and flat. Place the flattening frame on the specimen and position a methenamine tablet on one of its flat sides with its edge within 1/8 inch of the hole in the center of the specimen.

6.3.4 Ignite the tablet by touching a lighted match or an equivalent igniting source carefully to its top.

6.3.5 Continue each test until the last vestige of flame or glow disappears (this is frequently accompanied by a final puff of smoke) or the flaming or smoldering has approached within 1.0 inch of the edge of the hole in the flattening frame at any point. (Any test in which the tablet is extinguished by physical action of the specimen of flooring material shall be disregarded and the test repeated.)

6.3.6 When all combustion has ceased, ventilate the hood and measure the shortest distance between the edge of the hole in the flattening frame and the damaged area. Record the distance measured for each specimen.

6.3.7 Remove the specimen from the chamber and remove any burn residue from the floor of the chamber. Before proceeding to the next test, the floor must be cooled to normal room temperature or replaced with one that is at normal room temperature.

6.4 **Report.** The number of specimens of the four tested in which the damaged area does not extend to within 1.0 inch of the edge of the hole in the flattening frame shall be reported.

6.5 **Notes**

6.5.1 The No. 1588 methenamine tablet may be procured from a local pharmacy or from Eli Lilly & Co., 740 S. Alabama, Indianapolis, Indiana 46206.

7. **Test Method, Wall and Top Material**

7.1 **Test Specimen.** The test specimens shall be rectangles of cloth 2 3/4 inches by 12 inches (± 1/16 inch) with the long dimensions parallel to either the warp or filling directions of the material.

7.2 **Apparatus**

7.2.1 **Cabinet:** A cabinet and accessories, fabricated in accordance with the requirements specified in Figures A, B and C. Galvanized sheet metal or other suitable metal shall be used. The entire inside back wall of the cabinet shall be painted black to facilitate the viewing of the test specimen and pilot flame.
7.2.2 Burner The burner shall be equipped with a variable orifice to
adjust the flame height, a barrel having a 3/8 inch inside diameter, and a pilot
light.

7.2.2.1 The burner may be constructed by combining a 3/8 inch inside
diameter barrel 3 + 1/4 inches long from a fixed orifice burner with a base from
a variable orifice burner.

7.2.2.2 The pilot light tube shall have a diameter of approximately
1/16 inch and shall be spaced 1/8 inch away from the burner edge with a pilot
flame 1/8 inch long.

7.2.2.3 The necessary gas connections and the applicable plumbing
shall be as specified in Figure D except that a solenoid valve may be used in
lieu of the stopcock valve to which the burner is attached. The stopcock valve
or solenoid valve, whichever is used, shall be capable of being fully opened or
fully closed in 0.1 second.

7.2.2.4 On the side of the barrel of the burner, opposite the pilot
light there shall be a metal rod of approximately 1/8 inch diameter spaced 1/2
inch from the barrel and extending above the burner. The rod shall have two
5/16 inch prongs marking the distances of 3/4 inch and 1 1/2 inches above the
top of the burner.

7.2.2.5 The burner shall be fixed in a position so that the center of the
barrel of the burner is directly below the center of the specimen.

7.2.3 A control valve system with a delivery rate designed to furnish gas
to the burner under a pressure of 2 1/2 + 1/4 lbs. per square inch at the burner
inlet (see 7.5.1). The manufacturer's recommended delivery rate for the valve
system shall include the required pressure.

7.2.4 The gas used shall be Matheson Manufactured Gas Type B or the equivalent.

7.2.5 Metal hooks and weights to produce a series of total loads to determine
damaged length. The metal hooks shall consist of No. 19 gauge steel wire or
equivalent and shall be made from 3 inch lengths of the wire and bent 1/2 inch from
one end to a 45 degree hook. One end of the hook shall be fastened around the
neck of the weight to be used.

7.2.6 Stop watch or other device to measure the burning time to 0.2 second.

7.2.7 Scale, graduated in 0.1 inch to measure the damaged length.

7.2.8 Clamps For holding the specimen to the supporting frame shall be
'Acco #325, Hunt Bulldog Clips No.2, or equivalent. A total of four clamps, two
on each side are used. Two clamps 3/4 inch above the bottom edge and two clamps
1 1/2 inch above the first two.

7.3 Procedure

7.3.1 The specimen in its holder shall be suspended vertically in the cabinet
in such a manner that the entire length of the specimen is exposed and the lower
end is 3/4 inch above the top of the gas burner. The apparatus shall be set up
in a draft free area.
7.3.2 Prior to inserting the specimen, the pilot flame shall be adjusted to approximately 1/8 inch in height measured from its lowest point to the tip. The burner flame shall be adjusted by means of the needle valve in the base of the burner to give a flame height of 1 1/2 inches (+ 1/16 inch) with the stopcock fully open and the air supply to the burner shut off and taped. The 1 1/2 inch flame height is obtained by adjusting the valve so that the uppermost portion (tip) of the flame is level with the tip of the metal prong (see Figure B) specified for adjustment of flame height. It is an important aspect of the evaluation that the flame height be adjusted with the tip of the flame level with the tip of the metal prong. After inserting the specimen, the stopcock shall be fully opened, and the burner flame applied vertically at the middle of the lower edge of the specimen for 12 seconds (.2 second) and the burner turned off. The cabinet door shall remain shut during testing.

7.3.3 The after-flame time for each specimen shall be recorded to the nearest 0.2 seconds. After flaming and glowing have ceased, the specimen shall be removed from the cabinet.

7.3.4 After each specimen is removed, the test cabinet shall be cleared of fumes and smoke prior to testing the next specimen.

7.3.5 After both flaming and glowing have ceased, the damaged length shall be measured. The damaged length shall be the distance from the end of the specimen, which was exposed to the flame, to the end of a tear (made lengthwise) of the specimen through the center of the damaged area as follows: The specimen shall be folded lengthwise and creased by hand along a line through the highest peak of the damaged area. The hook shall be inserted in the specimen (or a hole, 1/4 inch diameter or less, punched out for the hook) at one side of the damaged area 1/4 inch from the adjacent outside edge and 1/4 inch in from the lower end. A weight of sufficient size such that the weight and hook together shall equal the total tearing load required in 7.3.6.1 shall be attached to the specimen.

7.3.6 A tearing force shall be applied gently to the specimen by grasping the corner of the cloth at the opposite edge of the char from the load and raising the specimen and weight clear of the supporting surface. The end of the tear shall be marked off on the edge and the damaged length measurement made along the undamaged edge.

7.3.6.1 Loads for Determining Damaged Length. The specific load applicable to the weight of the test material shall be as follows:

<table>
<thead>
<tr>
<th>Untreated Weight of Material Being Tested (Ounces per Square Yard)</th>
<th>Total Tear Weight for Determining the Damaged Length (Pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not exceeding 3.0</td>
<td>0.125</td>
</tr>
<tr>
<td>Over 3.0 and not exceeding 6.0</td>
<td>0.25</td>
</tr>
<tr>
<td>Over 6.0 and not exceeding 10.0</td>
<td>0.50</td>
</tr>
<tr>
<td>Over 10.0</td>
<td>0.75</td>
</tr>
</tbody>
</table>

7.3.7 The damaged length for each specimen shall be recorded to the nearest 0.1 inch.
7.4 **Report**

7.4.1 The after-flame time and damaged length of the sample unit shall be the average of the results obtained from the individual specimens tested. All values obtained from the individual specimens shall be recorded.

7.4.2 The after-flame time shall be reported to the nearest 0.2 second and the damaged length to the nearest 0.1 inch.

7.5 **Notes**

7.5.1 The gas and the regulator valve system, Models IL-350 and 70 with hose and fittings connected in series may be obtained from Matheson Gas Products, P. O. Box 85, East Rutherford, New Jersey 07073.

7.5.2 The test cabinet of the type described in this test method may be obtained from U. S. Testing Company, 1941 Park Avenue, Hoboken, New Jersey, 07030 or from the Govmark Organization, Inc., P. O. Box 807, Bellmore, New York 11710.
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END