



# Standard Consumer Safety Specification for Soft Infant and Toddler Carriers<sup>1</sup>

This standard is issued under the fixed designation F2236; 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 is intended to address incidents reported by the U.S. Consumer Product Safety Commission (CPSC) relating to soft infant carriers.

In response to the incident data compiled by the CPSC, this consumer safety specification attempts to minimize the hazards associated with these products from the following: (1) occupant retention, (2) structural integrity, (3) deficiency of consumer education regarding product use. This consumer safety specification is intended to deal with reasonably foreseeable use and misuse of the products. This consumer safety specification does not apply to products that are blatantly misused, nor does it apply to products used by consumers in a careless manner that violate normal practice or disregard the instructions or warnings provided with the product, or both.

## 1. Scope

1.1 This consumer safety specification establishes performance requirements, test methods and marking requirements to promote safe use of soft infant and toddler carriers.

1.2 This consumer safety specification is intended to minimize the risk of incidents to an infant from the normal use and reasonably foreseeable misuse of these products.

1.3 For purposes of definition, a soft infant and toddler carrier is a product, normally of sewn fabric construction, which is designed to contain a full term infant to a toddler, generally in an upright position, in close proximity to the caregiver. In general, the child will weigh between 7 and 45 lb (3.2 and 22 kg). The soft infant and toddler carrier is normally “worn” by the caregiver with a child positioned in the carrier and the weight of the child and carrier suspended from one or both shoulders of the caregiver. These products may be worn on the front, side, or back of the caregiver’s body with the infant either facing towards or away from the caregiver. This consumer safety specification does not include products generally referred to as “slings.”

1.4 No soft infant and toddler carrier produced after the approval date of this consumer safety specification shall, either by label or other means, indicate compliance with the specification unless it complies with all of the requirements contained herein.

1.5 This consumer safety specification is not intended to address incidents and injuries resulting from the interaction of other persons or objects with the caregiver and infant while the soft carrier is in use.

1.6 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.7 The following precautionary caveat pertains only to the test method portion, Section 7 of this consumer safety 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 requirements prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

[D3359 Test Methods for Measuring Adhesion by Tape Test](#)  
[F963 Consumer Safety Specification for Toy Safety](#)  
[F977 Consumer Safety Specification for Infant Walkers](#)

### 2.2 Federal Regulations:<sup>3</sup>

[16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint](#)  
[16 CFR 1500 Hazardous Substance Act Regulations](#)

<sup>1</sup> This consumer safety specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.21 on Infant Carriers, Bouncers and Baby Swings.

Current edition approved Sept. 1, 2016. Published September 2016. Originally approved in 2003. Last previous edition approved in 2016 as F2236 – 16. DOI: 10.1520/F2236-16A.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

<sup>3</sup> Code of Federal Regulations, available from U.S. Government Printing Office, Washington, DC 20402.

- 16 CFR 1500.3(c)(6)(vi) Definition of “Flammable Solid”
- 16 CFR 1500.44 Method for Determining Extremely Flammable and Flammable Solids
- 16 CFR 1500.48 Technical Requirements for Determining a Sharp Point in Toys or Other Articles Intended for Use By Children Under Eight Years of Age
- 16 CFR 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
- 16 CFR 1500.50-.51 Test Methods for Simulating Use and Abuse of Toys and Other Articles for Use by Children
- 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
- 16 CFR 1610 Standard for the Flammability of Clothing Textiles

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *carrying position*—the location on the caregiver’s torso where the child is supported by the soft carrier. The most common carrying positions are front, back, and side/hip.

3.1.2 *conspicuous*—label which is visible when the product is in the manufacturer’s use position to a caregiver who is placing the occupant in the soft carrier or when the caregiver places the product on his or her body.

3.1.3 *cord*—length of slender, flexible material including monofilaments, rope, woven and twisted cord, plastic or textile tapes, ribbons and those fibrous materials commonly called string.

3.1.4 *dynamic load*—application of impulsive force through free fall of a weight.

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

3.1.6 *fastener*—mechanical means of attachment that may also allow for adjustments of the product fit to wearer and occupant including, but not limited to, buckles, snaps, rings, D-rings, hook-and-loop, etc., and excluding fabric-only means of attachment and fit adjustment such as, but not limited to, consumer-tied knots.

3.1.7 *leg opening*—opening in the soft carrier through which the occupant’s legs extend when the product is used in the manufacturer’s recommended use position.

3.1.8 *manufacturer’s recommended use position(s)*—any position that is presented as a normal, allowable, or acceptable configuration for 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.

3.1.9 *non-paper label*—any label material (such as plastic or metal) that either will not tear without the aid of tools or tears, leaving a sharply defined edge.

3.1.10 *occupant*—that individual who is placed or carried in the soft carrier product in one of the manufacturer’s recommended use positions.

3.1.11 *paper label*—any label material which tears without the aid of tools and leaves a fibrous edge.

3.1.12 *primary load bearing fastener*—any fastener which provides support for the child or is used to attach that support of the child to the caregiver, or both, that is subject to the direct force of the occupant load, including those fasteners associated with positioning or supporting the child’s torso within the carrier.

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

3.1.14 *secondary load bearing fastener*—any fastener which provides aid to the wearer for positioning primary load bearing components (for example, sternum strap fasteners). Such fasteners are subject to forces less than those exhibited by the direct occupant load in intended/foreseeable use.

3.1.15 *static load*—vertically downward force applied by a calibrated force gage or by dead weights.

3.1.16 *unbounded leg opening*—leg opening created by placing the soft carrier on a caregiver’s torso and which has an opening circumference composed solely of carrier materials and the caregiver’s torso.

### 4. Calibration and Standardization

4.1 The product shall be completely assembled in accordance with the manufacturer’s instructions.

4.2 No testing shall be conducted within 48 h of manufacture.

4.3 The product to be tested shall be at an ambient temperature of  $73 \pm 9^{\circ}\text{F}$  ( $23 \pm 5^{\circ}\text{C}$ ) for at least one hour before testing. All testing shall be conducted in this temperature range.

4.4 All testing required by this consumer safety specification shall be conducted on the same unit in the order presented in this specification unless otherwise specified (see 7.2).

### 5. General Requirements

5.1 *Hazardous Sharp Points or Edges*—There shall be no sharp points or edges as defined by 16 CFR 1500.48 and 16 CFR 1500.49 before and after testing.

5.2 *Small Parts*—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 *Lead in Paint*—The paint or surface coating on the product shall comply with 16 CFR 1303.

5.4 *Wood Parts*—Prior to testing, any wooden parts shall be smooth and free of splinters.

5.5 *Locking and Latching*—Any product designed with a locking and latching device must remain in the manufacturer’s recommended use position before and after completion of all tests in this standard.

5.6 *Labeling*—Warning labels (whether paper or non paper) shall be permanent when tested per 7.3 – 7.5.

5.6.1 Warning statements applied directly onto the surface of the product by hot stamping, heat transfer, printing, wood burning, and so forth shall be permanent when tested in accordance with 7.4.

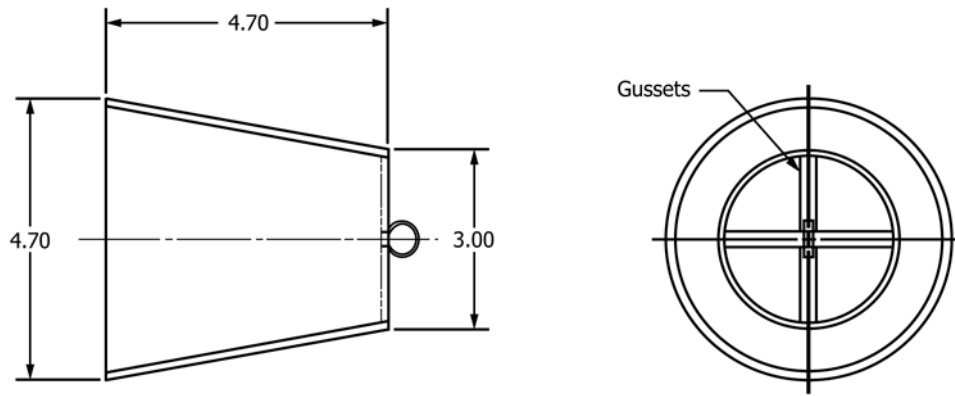


FIG. 1 Truncated Test Cone

5.6.2 Non-paper labels shall not liberate small parts when tested in accordance with 7.5.

5.7 *Flammability of Textile Products:*

5.7.1 There shall be no Class 2 or 3 fabrics used in the construction of a soft infant and toddler carrier when the product is evaluated against the requirements of 16 CFR 1610.

5.7.2 If a soft infant and toddler carrier is incapable of being evaluated to the requirements of 16 CFR 1610 due to construction characteristics, the product shall not be flammable as defined under 16 CFR 1500.3(c)(6)(vi) when tested in accordance with Consumer Safety Specification F963, Annex 5.

5.8 *Toys*—Toy accessories attached to, removable from, or sold with a soft infant carrier, as well as their means of attachment, must meet applicable requirements of Consumer Safety Specification F963.

6. Performance Requirements

6.1 *Leg Openings*—Leg openings shall not permit the passage of the Leg Opening Test Sphere when tested in accordance with 7.1.

6.2 *Dynamic and Static Load:*

6.2.1 *Structural Integrity*—Dynamic and static load testing shall not result in a hazardous condition as defined in Section 5 or result in a structural failure such as fasteners breaking or disengaging, or seams separating when tested in accordance with 7.2.1 and 7.2.2, respectively.

6.2.2 *Support/Shoulder Strap Slippage*—Adjustable sections of support/shoulder straps shall not slip, in a manner that loosens the strap, more than 1 in. (25 mm) per strap from their original adjusted position after dynamic and static load testing is performed in accordance with 7.2.1 and 7.2.2, respectively.

6.3 *Unbounded Leg Opening*—Leg opening shall not allow complete passage of the truncated test cone (see Fig. 1) when tested according to 7.6.

6.4 *Fastener Strength and Strap Retention:*

6.4.1 Each unique primary load bearing fastener shall not break or disengage, and adjustable elements in straps shall not slip, in a manner that loosens the strap, more than 1 in. (2.5 cm) when tested in accordance with 7.7.1 and 7.7.2.

6.4.2 Each unique fastener whose primary purpose is to adjust the size of the leg opening, or is a secondary load

bearing fastener, shall not break or disengage, and adjustable elements in straps shall not slip, in a manner that loosens the strap, more than 1 in. (2.5 cm) when tested in accordance with 7.7.1 and 7.7.3.

NOTE 1—The requirements in 6.4 only apply to load bearing fasteners and leg opening adjustment fasteners. Non-load bearing fasteners intended to retain accessory items such as, but not limited to, sleeping hoods, bibs, toy rings etc., or fasteners which do not provide support or securement of the child’s torso within the carrier (for example, head adjustment fasteners) are exempt from these requirements.

7. Test Methods

7.1 *Leg Openings:*

7.1.1 Fasten the soft carrier to a rigid fixture in a manner such that the leg opening of the carrier is horizontal. The opening shall be as close to the center of the fixture as possible. If the leg opening is adjustable in size to allow for growth, it shall be tested with the leg opening adjusted to its smallest size as described in the manufacturer’s literature or instructions.

7.1.2 Place the leg opening test sphere (see Fig. 2) inside the carrier and gradually allow the sphere to rest in the leg opening over a period of 5 s. Allow the sphere to rest in the opening for an additional 1 min.

7.1.3 Repeat the test for the other leg opening.

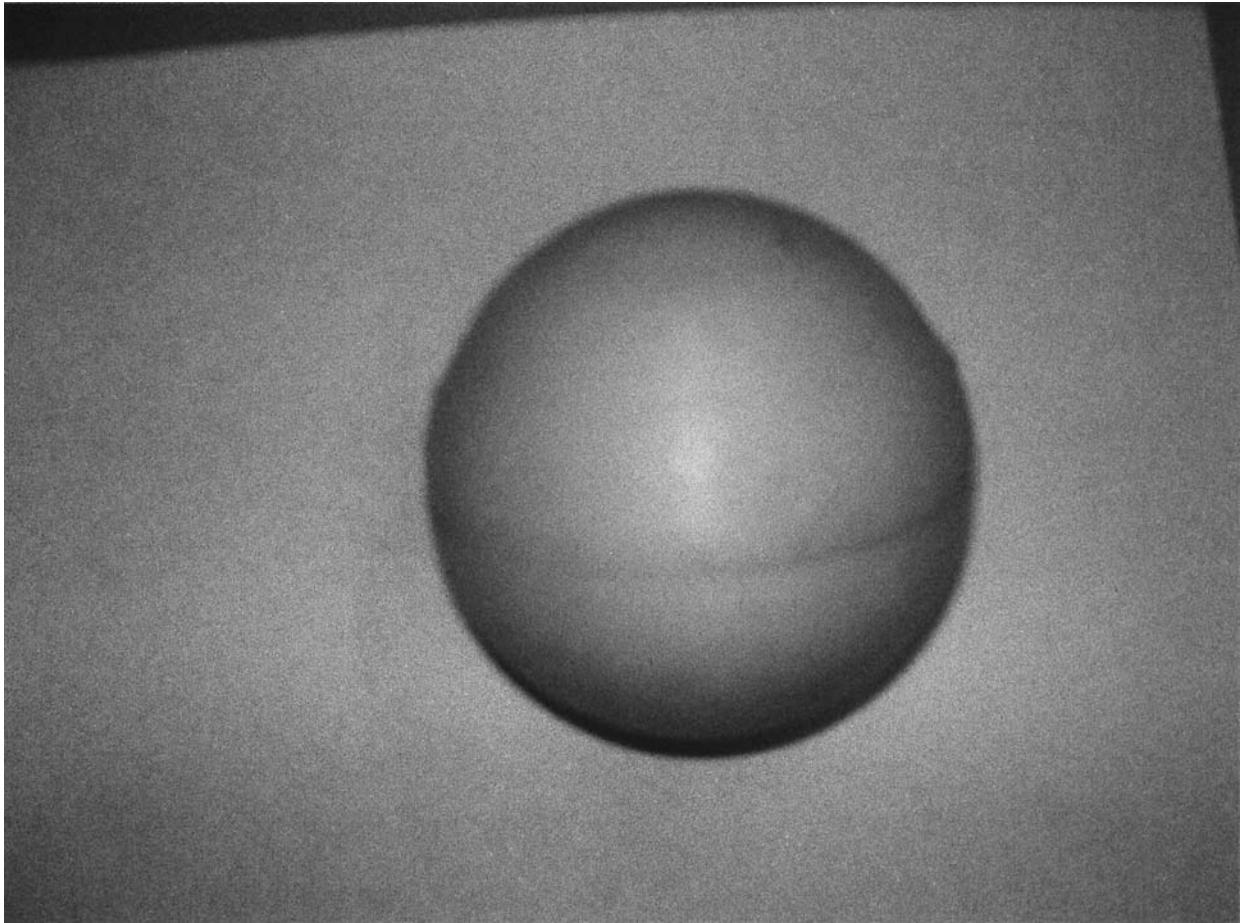
7.2 *Dynamic and Static Load Tests*—The dynamic and static tests in 7.2.1 and 7.2.2, respectively, shall be performed on the same product sample in each carrying position with a new product sample being tested for each different carrying position. For example, a product that may be worn on the front and back has two carrying positions therefore a minimum of two samples must be tested. One product sample shall be used for the front carrying position dynamic and static tests, and another for the back carrying position dynamic and static tests.

7.2.1 *Dynamic Load Test:*

7.2.1.1 *Equipment:* (1) *Shot Bag*—6 to 8 in. (152 to 203 mm) diameter shot bag with total mass of 25 lbm (11.3 kg) or a mass equal to the manufacturer’s recommended maximum occupant weight for the specific carrying position of the product, whichever is greater. A product with multiple carrying positions may have different manufacturer’s recommended maximum weights for each carrying position.

NOTE 2—Solid, cylindrical weights (Olympic-sized barbell weight





NOTE 1—Sphere shall be fabricated from a smooth, rigid material weighted to 5 lb (2.3 kg).

NOTE 2—Sphere is machined to 14.75 in. (374.6 mm) circumference.

**FIG. 2 Leg Opening Test Sphere**

plates, for example) may be secured on top of the 25 lbm (6.9 kg) shot bag when a greater total mass is required.

(2) *Test Torso*<sup>4</sup>— See Fig. 3.

7.2.1.2 Position, secure, and adjust the soft carrier onto the test torso<sup>4</sup> according to the manufacturer’s instructions provided with the product.

7.2.1.3 Position the shot bag a distance of 1 in. (25 mm) above the seat of the soft carrier. Allow the shot bag to free fall onto the seat ten times with a cycle time of  $4 \pm 1$  s/cycle to preset the adjustment(s) of the carrier on the test torso. By some appropriate means, mark the position of all adjustment hardware. This will be the reference point for measuring adjustment slippage in the test. Drop the shot bag onto the seat an additional 990 times with a cycle time of  $4 \pm 1$  s/cycle. If

<sup>4</sup> The sole source of supply of the test torso (called “Body Opponent Bag”) known to the committee at this time is Century Sporting Goods. It is available from various distributors on websites such as [www.superfoots.com/cenbodopbagb](http://www.superfoots.com/cenbodopbagb), [www.karate-mart.com](http://www.karate-mart.com), and [karatedepot.com](http://karatedepot.com). If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>1</sup> which you may attend.

the height location of the product on the test torso changes, adjust the test torso or product to maintain the 1 in. (25 mm) drop height.

7.2.2 *Static Load Test:*

7.2.2.1 *Equipment:*

(1) *Standard Weld Cap*—6 in. (150-mm) (see Fig. 4).

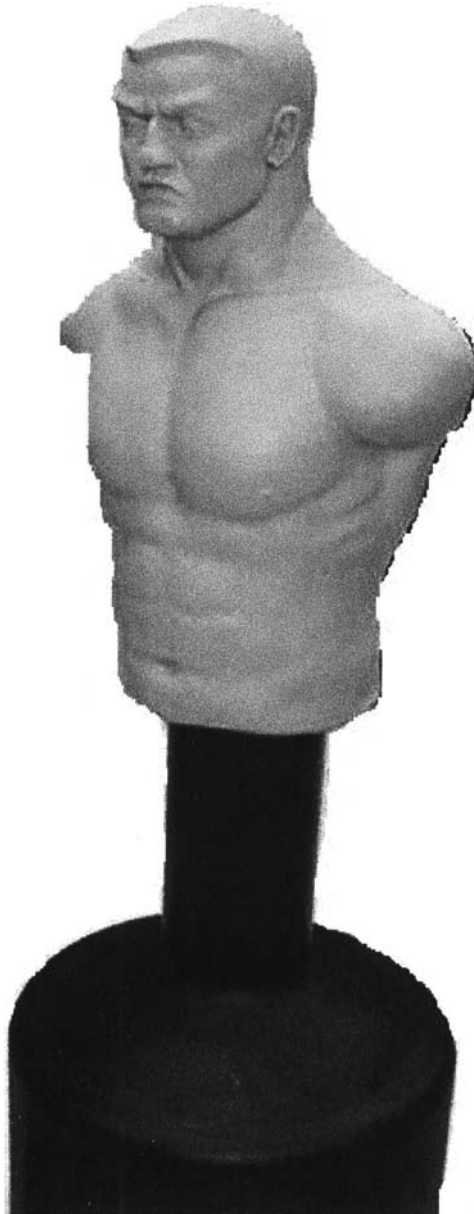
(2) *Test Torso*<sup>4</sup>—See Fig. 3.

7.2.2.2 Position, secure, and adjust the soft carrier onto the test torso according to the manufacturer’s instructions provided with the product.

7.2.2.3 Center the standard weld cap in the seat area of the soft carrier. Place a total weight of 75 lbm (34 kg) or three times the manufacturer recommended maximum occupant weight for the specific carrying position, whichever is greater, onto the weld cap. (Include the weight of the weld cap in the total weight.) Gradually apply the weight within a 5-s period and maintain for an additional 1 min.

7.3 *Permanency of Labels and Warnings:*

7.3.1 A paper label (excluding labels attached by a seam) shall be considered permanent if during an attempt to remove



NOTE 1—This figure illustrates typical device that is acceptable.

**FIG. 3 Test Torso**

it without the 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.

7.3.2 A non-paper label (excluding labels attached by a seam) shall be considered permanent if, during an attempt to remove it without the aid of tools or solvents, it cannot be removed or such action damages the surface to which it is attached.

7.3.3 A warning label attached by a seam shall be considered permanent if it does not detach when subjected to a 15-lbf (67-N) pull force applied in any direction most likely to cause

failure using a 3/4-in. (19-mm) diameter clamp surface. Gradually apply the force over 5 s and maintain for an additional 10 s.

*7.4 Adhesion Test for Warnings Applied Directly Onto the Surface of the Product:*

7.4.1 Apply the tape test defined in Test Method B—Cross-Cut Tape Test of Test Methods **D3359**, eliminating parallel cuts.

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

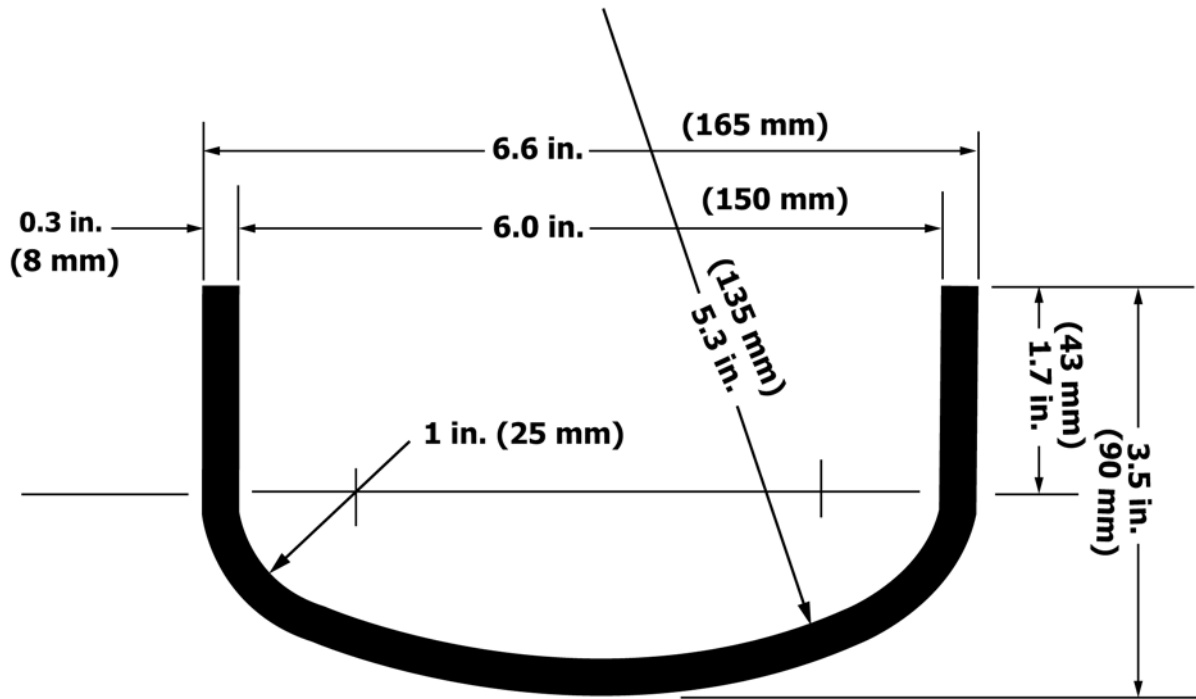


FIG. 4 Standard 6 in. (150 mm) Weld Cap

7.4.3 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.

7.5 A non-paper label shall not be removed or shall not fit entirely within the small parts cylinder defined in 16 CFR 1501 if it can be removed. The attempt to remove it shall be without the aid of tools or solvents.

7.6 *Unbounded Leg Opening:*

7.6.1 *Test Equipment:*

7.6.1.1 *Shot Bag*—A bag, 4.0 in. (10.2 cm) in diameter and 8.0 in. (20.3 cm) long, filled with non-toxic shot having a total weight of 17 lb (7.7 kg).

7.6.1.2 *Truncated Test Cone*, weighing less than 2.0 lbm (0.9 kg) made from aluminum with a smooth finish (see Fig. 1).

7.6.1.3 *Test Torso*<sup>4</sup>—See Fig. 3.

7.6.2 Fasten the soft carrier onto the front of the test torso according to manufacturer’s recommended assembly instructions. If the leg opening can be adjusted for size to allow for growth, it shall be tested with the leg opening adjusted to the size recommended for the smallest suitable occupant as described in the manufacturer’s literature or instructions.

7.6.3 Place the shot bag in a horizontal position in the seating area of the carrier (8 in. dimension of the bag shall be positioned horizontally into the seating area). Center the shot bag in the seating area and uniformly distribute the weight of the shot bag along the length of the shot bag.

7.6.4 Place the truncated test cone into a leg opening above the shot bag with the narrow end of the cone protruding just beyond the plane of the opening. The side of the test cone should contact every bounded edge of the leg opening possible. Small adjustments of the weight bag’s position are permitted to create this contact.

7.6.5 Gradually apply a 5 lb (2.3 kg) load to the centerline of the cone gradually over 5 s and then maintain the 5 lb (2.3 kg) load for an additional minute. The load should be applied in a horizontal direction away from the carrier and in a front-to-back direction most likely to allow passage of the test probe.

7.7 *Fastener Strength and Strap Retention Test:*

7.7.1 Attach clamps on either side of the fastener. Clamps shall not contact the fastener when a 1.0 lbf (4.4 N) tensile pre-load is applied.

7.7.2 Gradually apply a uniaxial tensile force of 80 lb (352 N) over 5 s to the straps or soft goods on either side of the fastener. The force should be applied in substantially the same direction as loads applied during use. This direction may not necessarily be the direction associated with fastener disengagement. Hold for 1 min.

7.7.3 Gradually apply a uniaxial tensile force of 45 lb (198 N) over 5 s to the soft goods on either side of the fastener. The force should be applied in substantially the same direction as loads applied during use. This direction may not necessarily be the direction associated with fastener disengagement. Hold for 1 min.

8. **Marking and Labeling**

8.1 Each product and its retail package shall be marked or labeled clearly and legibly to indicate the following:

8.1.1 The name of the manufacturer, distributor, or seller and either the place of business (city, state, and mailing address, including zip code) or telephone number, or both.

8.1.2 A code mark or other means that identifies the date (month and year minimum) of manufacture.

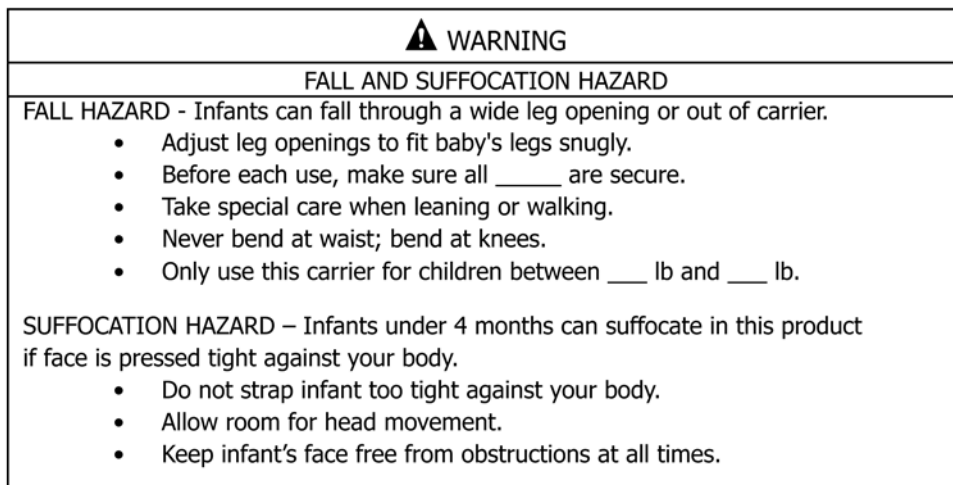


FIG. 5 Warning Statements and Label Format

8.2 Any Upholstery Label required by law shall not be used to meet the requirements in 8.1.

8.3 Each soft infant carrier shall be labeled with warning statements. The warning statements shall be in a contrasting color(s), permanent, conspicuous, and in sans serif style font. The warning label shall be in a prominent location, visible to the caregiver each time the occupant is placed in the carrier or when the caregiver places the product on his or her body, and shall be separate and distinct from any other graphic or written material on the product. Any labels or written instructions provided in addition to those required by this section shall not obscure or confuse the meaning of the required information or be otherwise misleading to the consumer.

8.3.1 The safety alert symbol “▲” and the signal word “WARNING” and “FALL AND SUFFOCATION HAZARD” shall precede the warning statements. The safety alert symbol “▲” and the signal word “WARNING” and “FALL AND SUFFOCATION HAZARD” shall not be less than 0.2 in. (5 mm) high and the remainder of the text shall be in characters whose upper case is at least 0.1 in. (2.5 mm) high.

8.3.2 Warnings shall address the following:

8.3.2.1 *Fall Hazards:*

(1) *Hazard Statement:*

(a) FALL HAZARD - Infants can fall through a wide leg opening or out of carrier.

(2) *Precautionary Statements:*

(a) If unit has adjustable leg openings, the warning shall also address the following: Adjust leg openings to fit baby’s legs snugly.

(b) Before each use, make sure all \_\_\_\_\_ [fasteners/knots] are secure.

(c) Take special care when leaning or walking.

(d) Never bend at waist; bend at knees.

(e) Only use this carrier for children between \_\_\_\_ lb and \_\_\_\_ lb.

8.3.2.2 *Suffocation Hazards:*

(1) *Hazard Statement:*

(a) SUFFOCATION HAZARD - Infants under 4 months can suffocate in this product if face is pressed tight against your body.

(2) *Precautionary Statements:*

(a) Do not strap baby too tight against your body.

(b) Allow room for head movement.

(c) Keep infant’s face free from obstructions at all times.

8.3.3 *Warning Label Format*—Precautionary statements shall be indented from the hazard statements, preceded with bullet points, and not be longer than the hazard statement. White space of at least 0.2 in. (2.5 mm) in height shall exist between hazard categories. The label shall be contained within a solid line border. The signal word “WARNING” and “FALL AND SUFFOCATION HAZARD” shall be delineated with solid line borders. Overall height and width of the label may be modified as necessary to fit on the product. An example of the warning label format described in this section is shown in Fig. 5 (white is used as the contrasting background color to the black text).

8.4 *Informational Statements*—The following is informational in nature, and shall be on the product but not in the warning label shown in Fig. 5.

8.4.1 For soft infant and toddler carriers that have use positions where the child can either face the caregiver or be in an outward facing position, the carrier shall be labeled clearly and legibly with an informational statement addressing the following:

8.4.1.1 Child must face towards you until he or she can hold head upright.

## 9. Instructional Literature

9.1 Instructions must be provided with the product and shall be easy to read and understand. Instructions for assembly, use, maintenance and cleaning of the product, and warnings, where applicable, must be included.

9.1.1 Instructions shall address the following:

9.1.1.1 Read all instructions before assembling and using the soft carrier.

9.1.1.2 Keep instructions for future use.

9.1.1.3 Check to assure all buckles, snaps, straps, and adjustments are secure before each use.

9.1.1.4 Check for ripped seams, torn straps or fabric and damaged fasteners before each use.



9.1.1.5 Ensure proper placement of child in product including leg placement.

9.1.1.6 For soft carriers that have use positions where the child can either face the caregiver or be in an outward facing position, an informational statement shall address the following:

(1) Child must face towards you until he or she can hold head upright.

9.1.1.7 Premature infants, infants with respiratory problems, and infants under 4 months are at greatest risk of suffocation.

9.1.1.8 Never use a soft carrier when balance or mobility is impaired because of exercise, drowsiness, or medical conditions.

9.1.1.9 Never use a soft carrier while engaging in activities such as cooking and cleaning which involve a heat source or exposure to chemicals.

9.1.1.10 Never wear a soft carrier while driving or being a passenger in a motor vehicle.

9.2 *Warning Statements Within the Instructional Literature:*

9.2.1 Warnings in the Instructional Literature shall address the items in 8.3.

9.2.2 In warning statements, the symbol “△” and the word WARNING shall be at least 0.2 in. (5 mm) high. The remainder of the text shall be in characters whose upper case is at least 0.1 in. (2.5 mm) high.

9.3 Instructional literature shall also include name and either place of business (city, state, and mailing address, including zip code) or telephone number of either the manufacturer, importer, distributor, or seller.

9.4 Instructional literature shall address the informational item in 8.4.

## 10. Keywords

10.1 carrier; front carrier; soft carrier; soft infant carrier

## APPENDIX

### (Nonmandatory Information)

#### X1. RATIONALE

X1.1 *Leg Openings*—The test method was designed to provide a reliable, repeatable method to ensure that the leg opening was smaller than that which was set in the standard. The establishment of the maximum leg opening was based on the following factors:

X1.1.1 The initial consideration was to use the minimum hip measurement for the age/weight range, but it was obvious that this could only be used if some provision was made for diapers or clothing, or both, was used since the hip alone measurement would not permit the carrier to be used with children on the 95th and over percentile of the age range since the dimension would be too small to allow the thigh of the child in that group to fit the carrier.

X1.1.2 To remove the uncertainty of the estimation of the adjustment for diapers or clothing, or both, the 50th percentile hip circumference of the smallest child likely to use the soft carrier—7 to 8 lb. This was found to be 36.4 cm and for design and testing purposes was set at 37.5 cm (14.75 in.). This permitted the admission of the thigh of the largest child that would likely use the product.

X1.1.3 Round robin testing of current production product and product that was subject to recent corrective action product was conducted by manufacturers and the test lab (ITS). The test procedure was shown to be effective in eliminating the perceived hazard.

X1.1.4 The test ball is constructed to provide sufficient weight (5 lb) to ensure that the carrier fabric is stretched in a repeatable manner. The texture of the test ball replicates the texture of skin or fabric.

X1.2 *Dynamic Load Testing*—This test procedure was patterned after that of Consumer Safety Specification F977 on Walkers. The number of cycles was set to be identical to Consumer Safety Specification F977. The weight selected was the expected maximum weight of the occupant of the carrier, 25 lb (11.4 kg). The test fixture was selected to replicate the caregiver.

X1.2.1 *Subsection 7.2.1.1*—The recommended maximum weight for the product for determining the mass for the load tests was always intended to be the recommended maximum occupant weight of the product. Therefore, “occupant” is being added to Dynamic Load Test in 7.2.1.1 for clarification, which is consistent with the wording in the Static Load Test in 7.2.2.3. There are carriers which have pockets or pouches to carry accessory items. However, the weight that these pouches may bear is inconsequential compared to the maximum weight of the occupant and need not be considered in the recommended carry weight of the product.

X1.3 *Static Load Testing*—This test procedure is also patterned after Consumer Safety Specification F977 on Walkers. The test weight selected (75 lb or 34.0 kg) represents a safety factor of three times the weight of the largest child that would normally use the carrier.

X1.4 *Unbounded Leg Opening:*

X1.4.1 Needed to define the limitations of an unbounded leg opening (3.1.16) and the need to include the caregiver’s torso in the opening circumference.

X1.4.2 *Subsection 7.6.2*—There are products where if the leg opening is adjusted to its smallest size, this may not necessarily be intended for the smallest occupant due to the



interaction with the seat width adjustment. This change is intended to provide clarification that the test is to be conducted with the leg openings adjusted for the smallest suitable occupant per the manufacturer's instructions.

X1.4.3 *Subsection 7.6.3*—Bag weight equals Cami infant dummy. Bag diameter is the approximate thickness of the Cami at the hip area. Bag length is the approximate width of the Cami at the hip area. This application of the bag is intended to simulate the infant sitting in the carrier and applying simulated stress to the carrier and unbounded leg openings to simulate normal product use.

X1.4.4 *Subsection 7.6.4*—Major diameter of truncated cone equals the diameter of the leg opening test sphere. Applied 5 lb (2.3 kg) load is the weight of the leg opening test sphere. Diameter and load application and times are the equivalent of the leg opening test sphere for consistency.

X1.5 *Flammability of Textile Products (5.7)*—The foreseeable flammability hazard associated with this product is most appropriately addressed by the inclined surface flame impingement test requirements of 16 CFR 1610. Flammability of composite products too narrow or thick to fit into the 16 CFR 1610 test fixture, such as padded shoulder straps, for example, is addressed by the requirement described in 5.7.2.

#### X1.6 *Fastener Strength and Strap Retention:*

X1.6.1 *Subsection 6.4.1*—Infant falls have occurred while products are in use when strap fasteners and adjustable elements failed. This component test addresses this hazard. During normal consumer use individual fasteners (for example, side and center release buckles) and straps may be subjected to loads in excess of those endured during the Dynamic Load and Static Load system tests (7.2). Fasteners of recalled products in CPSC's possession failed this test with an applied load of approximately 54 lbf. The 80 lbf test load equates to a safety factor of approximately  $1.5 \times (1.5 \times 54 \text{ lbf} \approx 80 \text{ lbf})$ .

X1.6.2 *Subsection 6.4.2*—Adjustable leg opening fasteners of incident products in CPSC's possession failed this test with an applied load of approximately 30 lbf. The maximum static load a 95th-percentile (15 lbm) three-month-old infant could apply to these fastener joints is approximately 15 lbf. The 45 lbf test load equates to a safety factor of approximately  $3 \times (3 \times 15 \text{ lbf} = 45 \text{ lbf})$ .

X1.6.3 There have been some questions and varying interpretations from test labs regarding which fasteners fall within the scope of 6.4. This change is intended to provide clarification for which fasteners fall under each part of 6.4. Definitions have been added for additional clarification.

#### X1.7 *Warnings and Informational Statements:*

X1.7.1 *Subsection 8.3*—The warning statements have been re-written and expanded to better reflect the incident data contained in the CPSC's database. Formatting of the warning label is designed to make the label easier for the consumer to read and understand.

X1.7.2 *Subsection 8.4*—It was determined that the information contained in this subsection is important information for the user of the product, but does not rise to the level of a warning statement. Therefore, this information will still be displayed on the product, but will no longer be part of the warning statement.

X1.8 *Instructional Literature (Section 9)*—The informational statements have been expanded to better reflect the incident data contained in the CPSC's database.

#### X1.9 *Definitions:*

X1.9.1 *Subsections 3.1.12 and 3.1.14*—The term "used in the attachment of the product to the caregiver" is not relevant to the definition of load bearing fasteners and may cause confusion so it is being eliminated.

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