Designation: F2907 – 15

Standard Consumer Safety Specification for Sling Carriers[1]

This standard is issued under the fixed designation F2907; 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 is intended to address incidents reported by the U.S. Consumer Product Safety Commission (CPSC) relating to sling 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) 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 sling carriers.

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

1.3 For purposes of definition, a sling carrier is a product of fabric or sewn fabric construction, which is designed to contain a child in an upright or reclined position while being supported by the caregiver's torso. In general, the child will be between full term birth and 35 lb (15.9 kg).

NOTE 1—Slings consist of a variety of unstructured designs ranging from a hammock-shaped product suspended on the caregiver's upper torso to a long length of material wrapped around the caregiver's body.

1.4 The sling carrier is normally "worn" by the caregiver, and thus the child is supported from one or both shoulders of the caregiver. These products are worn on the front, hip or back of the caregiver, with the child either facing towards or away from the caregiver or reclined on the front only of the caregiver.

1.5 No sling 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.

1.6 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 child while the sling carrier is in use.

1.7 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.

1.8 *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:*[2]

D3359 Test Methods for Measuring Adhesion by Tape Test

F963 Consumer Safety Specification for Toy Safety

2.2 *Federal Regulations:*[3]

16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Product Bearing Lead-Containing Paint

16 CFR 1500.3(c)(6)(vi) Definition of "Flammable Solid"

[1] 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.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.

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 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 of Terms Specific to This Standard:*

3.1.1 *attachment system, n*—fastenings, straps, hoops, buckles or similar parts which are fitted to the sling carrier for the purpose of securing the article to the caregiver's torso.

3.1.2 *conspicuous, adj*—visible when the product is in the manufacturer's carrying position to a caregiver who is placing the occupant in the sling carrier or when the caregiver places the product on his or her body.

3.1.3 *dynamic load, n*—application of impulsive force through free fall of a weight.

3.1.4 *fabric, n*—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.

3.1.5 *full term infant, n*—a baby born 38+ weeks after conception.

3.1.6 *manufacturer's recommended carrying position(s), n*—any carrying 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.

3.1.6.1 *Discussion*—This specifically excludes positions that the manufacturer shows in a like manner in its literature to be unacceptable, unsafe or not recommended.

3.1.7 *non-paper label, n*—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.

3.1.8 *occupant, n*—individual who is placed or carried in the sling carrier in one of the manufacturer's recommended carrying positions in accordance with 1.4.

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

3.1.10 *reclined, n*—any position other than upright.

3.1.11 *restraint system, n*—a means of securing the occupant in any of manufacturer's recommended carrying positions.

3.1.12 *ring sling, n*—a sling carrier constructed of a long, rectangular, oblong, or similarly shaped piece of fabric with two rings (usually either nylon or metal) attached to one end.

3.1.12.1 *Discussion*—The end of the fabric without rings is threaded through and between rings to make a pouch for the baby and a tail of fabric. The rings bear the weight of the baby in the sling, and the caregiver can adjust the sling through the rings.

3.1.13 *seam, n*—a place where fabric components are joined, by means such as sewing, welding, heat sealing, or gluing.

3.1.14 *static load, n*—a force applied by a calibrated force gage or by dead weights.

3.1.15 *substantially similar carrying position, n*—carrying positions where the sling fabric orientation does not vary regardless of the direction the baby is facing relative to the wearer, or regardless of the positioning of the product to the wearer.

3.1.16 *support area, n*—the area in the sling carrier where the occupant's weight rests in the product in either a sitting or reclining position.

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 ± 9°F (23 ± 5°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, except where directly indicated.

5. General Requirements

5.1 *Laundering*—The sling shall be washed and dried twice in accordance with the manufacturer's instructions. Any resulting shrinkage shall not prevent any removable parts from being refitted without damaging the seams of the fabric and shall not impair the performance and use of the article. *This test will be the first test conducted on the fabric.*

5.2 *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.

5.3 *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.

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

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

5.6 *Locking and Latching*—Any product designed with a locking or latching attachment system must remain in the manufacturer's recommended carrying position before and after completion of all tests in this standard.

5.7 *Labeling*—Warning labels (whether paper or non-paper) shall be permanent when tested in accordance with 7.3.

5.7.1 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.

5.7.2 Non-paper labels shall not liberate small parts when tested in accordance with 7.4.

5.8 *Openings*—Holes or slots that extend entirely through a wall section of any rigid material less than 0.375 in. (9.53 mm) thick and admit a 0.210 in. (5.33 mm) diameter rod shall also admit a 0.375 in. (9.53 mm) diameter rod. Holes or slots that are between 0.210 in. (5.33 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 manufacturers' recommended carrying positions.

5.9 *Scissoring, Shearing, and Pinching*—A product, when in a manufacturer's recommended carrying 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 shall not be permissible when the edges of any rigid parts admit a probe greater than 0.210 in. (5.33 mm) and less than 0.375 in. (9.53 mm) diameter at any accessible point throughout the range of motion of such parts.

5.10 *Monofilament Threads*—Monofilament threads shall not be used.

5.11 *Flammability*—There shall be no Class 2 or 3 fabrics used in the construction of a sling carrier when the product is evaluated against the requirements of 16 CFR 1610.

5.11.1 If a sling 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.

6. Performance Requirements

6.1 *Structural Integrity*—At the conclusion of each test, there shall be no failures such as seam separation, fabric tears, permanent deformation, breakage or disengagement of attachment systems, or a hazardous condition as defined in 5.2 – 5.5, 5.8, or 5.9. Adjustable attachment systems of the sling carrier shall not slip more than 1 in. (25.44 mm) per element.

6.1.1 *Static Load*—The sling carrier shall meet the criteria in 6.1 when tested in accordance with 7.1.

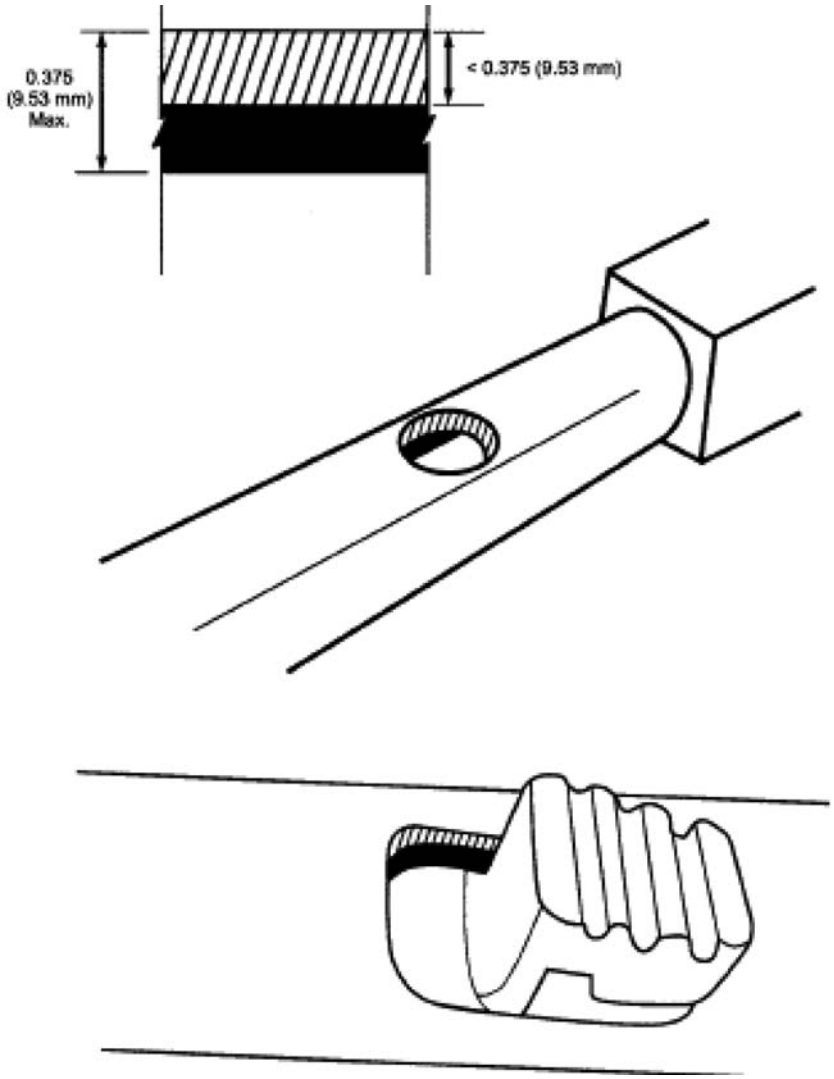

FIG. 1 Opening Example

6.1.2 *Dynamic Load*—The sling carrier shall meet the criteria in 6.1 when tested in accordance with 7.2.

6.2 *Restraint System*—If the manufacturer includes a restraint system on the product:

6.2.1 The restraint system shall include both waist and crotch restraint, where the crotch restraint's use is mandatory when the waist restraint system is in use.

6.2.2 The anchorages for the restraint system shall not separate from their attachment points through normal use when tested in accordance with 7.6.

6.3 *Occupant Retention:*

6.3.1 *Ring Slings*—When tested in accordance with 7.5, after 100 cycles the maximum slippage of the attachment system shall be 3 in. (76.2 mm) and no part of the test mass shall pass below the bottom of the test torso.

6.3.2 *Products Other Than Ring Slings*—When tested in accordance with 7.5, after 100 cycles the maximum slippage of the attachment system and the restraint system (if applicable) shall be 1 in. (25 mm) and no part of the test mass shall pass below the bottom of the test torso.

6.3.3 When tested in accordance with 7.5, after the completion of each phase of the test, the attachment system and the restraint system (if applicable) shall not be released, there shall be no failures (as defined in 6.1), and no part of the test mass shall pass below the bottom of the test torso.

7. Test Methods

7.1 *Static Load Test:*

7.1.1 Fasten the sling carrier to a test torso (see Fig. 2) as directed in the instruction manual supplied with the product. If the sling carrier is manufactured in multiple sizes, the size that fits the test torso is the required size for the sample submission.

7.1.2 Using a 6 in. (150 mm) standard weld cap (see Fig. 3), center a weight equal to three times the manufacturer's maximum recommended weight, or 60 lb (27.2 kg), whichever is greater, in the support area of the sling carrier. Include the weight of the weld cap in the total. Gradually apply the weight within a 5-s period and maintain for an additional 1 min.

7.1.3 Repeat 7.1.1 and 7.1.2 for all manufacturers' recommended carrying positions.

7.2 *Dynamic Load Test:*

7.2.1 Fasten the sling carrier to a test torso (see Fig. 2) as directed in the instruction manual supplied with the product. If the sling carrier is manufactured in multiple sizes, the size that fits the test torso is the required size for the sample submission.

7.2.2 Position a weight of 35 lb (15.9 kg) using a 6 to 8 in. diameter shot bag a distance of 1 in. (25 mm) above the support area of the sling carrier. Drop the weight onto the support area ten times with a cycle time of 4 ± 1s/cycle to preset the attachment system. By some appropriate means, mark the position of the attachment system. If sling does not have any hardware and is fastened by means of fabric, mark the position on the fabric. This will be the start point of the remainder of the test.

7.2.3 Calculate the variable X by dividing 1000 test cycles by the total number of different manufacturer's recommended carrying positions and rounding up to the nearest multiple of 50. Substantially similar carrying positions shall be counted as 1 position. If the manufacturer has more than 3 carrying positions, X shall be 350. Drop the weight onto the support area an additional X times with a cycle time of 4 ± 1s/cycle. Repeat the test for each different carrying position.

7.3 *Permanency of Labels and Warnings:*

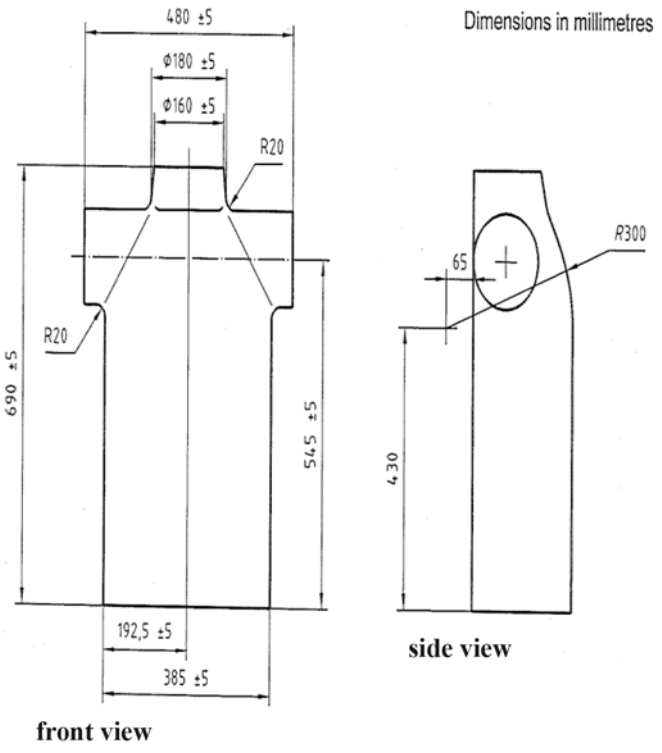

FIG. 2 Test Torso

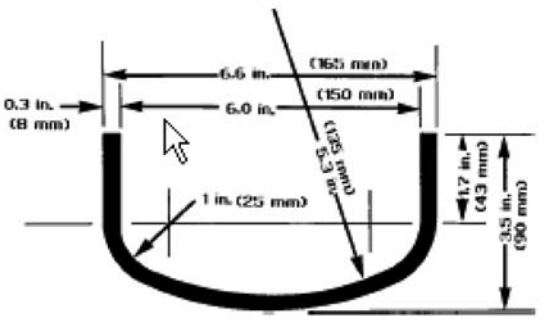

FIG. 3 Standard 6 in. (150 mm) Weld Cap

7.3.1 A 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, 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 0.75 in. (19 mm) diameter clamp surface (see Fig. 4). 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 Methods D3359, Test Method B—Cross-Cut Tape Test of Test Methods, eliminating parallel cuts.

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

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.

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

7.5 *Occupant Retention Test:*

7.5.1 *Test Equipment:*

7.5.1.1 *Test Torso*—A rigid test torso with dimensions as specified in Fig. 2 shall be clothed in a tight-fitting, thermal knit or waffle-weave, cotton or cotton/polyester undershirt or equivalent and fitted on a rigid plate. The plate shall be subjected to an alternating vertical sinusoidal movement through 4.75 ± 0.25 in. at a frequency of 2 Hz (±10 %).

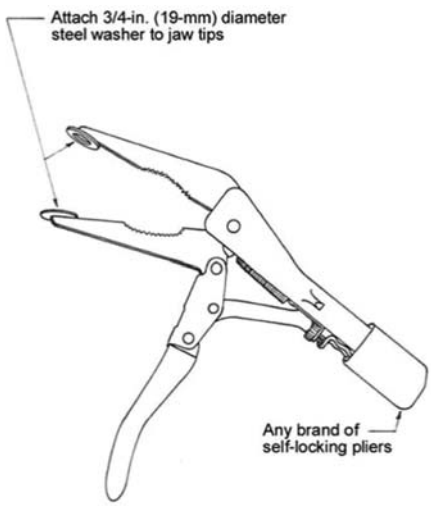

FIG. 4 Label Permanency Test Clamp

7.5.1.2 *Test Masses*—Test mass A is a bag filled with sand to a total mass of 20 lb, the shape and size of which are adjustable so that it can be firmly restrained by the sling carrier. This test mass is for use for testing sling carriers intended for children up to and including 20 lb.

7.5.1.3 Test mass B is a bag filled with sand to a total mass of 35 lb, the shape and size of which is adjustable so that it can be firmly restrained by the sling carrier. This test mass is used for testing sling carriers intended for children over 20 lb.

7.5.2 *Test Procedure*—Place the sling on the test torso in accordance with the manufacturer's instructions. Calculate the variable X by dividing 1000 test cycles by the total number of different manufacturer's recommended carrying positions and rounding up to the nearest multiple of 50. Substantially similar carrying positions shall be counted as 1 position. If the manufacturer has more than 3 carrying positions, X shall be 350. Select either test mass A or test mass B. Place the appropriate test mass into the sling carrier and firmly secure any restraint system (if applicable). Carry out the test for 10 cycles. Mark all straps to enable measurement of slippage of straps in buckles or other devices. Carry out the test for 100 additional cycles and measure any slippage. Carry out the test for a further X–100 cycles. If the sling, according to manufacturer's instructions, has more than one different carrying position, repeat the test for each different carrying position.

7.6 *Restraint System:*

7.6.1 Secure the sling carrier to a horizontal test plane so that it cannot move vertically or horizontally.

7.6.2 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 an additional 10 s.

7.6.3 Place a CAMI Infant Dummy, Mark II in the carrier with the restraint system adjusted in accordance with the manufacturer's instructions.

7.6.4 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 an additional 10 s.

7.6.5 Repeat this procedure five times with a maximum interval of 5 s between tests.

8. Marking and Labeling

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

8.1.1 Name and principal place of business (city, state, and mailing address, including zip code and telephone number) and website, if applicable, of either the manufacturer, importer, distributor, or seller.

8.1.2 Model number, stock number, catalog, item number, or other symbol that identifies the specific sling carrier.

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

8.1.4 Minimum and maximum recommended child's weight for the carrier.

8.2 Any upholstery label required by law shall not be used to meet the requirements outlined in 8.1.

8.3 Each sling carrier shall be labeled with warning statements. Warning statements shall be easy to read and understand. The warning statements shall be in contrasting color(s), permanent, conspicuous, and in sans serif font.

8.3.1 In warning statements, the safety alert symbol ⚠ and the word "WARNING" shall not be less than 0.2 in. (5 mm) high and the remainder of the text shall be at least 0.1 in. (2.5 mm) high.

8.3.2 The following warning statement shall be included exactly as stated below:

⚠ WARNING – Failure to follow the manufacturer's instructions can result in death or serious injury.

8.3.3 The label shall address the following additional warning statements:

Only use this carrier with children weighing between [manufacturer's minimum recommended weight] and [manufacturer's maximum recommended weight] pounds.

SUFFOCATION HAZARD

Babies younger than 4 months can suffocate in this product if face is pressed tightly against your body. Babies at greatest risk of suffocation include those born prematurely and those with respiratory problems.

• Check often to make sure baby's face is uncovered, clearly visible, and away from caregiver's body at all times.

• Make sure baby does not curl into a position with the chin resting on or near baby's chest. This position can interfere with breathing, even when nothing is covering the nose or mouth.

• If you nurse your baby in carrier, always reposition after feeding so baby's face is not pressed against your body.

• Never use this carrier with babies smaller than 8 pounds without seeking the advice of a healthcare professional.

FALL HAZARD – Leaning, bending over, or tripping can cause baby to fall. Keep one hand on baby while moving.

8.3.4 A pictogram comparing proper infant positioning with improper infant positioning, such as the example in Fig. 5, must be included on the warning label.

9. Instructional Literature

9.1 Instructions shall be provided with the sling and shall be easy to read and understand. These instructions shall include information on assembly, adjustment, restraint system (if applicable), maintenance, cleaning, storage and use.

9.2 Instructions shall contain an image—pictogram, photograph, or drawing—of each manufacturer's recommended carrying position.

9.3 Instructions shall contain ALL warnings in 8.3. In addition, instructions shall address the following:

9.3.1 Minimum and maximum weight of the child for which the carrier is intended.

9.3.2 Read and follow all printed instructions and view instructional videos (if applicable) before use.

9.3.3 Check for ripped seams, torn straps or fabric, and damaged hardware before each use. If found, stop using carrier.

9.3.4 Always check to ensure that all knots, buckles, snaps, straps, and adjustments are secure.

9.3.5 Ensure that the baby is safely positioned in the sling carrier according to manufacturer's instructions for use.

9.3.6 Never leave a baby in a sling carrier that is not being worn.

9.3.7 Check on the baby often. Ensure that the baby is periodically repositioned.

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

9.3.9 Never place more than one baby in the sling carrier. Never use/wear more than one carrier at a time.

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

9.3.11 Never wear sling carrier while driving or being a passenger in a motor vehicle.

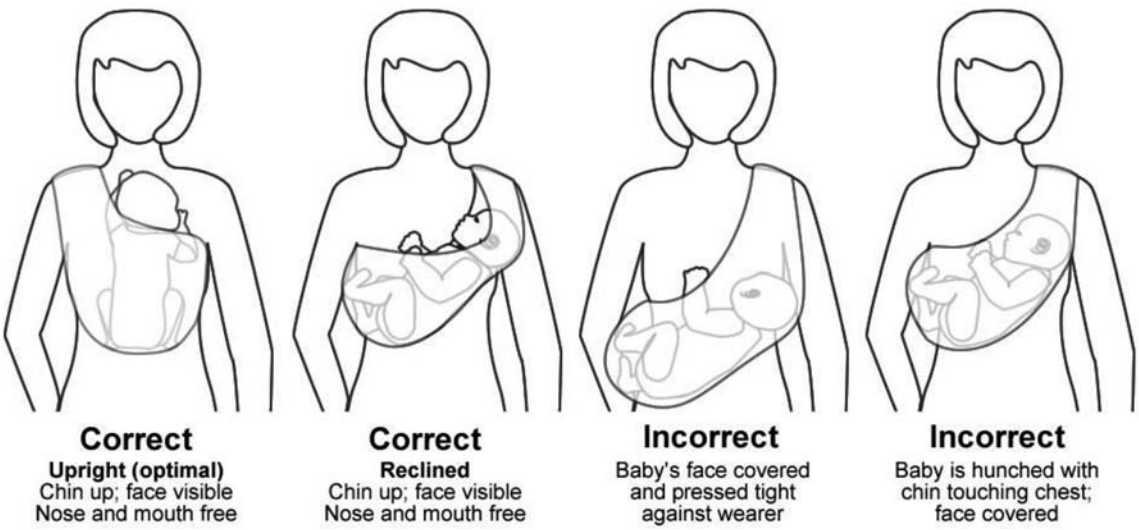

FIG. 5 Example Positioning Pictogram

10. Keywords

10.1 sling carrier