



Standard Specification for Consumer Safety for Portable Hook-On Chairs¹

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 (ϵ) 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, 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:

D 3359 Test Methods for Measuring Adhesion by Tape Test²

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 of Age³

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 Age³

1500.50.52 Test Methods for Simulating Use and Abuse of Toys and Other Articles Intended for Use by Children³

16 CFR 1303 Ban of Lead-Containing Paint, and Certain

¹ This specification is under the jurisdiction of ASTM Committee F-15 on Consumer Products and is the direct responsibility of Subcommittee F15.40 on Juvenile Products.

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² Annual Book of ASTM Standards, Vol 06.01.

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

Consumer Products Bearing Lead-Containing Paint³
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 Parts³

2.3 *ANSI Standards:*

ANSI Z535.4 Product Safety Signs and Labels⁴

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *conspicuous*—a label that, when the portable hook-on chair is in a manufacturer's recommended use position, is visible to a person standing 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 *static load*—a vertically downward load 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.

4. General Requirements

4.1 The portable hook on chair shall conform to the regulations specified in Section 2 of this specification both before and after testing.

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

4.3 *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 unit shall remain in its manufacturer's recommended use position. 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-stripping) 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 *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 when the edges of any rigid parts admit a probe greater than 0.210 in. (5.30 mm) and less than 0.375 in. (9.50 mm) diameter at any accessible point throughout the range of motion of such parts.

4.6 *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 6.6, shall be covered or otherwise designed to prevent injury from entrapment.

4.7 *Openings*—Any shaped holes, slots, or cracks 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 through and/or recessed into the surface of any rigid material that admits a 0.210 in. (5.30 mm) diameter rod, shall also admit a 0.375 in. (9.50 mm) diameter rod. Openings that

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

have a minor dimension between 0.210 in. (5.30 mm) and 0.375 in. (9.50 mm) shall be permissible, providing the depth is no greater than the minor dimension of the opening.

5. Performance Requirements

5.1 Protective Components—If the child can grasp protective components, such as caps, sleeves, or plugs used for protection from sharp edges, points, or entrapment of fingers or toes between the thumb and forefinger, 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.

5.2 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 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 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 Chair Bounce Test—The chair shall remain attached to the standard test surface as described in 6.1.16 and allow no movement greater than 1 in. (25 mm) when forces are applied in accordance with 6.8.

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

5.7 Restraint Systems:

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

5.7.1.1 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 2—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.

5.7.2 The restraint system and its closing means (for example, buckle) shall not break, separate or permit removal of the CAMI test dummy (see Fig. 1) from the chair when tested in accordance with 6.10.

5.7.2.1 If during the tests in 6.10 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.

5.7.2.2 After the tests in 6.10.6 and 6.10.7, the CAMI dummy shall not be fully released.

5.7.3 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 6.10 without allowing restraint movement or slippage of more than 1 in. (25 mm).

5.7.4 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.

5.7.5 Before shipment, the restraining system must be

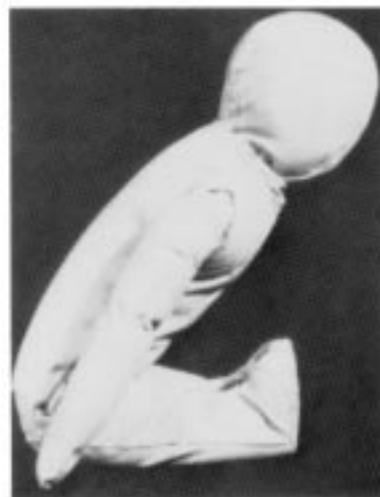


FIG. 1 CAMI Infant Dummy, Mark II⁶

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.

6. Test Methods

6.1 Test Equipment:

6.1.1 A push-pull gage (Chatillon DPPH-100 or equivalent).⁵

6.1.2 A CAMI Infant Dummy Mark II (see Fig. 1).⁶

6.1.3 Tension test adapter/clamp (see Fig. 2).

6.1.4 A 0.040 in. (1.00 mm) feeler gage.

6.1.5 A wood block 6 by 6 by ¾ 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 6.1.6.

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

NOTE 3—If using a weld cap, subtract the weight of the cap from the indicated test weight.

6.1.7 A wood block 2 by 2 by ¾ in. thick, (50 by 50 by 19 mm).

6.1.8 A 100 lb (45.5 kg) weight.

6.1.9 A 30 lb (13.6 kg) weight.

6.1.10 A 20 lb (9.1 kg) weight.

6.1.11 A 12 lb (5.4 kg) weight.

6.1.12 A 10 lb (4.5 kg) weight.

6.1.13 A 5 lb (2.2 kg) weight.

6.1.14 Webbing tension pull device (see Fig. 4).

⁵ 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 a meeting of the responsible technical committee, which you may attend.

⁶ 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.

15 lbf (67N) MAX TENSION

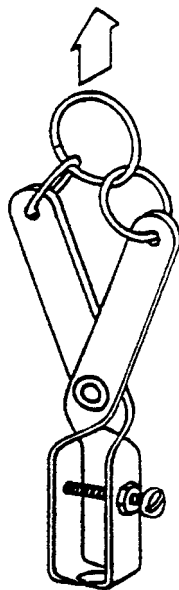
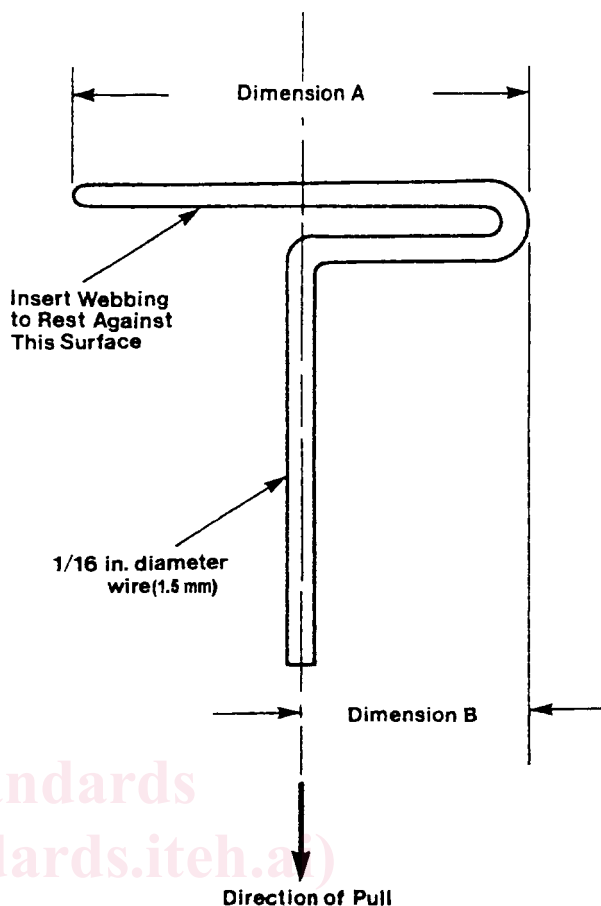
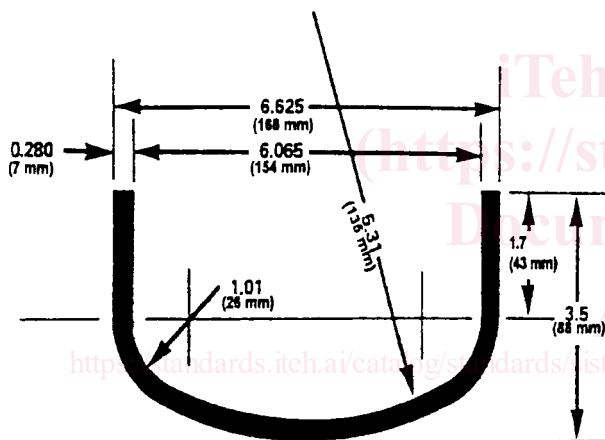


FIG. 2 Tension Test Adapter/Clamp



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

FIG. 4 Webbing Tension Pull Device



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

6.1.15 A clamp with 3/4 in. (19 mm) diameter clamping surfaces.

6.1.16 *Standard Test Surface, Underlayment, and Thickness:*

6.1.16.1 The standard test surface should be a smooth finish, impregnated high pressure, high gloss laminate.⁷

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

6.1.16.3 Two standard test surface thicknesses are required.

⁷ Formica, a registered trademark of Formica Corp., has been found suitable for this purpose.

6.1.16.4 The minimum test surface shall be equal to or to the nearest 1/4 in. (6 mm) greater than the minimum surface thickness stated by the manufacturer on the retail package.

6.1.16.5 The maximum test surface shall be equal to or to the nearest 1/4 in. (6 mm) less than the maximum thickness stated by the manufacturer on the retail package.

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

6.3 *Latching Mechanisms for Prevention of Unintentional Folding:*

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

6.3.2 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.

6.4 *Removal of Protective Components From Chairs:*

6.4.1 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.