



Designation: F 1235 – 9803

# Standard Consumer Safety Specification for Consumer Safety for Portable Portable Hook-On Chairs<sup>1</sup>

This standard is issued under the fixed designation F 1235; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## INTRODUCTION

This consumer safety specification addresses incidents associated with portable hook-on chairs (chairs) that were identified by the United States Consumer Product Safety Commission (CPSC).

CPSC has identified injuries which occurred when chairs fell because the child pushed off the table, components of the chair became detached or broke, and, to a lesser extent, when the table to which the chair was attached tipped over. In response to a review of the data received by the CPSC, this specification attempts to minimize the following: falls due to detachment of the chair from the table or due to breakage or detachment of components; a child falling out of the chair; and chair and table tipping over.

This specification does not cover chairs that are either blatantly misused or are used in a careless manner that disregards the warning statements and safety instructions provided with each chair. This specification is written within the current state-of-the-art of chair technology. It is intended that this specification will be updated whenever substantive information becomes available that necessitates additional requirements or justifies revising the existing requirements.

## 1. Scope

1.1 This specification covers the performance requirements and test methods designed to ensure the satisfactory performance of the portable hook-on chair.

1.2 This specification is intended to minimize injuries to children resulting from normal use and reasonably foreseeable misuse or abuse of chairs.

1.3 For the purposes of this specification a chair is:

1.3.1 A seat made for the express purpose of seating and holding a child who can remain in a sitting position due to his or her own coordination.

1.3.2 Usually a legless seat constructed to locate the occupant at a table in such a position and elevation so that the surface of the table can be used as the feeding surface for the occupant.

1.3.3 Supported solely by the table on which it is mounted. These chairs are intended for use by children between the ages of six months and three years and who weigh no more than 37 lb (16.8 kg) (95th percentile male at three years).

1.4 No chair produced after the approval date of this consumer safety specification shall, either by label or other means, indicate compliance with this specification unless it conforms to all applicable requirements contained herein.

1.5 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.6 The following precautionary caveat pertains to the test methods portion only, Section ~~6~~, 7, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards:*

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee ~~F15.40~~ F15.16 on Juvenile Products—Highchairs, Hook-On Chairs and Expandable Gates.

Current edition approved ~~Jan. Aug. 10, 1998; 2003~~. Published ~~August 1998; Aug. 2003~~. Originally published as F 1235—89; approved 1989. Last previous edition F 1235—89 (1993); approved in 1998 as F 1235—98.

D 3359 Test Methods for Measuring Adhesion by Tape Test<sup>2</sup>

## 2.2 Federal Regulations:

~~16 CFR 1500 Hazardous Substances Act Regulations including sections:~~

~~1500.48 Technical Requirements for Determining a Sharp Point in Toys or Other Articles Intended for Use By Children Under Eight Years 1303 Ban of Age Lead-Containing Paint, and Certain Consumer Products Bearing Lead-Containing Paint<sup>3</sup>~~

~~16 CFR 1500 Hazardous Substances Act Regulations including sections:~~

~~1500.48 Technical Requirements for Determining a Sharp Point in Toys or Other Articles Intended for Use By Children Under Eight Years of Age<sup>3</sup>~~

~~1500.49 Technical Requirements for Determining a Sharp Metal or Glass Edge in Toys or Other Articles Intended for Use By Children Under Eight Years of Age<sup>3</sup>~~

~~1500.50.52 Test Methods for Simulating Use and Abuse of Toys and Other Articles Intended for Use by Children<sup>3</sup>~~

~~16 CFR 1303 Ban of Lead-Containing Paint, and Certain Consumer Products Bearing Lead-Containing Paint<sup>3</sup>~~

~~16 CFR 1501 Method for Identifying Toys and Other Articles Intended for Use by Children Under Three Years of Age Which Present Choking, Aspiration, or Ingestion Hazards Because of Small Parts<sup>3</sup>~~

## 2.3 ANSI Standards:

~~ANSI Z535.4 Product Safety Signs and Labels<sup>4</sup>~~

## 3. Terminology

### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *conspicuous*—a label that, is visible when the portable hook-on chair is in a manufacturer's recommended use position; is visible position to a person standing near the chair at any one position ~~near the chair~~ but is not necessarily visible from all positions.

3.1.2 *fabric*—any woven, knit, coated, laminated, extruded or calendered flexible material that is intended to be sewn, welded, heat sealed or glued together as an assembly.

3.1.3 *manufacturer's recommended use position*— any position that is presented as a normal, allowable, or acceptable configuration for the use of the product by the manufacturer in any descriptive or instructional literature. This specifically excludes positions that the manufacturer shows in a like manner in its literature to be unacceptable, unsafe, or not recommended.

3.1.4 *nonpaper label*—any label ~~made of fabric or other~~ material (such as plastic or metal) which either will not tear without the aid of tools, or tears leaving a sharply defined edge.

3.1.5 *occupant*—that individual who is in a product that is set up in one of the manufacturer's recommended use positions.

3.1.6 *paper label*—any label material ~~(except fabric)~~ that tears without the aid of tools and leaves a fibrous edge.

3.1.7 *permanent*—~~(label/warning attachment):~~

3.1.7.1 *labels not attached by a seam* :

(1) A nonpaper label or decal shall be considered permanent if, during an attempt to manually remove it without the aid of tools or solvents, it cannot be removed, or such action damages the surface to which it is attached.

(2) A paper label shall be considered permanent if, during an attempt to remove it without the aid of tools, or solvents, it cannot be removed, it tears upon removal or such action damages the surface to which it is attached.

3.1.7.2 *labels attached by a seam*—a label attached by a seam shall be considered permanent if it complies with the requirements of 6.11 and does not tear, yielding a separate part, during the test.

3.1.8 *seam*—a means of joining fabric components such as sewing, welding, heat sealing or gluing.

3.1.9 ~~8~~ *static load*—a vertically downward ~~load force~~ applied by a calibrated force gage or by dead weight.

3.1.10 *warning statements*—warning statements applied directly onto the surface of the product by hot stamping, heat transfer, printing or wood burning, etc. shall be considered permanent if the printing in the area tested is still legible and attached after being subjected to the test prescribed in 6.12.

3.1.10.1 *Discussion*—If warning statements are on labels, refer to 3.1.7.1 or 3.1.7.2. weights.

## 4. Calibration and Standardization

4.1 All testing shall be conducted on a concrete floor that may be covered with 1/8 in. (3 mm) thick vinyl flooring covering, unless test instructs differently.

4.2 The product shall be completely assembled, unless otherwise noted, in accordance with the manufacturer's instructions.

4.3 No testing shall be conducted within 48 h of manufacturing.

4.4 The product to be tested shall be in a room with ambient temperature of  $73 \pm 9^\circ\text{F}$  ( $23 \pm 5^\circ\text{C}$ ) for at least 1 h prior to testing. Testing shall then be conducted within this temperature range.

<sup>2</sup> Annual Book of ASTM Standards, Vol 06.01.

<sup>3</sup> Available from U.S. Government Printing Office, N. Capital and H Streets, NW, Washington, DC 20401.

<sup>4</sup> Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

<sup>4</sup> CAMI Infant Dummy (Mark II), Department of Transportation, Federal Aviation Administration, Cami Infant Dummy, Drawing No. SA-100I, Memorandum Report AAC-119-74-14, Revision II, by Richard F. Chandler, July 2, 1974.

4.5 All testing required by this specification shall be conducted on the same unit.

## 5. General Requirements

~~4.1 The portable hook on chair~~

~~5.1 There shall conform be no hazardous sharp points or edges as defined by 16 CFR 1500.48 and 16 CFR 1500.49 before and after testing to the regulations specified in Section 2 of this consumer safety specification.~~

~~5.2 There shall be no small parts as defined by 16 CFR 1501 before testing or liberated as a result of testing to this specification.~~

~~5.3 The paint and after testing:~~

~~4.2 Prior surface-coatings on the product shall comply with 16 CFR 1303.~~

~~5.4 Prior to testing, any exposed wood parts shall be smooth and free of from splinters.~~

~~4.3~~

~~5.5 Latching or Locking Mechanisms— Any unit that folds shall have a latching or locking device or other provision in the design that will prevent the unit from unintentionally folding when properly placed in the manufacturer’s recommended use position. During and upon completion of the test, the The unit shall remain in its manufacturer’s recommended use position during and upon completion of the test in accordance with 7.3. If a unit is designed with a latching or locking device, that device shall remain engaged and operative after testing in accordance with 6.3.~~

~~4.4 Nonpaper Labels:~~

~~4.4.1 Nonpaper labels or decals (such as warning labels, brand name labels, decorative labels, or pin-striping) which may present a choking hazard if removed must be permanent.~~

~~NOTE 1—Paper labels are exempt from the small parts requirements of 16 CFR 1501 because paper cannot be meaningfully tested.~~

~~4.4.1.1 Nonpaper labels that may present a choking hazard are those that upon removal, fit entirely within the small parts cylinder as defined in 16 CFR 1501. Non-paper labels that tear upon an attempt to remove them are considered labels that may pose a choking hazard, since the size of the torn piece could fit within the small parts cylinder.~~

~~4.4.1.2 Nonpaper labels attached by a seam, except warning labels, that tear along a seam only and do not yield a part that fits entirely within the small parts cylinder, as defined in 16 CFR 1501, are not considered labels that pose a choking hazard and thus are not required to be permanent. (Warning labels must be permanent.)~~

~~4.5 testing.~~

~~5.6 Scissoring, Shearing, and Pinching— A portable hook-on chair, when in a manufacturer’s recommended use position, shall be designed and constructed so as to prevent injury to the occupant from any scissoring, shearing, or pinching when members or components rotate about a common axis or fastening point, slide, pivot, fold, or otherwise move relative to one another. Scissoring, shearing, or pinching that may cause injury exists shall not be permissible when the edges of any rigid parts admit a probe greater than 0.210 in. (5.303 mm) and less than 0.375 in. (9.503 mm) diameter at any accessible point throughout the range of motion of such parts.~~

~~4.6~~

~~5.7 Exposed Coil Springs—Any exposed coil spring that is accessible to the occupant, having or capable of generating a space between coils of 0.210 in. (5.30 mm) or greater during static load testing in accordance with 6 7.6, shall be covered or otherwise designed to prevent injury from entrapment.~~

~~4.7~~

~~5.8 Openings—Any shaped holes, slots, Holes or cracks slots that exist in the product that is in its manufacturer’s recommended use position, and that are accessible to the toes and fingers of the occupant extend entirely through and/or recessed into the surface a wall section of any rigid material less than 0.375-in. (9.53-mm) thick and admits a 0.210-in. (5.303-mm) diameter rod; shall also admit a 0.375-in. (9.503-mm) diameter rod. Openings Holes or slots that have a minor dimension are between 0.210-in. (5.303-mm) and 0.375-in. (9.53-mm) and have a wall thickness less than 0.375-in. (9.53-mm) but are limited in depth to 0.375-in. (9.53-mm) maximum by another rigid surface shall be permissible; (see Fig. 1). The product shall be evaluated in all manufacturer’s recommended us positions.~~

~~5.9 Labeling:~~

~~5.9.1 Warning labels (whether paper or non paper) shall be permanent when tested in accordance with 7.11.~~

~~5.9.2 Warning statements applied directly onto the depth is no greater than the minor dimension surface of the opening.~~

## 5. Performance Requirements

~~5.1 product by hot stamping, heat transfer, printing, wood burning, and so forth shall be permanent when tested in accordance with 7.11.~~

~~5.9.3 Nonpaper labels shall not liberate small parts when tested in accordance with 7.11.~~

~~5.10 Protective Components—If the a child can grasp protective components, such components between the thumb and forefinger, or teeth, (such as caps, sleeves, or plugs used for protection from sharp edges, points, or entrapment of fingers or toes between the thumb and forefinger, toes), or teeth, or if there is at least a 0.040 in. (1.00 mm) gap between the protective component and its adjacent parent component, such protective component shall not be removed when tested in accordance with 6.4.~~

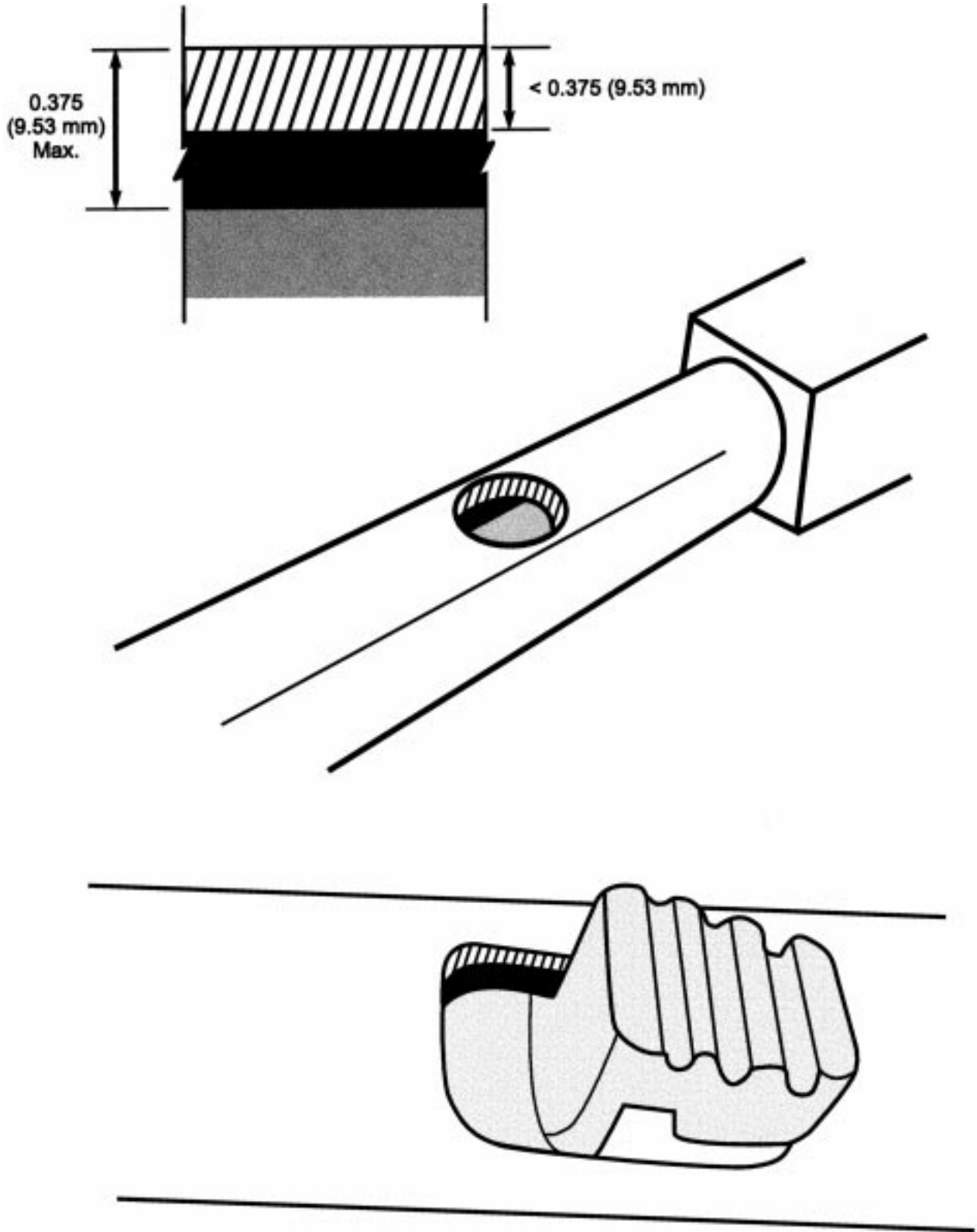


FIG. 1 Opening Example

5.2- 7.4.

## 6. Performance Requirements

6.1 *Chair Drop Test*—The chair shall permit subsequent tests and exhibit no mechanical hazards (sharp points, sharp edges, or small parts) when tested in accordance with 6.5.

~~5.3–7.5.~~

~~6.2 Static Load Test~~—The chair shall support a static load on the seat without causing any hazardous conditions as identified within this specification when tested in accordance with ~~6.6.~~

~~5.4–7.6.~~

~~6.3 Seat and Seat Back Disengagement Test~~—The seat back and seat shall remain fully attached to the frame of the chair when forces are applied in accordance with ~~6.7.~~

~~5.5–7.7.~~

~~6.4 Chair Bounce Test~~—The chair shall remain attached to the standard test surface as described in ~~6.7.1.16~~ and allow no movement greater than 1 in. (25 mm) when forces are applied in accordance with ~~6.8.~~

~~5.6–7.8.~~

~~6.5 Chair Pull/Push Test~~—The chair shall remain attached to the standard test surface when tested in accordance with ~~6.9.~~

~~5.7–7.9.~~

~~6.6 Restraint Systems:~~

~~56.76.1~~ A restraint system shall be provided to secure a child in the seated position in each of the manufacturer’s recommended use positions.

~~56.76.1.1~~ The restraint system shall include both waist and crotch restraint. The crotch restraint shall be designed such that its use is mandatory when the restraint system is in use.

~~NOTE 21~~—It should be noted that this test applies to all designs of restraining systems, whether they be of the traditional “active” or of the “passive” type.

~~56.76.2~~ The restraint system and its closing means (for example, buckle) shall not break, separate or permit removal of the CAMI test dummy (see Fig. ~~4.2~~) from the chair when tested in accordance with ~~6.7.10.~~

~~56.76.2.1~~ If during the tests in ~~6.7.10~~ the posterior of the test dummy, with the force applied, is pulled past the front edge of the seat, the dummy shall be considered removed.

~~56.76.2.2~~ After the tests in ~~6.7.10.6~~ and ~~6.7.10.7~~, the CAMI dummy shall not be fully released.

~~56.76.3~~ The waist restraint shall be capable of adjustment with a positive self-locking mechanism that is capable, when locked, of withstanding the forces of tests in ~~6.7.10~~ without allowing restraint movement or slippage of more than 1 in. (25 mm).

~~56.76.4~~ A connecting means and adjustment means for the waist restraint shall be capable of usage independent of one another. The connecting means shall not be an adjustment means, but may have one integrally attached to it.

~~56.76.5~~ Before shipment, the restraining system must be attached to the chair in such a manner as to not become detached through normal use. For chairs requiring consumer assembly, buckles must be completely threaded and the restraining system must be attached to a component that would render the chair unusable if not properly assembled.

**67. Test Methods**

~~67.1 Test Equipment:~~



FIG. ~~4.2~~ CAMI Infant Dummy, Mark II<sup>6</sup>

~~67.1.1~~ A push-pull gage (Chatillon DPPH-100 or equivalent).<sup>4</sup>

~~6.1.2~~ A gage.

~~7.1.2~~ A CAMI Infant Dummy Mark II (see Fig. ~~1~~ 2).<sup>5</sup>

~~67.1.3~~ Tension test adapter/clamp (see Fig. ~~2~~ 3).

~~67.1.4~~ A 0.040 in. (1.00 mm) feeler gage.

~~67.1.5~~ A wood block 6 by 6 by  $\frac{3}{4}$  in. thick (150 by 150 by 19 mm). In all cases where there is a hammock type seat, use the weld cap as described in ~~6~~ 7.1.6.

~~67.1.6~~ A 6 in. (150 mm) weld cap, as identified in Fig. ~~3~~ 4, for use with a hammock type seat.

NOTE 32—If using a weld cap, subtract the weight of the cap from the indicated test weight.

~~67.1.7~~ A wood block 2 by 2 by  $\frac{3}{4}$  in. thick, (50 by 50 by 19 mm).

~~67.1.8~~ A 100 lb (45.5 kg) weight.

~~67.1.9~~ A 30 lb (13.6 kg) weight.

~~67.1.10~~ A 20 lb (9.1 kg) weight.

~~67.1.11~~ A 12 lb (5.4 kg) weight.

~~67.1.12~~ A 10 lb (4.5 kg) weight.

~~67.1.13~~ A 5 lb (2.2 kg) weight.

~~67.1.14~~ Webbing tension pull device (see Fig. ~~4~~ 5).

~~67.1.15~~ A clamp with  $\frac{3}{4}$  in. (19 mm) diameter clamping surfaces.

~~67.1.16~~ *Standard Test Surface, Underlayment, and Thickness:*



15 lbf (67N) MAX TENSION

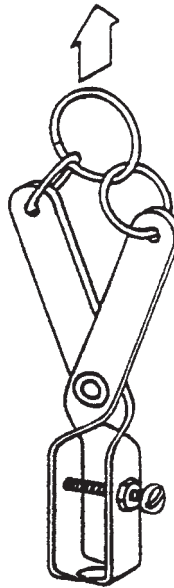
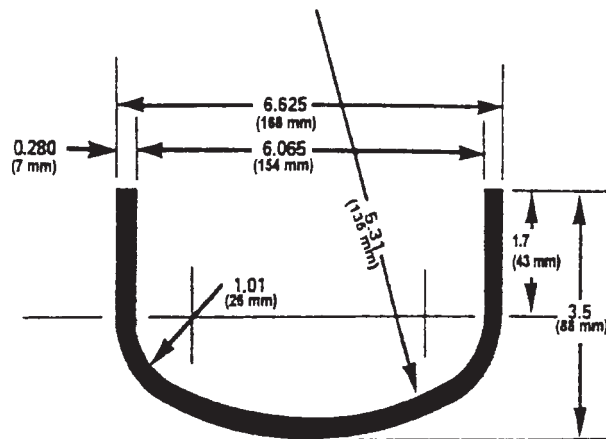


FIG. 2 3 Tension Test Adapter/Clamp



NOTE 1—Caps furnished to ANSI standards unless otherwise specified. Welding caps are formed from steel plate and are ellipsoidal in shape. The minor axis being equal to one half the major axis radii “R” and “r” closely approximate the actual semi-ellipsoidal shape. All dimensions in inches and are in accordance with ANSI B16.9.

FIG. 3 4 Nominal Weld 6 in. Weld Cap—Weight (Approximately) 6.4 lb

67.1.16.1 The standard test surface should be a smooth finish, impregnated high pressure, high gloss laminate.<sup>6</sup>

67.1.16.2 The underlayment should be clean particle board, smooth side down.

67.1.16.3 Two standard test surface thicknesses are required.

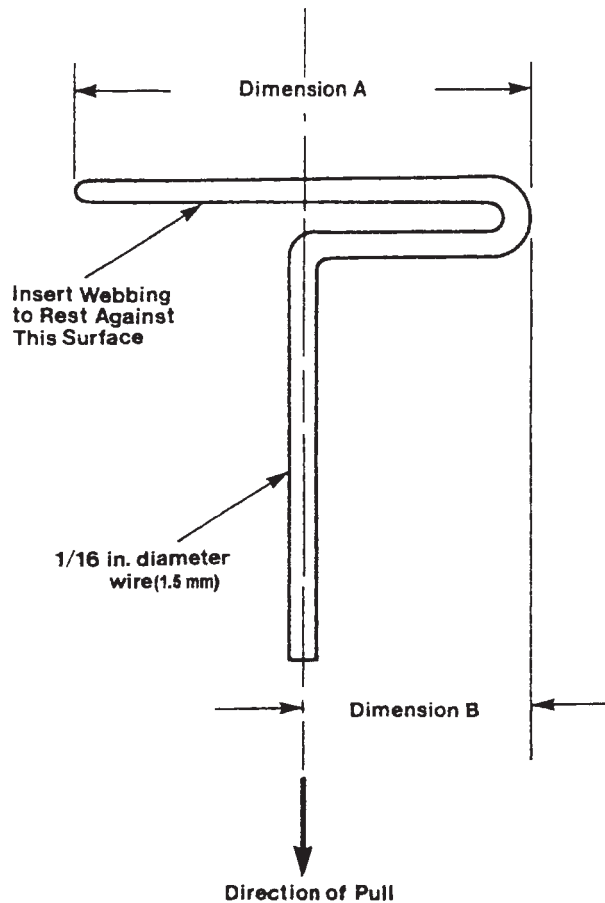
67.1.16.4 The minimum test surface shall be equal to or to the nearest ¼ in. (6 mm) greater than the minimum surface thickness stated by the manufacturer on the retail package.

67.1.16.5 The maximum test surface shall be equal to or to the nearest ¼ in. (6 mm) less than the maximum thickness stated by the manufacturer on the retail package.

67.2 Chair Assembly—Assemble the chair in accordance with the manufacturer’s instructions.

<sup>6</sup>The sole source of supply of the apparatus known to the committee at this time is John Chatillon & Sons, Inc., Force Measurement Division, 7609 Business Park Dr., Greensboro, NC 27109. If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at

<sup>6</sup>Formica, a meeting registered trademark of the responsible technical committee, which you may attend, Formica Corp., has been found suitable for this purpose.



NOTE 1—Dimension A—Width of webbing plus 1/8 in. (3 mm).  
 NOTE 2—Dimension B—One half of Dimension A.

**FIG. 4 5 Webbing Tension Pull Device**

**67.3 Latching Mechanisms for Prevention of Unintentional Folding:**

67.3.1 Securely affix the chair according to the manufacturer’s directions to the maximum test surface so that the normal folding motion is not impeded.

67.3.2 Gradually apply a force of 45 lbf (200 N) within 5 s and maintain for an additional 10 s. Apply the force in the direction normally associated with folding or disassembly of the chair at a position most likely to cause failure. Repeat this step three times within a 2 min period.

**67.4 Removal of Protective Components From Chairs:**

67.4.1 Any protective component which a child may reasonably be expected to grasp between the thumb and forefinger, or teeth, or that has at least a 0.040 in. (1.00 mm) gap between itself and its adjacent parent component shall be tested in accordance with each of the following methods in the sequence listed.

67.4.2 Secure the chair so that it cannot move during the performance of the following tests.

67.4.3 **Torque Test**—A torque of 3 lbf-in. (0.3 N·m) shall be applied evenly within a period of 5 s in a clockwise direction until a rotation of 180° from the original position has been attained or 3 lbf-in. (0.3 N·m) has been exceeded. The torque or 180° displacement shall be maintained for an additional 10 s. The torque shall then be removed and the test components permitted to return to a relaxed condition. This procedure shall then be repeated in a counter-clockwise direction.

**67.4.4 Tension Test:**

67.4.4.1 Attach a force gage to the protective component by means of any suitable device. For components that cannot reasonably be expected to be grasped between thumb and forefinger, or teeth, on their outer diameter, but have at least a 0.040 in. (1.00 mm) gap or more behind the rear surface of the components and the structural member of the chair to which they are attached, a clamp such as shown in Fig. 2 3 may be a suitable device.

67.4.4.2 Be sure that the attachment device does not compress or expand the component so that it hinders any possible removal of the component.

67.4.4.3 Gradually apply a 15 lbf (67 N) force in a direction that would normally be associated with the removal of the protective component. Gradually apply the force within 5 s and maintain for an additional 10 s.

**67.5 Chair Drop Test:**



- 67.5.1 Conduct all drop testing on a concrete floor, that may be covered with 1/8 in. (3 mm) thick vinyl flooring cover.
- 67.5.2 Drop a chair that does not fold, from a height of 36 in. (910 mm). Drop the chair twice on each of six different planes.
- 67.5.3 Drop a chair that does fold, from a height of 36 in. (910 mm). Drop the chair once on each of six different planes, both in the folded and erect configurations.
- 67.5.4 Conduct all further tests on chairs that have passed this drop test.
- 67.6 *Static Load Test:*
- 67.6.1 Securely affix the chair according to manufacturers directions to the minimum standard test surface.
- 67.6.2 Place a weight of 100 lb (45.5 kg) on the center of the seat and distribute it upon the 6 by 6 in. wood block.
- 67.6.3 Maintain this load for 60 s.
- 67.6.4 Repeat this procedure on the maximum standard test surface.
- 67.7 *Seat and Seat Back Disengagement Test:*
- 67.7.1 All forces in this section shall be gradually applied over 5 s through the 2 by 2 in. wood block and maintained for an additional 10 s.
- 67.7.2 *Step 1:*
- 67.7.2.1 Securely affix the chair according to the manufacturer's directions to the maximum test surface.
- 67.7.2.2 Place a weight of 20 lb (9.1 kg) on the center of the seat and distribute it upon the 6 by 6 in. wood block.
- 67.7.2.3 Gradually apply a force of 35 lbf (156 N) within 5 s downward on the middle of the top edge of the seat back. Repeat this step on the left and right top edge of the seat back. Make sure the wood block does not extend beyond the side edge of the seat back.
- 67.7.2.4 Gradually apply a force of 35 lbf (156 N) within 5 s upward on the middle of the bottom edge of the seat back. Repeat this step on the left and right bottom edge of the seat back. Make sure the wood block does not extend beyond the side edge of the seat back.
- 67.7.2.5 Gradually apply a force of 35 lbf (156 N) within 5 s toward the test surface on the middle of the seat back. Repeat this step on the left and right corner of the top and bottom of the seat back. Make sure that the wood block does not extend beyond the edge of the seat back.
- 67.7.2.6 Gradually apply a force of 35 lbf (156 N) within 5 s away from the test surface on the middle of the seat back. Repeat this step on the left and right corner of the top and bottom of the seat back. Make sure that the wood block does not extend beyond the edge of the seat back.
- 67.7.3 *Step 2:*
- 67.7.3.1 Securely affix the chair according to the manufacturer's directions to the maximum test surface.
- 67.7.3.2 Gradually apply a force of 35 lbf (156 N) within 5 s downward on the middle of the seat. Repeat this step on each corner of the seat. Make sure the wood block does not extend beyond the edge of the seat.
- 67.7.3.3 Gradually apply a force of 35 lbf (156 N) within 5 s away from the test surface on the middle of the front edge of the seat. Repeat this step on each corner of the front edge of the seat being sure that the wood block does not extend beyond the side edge of the seat.
- 67.7.3.4 Gradually apply a force of 35 lbf (156 N) within 5 s toward the test surface on the middle of the back edge of the seat. Repeat this step on each corner of the back edge of the seat being sure that the wood block does not extend beyond the side edge of the seat.
- 67.7.4 *Step 3:*
- 67.7.4.1 Invert the chair and support it so the seat is parallel to the test floor.
- 67.7.4.2 Gradually apply a force of 35 lbf (156 N) within 5 s downward on the middle of the seat. Repeat this step on each corner of the seat. Make sure the wood block does not extend over the edge of the seat.
- 67.8 *Chair Bounce Test:*
- 67.8.1 Securely affix the chair according to the manufacturer's directions to the minimum test surface.
- 67.8.2 Place a weight of 12 lb (5.4 kg) on the center of the seat and distribute it upon the 6 by 6 in. wood block.
- 67.8.3 Gradually apply a force of 15 lbf (67 N) within 5 s away from the test surface from a point in the middle of the seat back along the same plane of the test surface. Apply the force using a strap or belt.
- 67.8.4 Drop a weight of 24 lb (10.9 kg) from a height of 1 in. (25 mm) onto the center of the seat.
- 67.8.5 Repeat for a total of 50 drop cycles.
- 67.8.6 Securely affix the chair according to the manufacturer's directions to the maximum test surface, and repeat 67.8.1-67.8.5.
- 67.9 *Chair Pull/Push Test:*
- 67.9.1 *Step 1:*
- 67.9.1.1 Securely affix the chair according to the manufacturer's directions to the minimum test surface.
- 67.9.1.2 Place the weight indicated in Table 1 on the center of the seat, distributed evenly on the 6 by 6 in. wood block.
- 67.9.1.3 Apply a force as indicated in Table 1 away from the test surface from a point in the middle of the seat back along the same plane of the test surface. Using a strap or belt, gradually apply the force within 5 s and maintain for 10 s.
- 67.9.1.4 Repeat 67.9.1.1-67.9.1.3 for each set of force and weight loading requirements in Table 1.
- 67.9.1.5 Repeat 67.9.1.1-67.9.1.3 on the maximum test surface.

**TABLE 1 Chair Pull/Push Test, Step 1**

	Weight in Seat, lb (kg)	Pull Back Force, lbf (N)
Test No. 1	30 (13.6)	60 (267)
Test No. 2	20 (9.1)	50 (222)
Test No. 3	10 (4.5)	40 (178)

**67.9.2 Step 2:**

67.9.2.1 Securely affix the chair according to the manufacturer’s directions to the minimum test surface.

67.9.2.2 Place the weight indicated in Table 2 on the center of the seat, distributed evenly on the 6 by 6 in. wood block.

67.9.2.3 Apply a force indicated in Table 2, parallel to the test surface edge, to the side edge of the seat back, or the frame if a hammock type seat, at a point as close as possible to the test surface plane. Gradually apply the force within 5 s through the 2 by 2 in. wood block and maintain for 10 s.

67.9.2.4 Repeat 67.9.2.1-67.9.2.3 for each set of force and weight loading requirements in Table 2.

67.9.2.5 Repeat 67.9.2.2 and 67.9.2.3 on the maximum test surface.

**67.10 Restraining System Integrity and Retention Tests:**

67.10.1 Securely affix the chair according to the manufacturer’s directions to the minimum test surface. The attachment shall be such that it does not influence the manner in which the test dummy is restrained in the seat.

67.10.2 Apply a force of 45 lbf (200 N) to a single attachment point of the restraint system in the normal use direction(s) that stress would be applied to that attachment. Gradually apply the force within 5 s and maintain for 10 s.

67.10.2.1 Repeat 67.10.2 four additional times with a maximum interval of 2 s between tests.

67.10.2.2 Repeat 67.10.2 and 67.10.2.1 for each attachment point of the restraint system, and to the connection provided by any fastening device.

67.10.3 If the chair has an adjustable seat back, place it in the most upright use position. Place a CAMI Infant Dummy<sup>4</sup> (see Fig. 4 2) in the chair with the restraining system fastened in accordance with the manufacturer’s instructions. Tighten the restraining system in such a manner that a force of 2 lbf (9 N) or less will provide at least a ¼ in. (6 mm) space between the restraint system and the dummy. The webbing tension pull device shown in Fig. 4 5 is required to determine the proper restraint system fit. Perform the tests given in 67.10.4-67.10.7 without readjusting the restraining system.

67.10.4 Apply a pull force of 45 lbf (200 N) horizontally on the approximate centerline of either leg of the dummy (at the ankle). Gradually apply the force within 5 s and maintain for 10 s.

67.10.4.1 Repeat test 67.10.4 four additional times with a maximum interval of 2 s between tests.

67.10.5 Release the chair from its attachment (see 67.10.1).

67.10.6 By any convenient means, lift the chair and rotate it 360°, front to back, around an axis approximating the back edge of the seating surface at a rate of 1 s per 90° with a hesitation of 1 s at each 90°.

67.10.7 By any convenient means, lift the chair and rotate it 360°, left to right, around an axis approximating the side edge of the seating surface at a rate of 1 s per 90° with a hesitation of 1 s at each 90°.

**67.11 Label Testing:**

67.11.1 A paper label (excluding labels attached by a seam and that can seam) shall be grasped between considered permanent if, during an attempt to remove it without the thumb and forefinger aid of tools or solvents, it cannot be removed, it tears into pieces upon removal, or such action damages the surface to which it is attached.

67.11.2 A nonpaper label (excluding labels attached by a seam) shall not separate from be considered permanent if, during an attempt to remove it without the product aid of tools or solvents, it cannot be removed or such action damages the surface to which it is attached.

67.11.3 A warning label attached by a seam shall be considered permanent if it does not detach when subjected to a 15-lbf (67 N) lb pull force applied in the direction most likely to cause failure using a ¾ in. diameter clamp described in 6.1.15.

**6.12 Adhesion Test surface (see Fig. 1). Apply the force evenly over 5 s and maintain for Printing:**

6.12.1 Apply an additional 10 s.

7.11.4 Adhesion test for warnings applied directly onto the surface of the product.

7.11.4.1 Apply the tape test defined in Test Method B; Cross-Cut Tape Test; of Test Methods D 3359; eliminating the parallel cuts.

67.12.1.4.2 Perform this test once in each different location where warnings are applied.

**TABLE 2 Chair Pull/Push Test, Step 2**

	Weight in Seat, lb (kg)	Push Force, lbf (N)
Test No. 1	30 (13.6)	25 (111)
Test No. 2	20 (9.1)	25 (111)
Test No. 3	10 (4.5)	25 (111)

67.121.4.3 The warning statements will be considered permanent if the printing in the area tested is still legible and attached after being subjected to this test.

## 7. Product

7.11.5 A nonpaper label, during an attempt to remove it without the aid of tools or solvents, shall not be removed or shall not fit entirely within the small parts cylinder defined in 16 CFR 1501 if it can be removed.

## 8. Marking and Labeling

78.1 Each chair and its retail carton shall have a permanent label be marked or marking that identifies labeled clearly and legibly to indicate the following: name and address (city, state, and zip code) of the manufacturer, distributor, or seller.

78.2 A permanent code mark or other traceable product identification shall be provided on means that identifies the chair and its package or shipping container, if multiple packaging is used. The code will identify the date (month and year as a minimum) of manufacture and permit future identification of any given model. manufacture. Any upholstery label required by law shall not be used to meet label requirements in Section 7.

7.2.1 The manufacturer shall change the model number of the chair whenever it undergoes a significant structural or design modification or change that affects its conformance to this specification.

7.2.2 Label 8.

8.2.1 Label all chairs with both warning and informational statements. All statements shall be in contrasting color(s), permanent, conspicuous, and sans serif type.

78.3 Warning Statements:

7.3.1 The following

8.3.1 In warning statements shall be included exactly as stated below.

7.3.2 In warning statements, the safety alert symbol “⚠” and the word “WARNING” shall be not less than 0.2 in. (5 mm) high and the remainder of the text shall be in letters not less than 0.1 in. (2.5 mm) high except as specified.

78.3.32 The warning label shall address the following at a minimum:

⚠ **WARNING**—Failure to follow all warnings and instructions could result in serious injury or death.

Always secure child with the restraints.

Never leave child unattended. Always keep child in view while in hook-on chair.

Do not use on a glass table top, loose table top, single pedestal table, card table, table leaf, or with table cloths or placemats.

Check stability of table before and after seating child.

78.4 Informational Statements:

78.4.1 The product shall include the following information. Text shall be in letters not less than 0.1 in. (2.5 mm) high:

Recommended only for children capable of sitting upright unassisted

Do not place ordinary chair under this hook-on chair or position this hook-on chair on counters or tables that are near structures which could be used by the child to push the hook-on chair off or up from the table or counter.

Use only for children up to 37 pounds (16.8 kg)

Use only for tables \_\_\_\_\_ to \_\_\_\_\_ in. thick (\_\_\_\_\_ to \_\_\_\_\_ mm). (Manufacturer must insert recommended thicknesses)

Keep table and seat clean and dry to prevent slipping

78.5 The Retail Packaging Shall State:

Use only for children up to 37 pounds (16.8 kg)

Use only for tables \_\_\_\_\_ to \_\_\_\_\_ in. thick (\_\_\_\_\_ to \_\_\_\_\_ mm) (Manufacturer must insert recommended thicknesses)

## 89. Instructional Literature

89.1 Instructions must be provided with the chair and shall be easy to read and understand. Assembly, maintenance, cleaning, operating, folding instructions, and warnings, where applicable, must be included.

89.1.1 The instructions shall include the following statement at the beginning of the assembly instruction: “READ ALL INSTRUCTIONS BEFORE ASSEMBLY AND USE OF CHAIR. **KEEP INSTRUCTIONS FOR FUTURE USE.**” (The statement “**KEEP INSTRUCTIONS FOR FUTURE USE**” is to be highlighted via bold face type, color, etc.). The statement “**KEEP INSTRUCTIONS FOR FUTURE USE**” is not required if the instructions are permanently affixed to the chair.

89.1.2 In warning statements located in the instructional literature, the letters of the word “WARNING” shall not be less than 0.2 in. (5 mm) high and the remainder of the text shall be not less than 0.1 in. (2.5 mm) high.

~~8.2 Such~~

~~9.2 The instructional literature shall address at a minimum:~~

~~▲! **WARNING**—Failure to follow these warnings could result in serious injury or death.~~

~~— Be sure hook-on chair is securely attached to table before seating child.~~

~~— The child should be secured 8.3.2 and the informational statements in 8.4.~~

~~9.3 The instructional literature shall also address the hook-on chair at all following information if applicable: times by restraining system.~~

~~— Never leave child unattended. Always keep child in view when in hook-on chair.~~

~~— Check stability of table before and after seating child.~~

~~— Do not use on a glass, or a loose tabletop, table leaf, or single pedestal or card table, or with table cloths or placemats.~~

~~— Discontinue use if hook-on chair is broken. Contact manufacturer immediately for replacement parts or service.~~

~~— Do not place an ordinary chair under this hook-on chair or position this hook-on chair on counters or tables which are near other structures that could be used by the child to push the hook-on chair off or up from the table or counter.~~

~~— Do not use without all tips (suction cups or other otherlocking/latching mechanisms) attached securely to table surface.~~

~~— Keep seat and table surface clean and dry to prevent seat from slipping.~~

~~— Use only for a child capable of sitting upright unassisted.~~

~~— Discontinue use if child, when seated in hook-on chair, is able to move the hook-on chair arms on the table top.~~

~~— Do not allow other children or animals to play near or walk under hook-on chair while in use.~~

~~— Use only for children up to 37 pounds (16.8 kg)~~

~~— Use only on tables \_\_\_\_\_ to \_\_\_\_\_ in. thick (\_\_\_\_\_ to \_\_\_\_\_ mm) (Manufacturer must insert recommended thickness.)~~

~~— Before removing child from hook-on chair, be sure child’s legs are free from hook-on chair supports.~~

## 9. General Testing Requirements

~~9.1 The portable hook-on chair shall be completely assembled in accordance with the manufacturer’s instructions unless otherwise noted.~~

~~9.2 No testing shall be conducted within 48 h of manufacturing.~~

~~9.3 The product to be tested shall be in a room with an ambient temperature of  $73 \pm 9^{\circ}\text{F}$  ( $23 \pm 5^{\circ}\text{C}$ ) for at least 1 h prior to testing. Testing shall then be conducted within this temperature range.~~

~~9.4 All testing required by this specification shall be conducted on the same unit.~~

## 10. Keywords

10.1 hook-on; instructions; labels; permanent; rational; references; restraint; test; warning

**APPENDIXES**
**(Nonmandatory Information)**
**X1. RATIONALE FOR CONSUMER SAFETY SPECIFICATION FOR PORTABLE HOOK-ON CHAIRS<sup>6</sup>**
**X1.1 History**

X1.1.1 Portable hook-on chairs (chairs) are a product that appeared on the market in the late 1970s. In addition to the original cantilever action, manufacturers introduced clamping or fastening features with a number of degrees of effectiveness in holding the chair to the table. An ASTM task group was formed in May 1984.

X1.1.2 Incidents reported through NEISS were primarily in the area of dislodgment of the chair from the table and cracking of the chair (plastic) allowing the occupant to fall in either case. Restraining system failures, table instability, and detachment of seats and backs from frames also presented safety problems.

**X1.2 Production Description**

X1.2.1 Chairs “hook” onto a table and early models were basically seat pan/seat back components held together by frame members. The frame members normally formed the sides or armrests of the chairs. Newer models may feature a unitized seat and back. All lack legs, that is one major feature that differentiates these from “floor model” high chairs. The chairs “hook” onto the table top edge rather than free-stand as do high chairs. Attachment or “hook-on” to the table top edge is by cantilever-style suspension, and usually by the use of some form of retention or holding feature. Hook-on chair seats and backs may be rigid and upholstered with padding, rigid nonpadded, or be a cloth/fabric bucket-type seat attached to a frame. The frame ends are normally equipped with rubber or plastic caps and/or clamps to provide some degree of frictional properties.

X1.2.2 Quick attachment and removal, together with lightness and compactness makes them a relatively portable product.

<sup>6</sup> CAMI Infant Dummy (Mark II), Department of Transportation, Federal Aviation Administration, Cami Infant Dummy, Drawing No. SA-1001, Memorandum Report AAC-119-74-14, Revision II, by Richard F. Chandler, July 2, 1974.

<sup>7</sup> This rationale will be updated as this specification evolves.

**X2. ADDITIONAL RATIONALE**

X2.1 The numbers in parentheses refer to the appropriate subsections.

X2.1.1 Fabric, fuzz, elastic and string are excluded by 16 CFR ~~1501 (see 4.4.1.1)~~. 1501.

X2.1.2 Warning labels are required to be ~~permanent (see 4.4.1.2)~~. permanent.

X2.1.3 Add a pass/fail criterion (see ~~5.6.76.2.1~~).

X2.1.4 Add a pass/fail criterion (see ~~5.6.76.2.2~~).

X2.1.5 Add a pass/fail criterion (see section ~~5.7.3~~). 6.6.3.

X2.1.6 To prevent consumers from incorrectly threading the restraint assembly buckle (see ~~5.7.5~~). 6.6.5.

X2.1.7 To keep the test surfaces within the manufacturer’s recommended minimum and maximum use specifications (see ~~6.7.1.16.4 and 6.7.1.16.5~~).

X2.1.8 Deleted testing on the minimum test surface. Testing for the prevention of accidental folding of the latching/locking mechanisms is not relevant to the thickness of the test surface. The maximum test surface is specified only to provide a sturdier base, and consequently, a more stringent test for latching/locking mechanisms (see ~~6.7.3.1~~).

X2.1.9 Changed from 4 lbf-in. (0.4 N·m) to 3 lbf-in. (0.3 N·m) because of the age group using this product (see ~~6.7.4.3~~).

X2.1.10 To make the number of drops uniform for hook-on chairs that fold and those that do not (see ~~6.7.5.3~~).

X2.1.11 Deleted testing on the minimum test surface. Testing for seat and seat back disengagement is not relevant to the thickness of the test surface. The maximum test surface is specified only to provide a sturdier base, and consequently, a more stringent test for seat and back disengagement (see ~~6.7.7.2.1~~).

X2.1.12 To clarify for all hook-on chair types (see ~~6.7.9.2.3~~).

X2.1.13 To specify rotation and hesitation time (see ~~6.7.10.6~~).

X2.1.14 To specify rotation and hesitation time (see ~~6.7.10.7~~).

X2.1.15 Specific recommendations for ASTM warnings, as approved by an ASTM subcommittee for cribs, is partially referenced from ANSI Z535.4. This report was approved by the Section 15.16 Hook-On Chair task group (see ~~7.8.3~~).

X2.1.16 Information labels are separated from warning labels so as not to dilute the warnings (see ~~7.8.4~~).

X2.1.17 To require warnings which must be on the chair to also be included in the instructions. See rationale above (see ~~8.9.1~~).

X2.1.18 Minimum required warnings. Additional warnings may be added as deemed necessary by a manufacturer (see ~~7.3.3~~). 8.3.2.

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