



Designation: ~~F2933—21~~ F2933 – 21a

## Standard Consumer Safety Specification for Crib Mattresses<sup>1</sup>

This standard is issued under the fixed designation F2933; 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.

### 1. Scope

1.1 This consumer safety specification establishes design requirements, testing requirements and methods, and requirements for labeling for full-size crib mattresses, non-full-size crib mattresses, and after-market mattresses for play yards and non-full size cribs.

1.2 No crib mattress 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 requirements contained herein.

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

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

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

[D3359 Test Methods for Rating Adhesion by Tape Test](#)

[F406 Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards](#)

[F1169 Consumer Safety Specification for Full-Size Baby Cribs](#)

[F2194 Consumer Safety Specification for Bassinets and Cradles](#)

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

[16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint](#)

[16 CFR 1500.48 Technical Requirements for Determining a Sharp Point in Toys and Other Articles 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](#)

<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 F15.66 on Crib Mattresses.

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<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> Available from the U.S. Government Printing Office, Superintendent of Documents, 732 N. Capital St., NW, Washington, DC 20402-0001.

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 1219 Requirements for Full-Size Baby Cribs

16 CFR 1220 Requirements for Non-Full-Size Baby Cribs

16 CFR 1632 Standard for the Flammability of Mattresses and Mattress Pads

16 CFR 1633 Standard for the Flammability (Open Flame) of Mattress Sets

Consumer Product Safety Improvement Act of 2008 (CPSIA)

2.3 Other Standards:

[ANSI Z535.4 – 2011 Product Safety Signs And Labels](#)<sup>4</sup>

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *after-market mattress for play yard or non-full-size crib, n*—a mattress sold or distributed for a play yard or non-full-sized crib.

##### 3.1.1.1 Discussion—

This does not include a replacement mattress provided or sold by an original equipment manufacturer (OEM) if, and only if, it is equivalent with respect to dimensions, and specifications to the mattress that was provided with the original product.

3.1.2 *conspicuous, adj*—visible, when the mattress is being handled by a ~~consumer~~ consumer placing the mattress in its intended use position in a product.

3.1.3 *core, n*—main support system that may be present in a mattress, such as springs, foam, hair block, or resilient filling.

3.1.4 *crib, n*—bed that is designed to provide sleeping accommodations for an infant which have specific interior dimensions as determined by it being either a full size or non-full size crib:

3.1.4.1 *full size crib, n*—52<sup>3</sup>/<sub>8</sub> in. ± 5/8 in. (1330 mm ± 16 mm); Width 28 in. ± 5/8 in. (711 mm ± 16 mm) (as defined in 16 CFR 1219 and Consumer Safety Specification F1169).

3.1.4.2 *non-full size crib, n*—interior length dimension either greater than 55 in. (1397 mm) or smaller than 49<sup>3</sup>/<sub>4</sub> in. (1264 mm) or an interior width dimension either greater than 30<sup>5</sup>/<sub>8</sub> in. (778 mm) or smaller than 25<sup>3</sup>/<sub>8</sub> in. (645 mm) or both (as defined in 16 CFR 1220 and ASTM F406).

3.1.5 *mattress, n*—ticking filled with a resilient material used alone or in combination with other products intended or promoted for sleeping on it.

##### 3.1.5.1 Discussion—

For the purpose of this consumer safety specification, this term includes crib mattresses and non-full-size crib mattresses.

3.1.6 *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.

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

3.1.8 *surface, n*—side of a mattress that is intended for sleeping on it and can be tested.

3.1.9 *ticking, n*—outermost layer of fabric or related material that encloses the core and upholstery materials of a mattress.

##### 3.1.9.1 Discussion—

A mattress ticking may consist of several layers of fabric or related materials quilted together.

3.1.10 *upholstery material, n*—all material, either loose or attached, between the mattress ticking and the core of a mattress, if a core is present.

### 4. Calibration and Standardization

4.1 All testing shall be conducted on a rigid and level surface unless the test instructions are different.

<sup>4</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

- 4.2 The product shall be completely assembled, unless otherwise noted, in accordance with the manufacturer's instructions.
- 4.3 The product to be tested shall be in a room with an ambient temperature of  $73\text{ }^{\circ}\text{F} \pm 9\text{ }^{\circ}\text{F}$  ( $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ ) for at least 8 h before testing. Testing shall then be conducted within this temperature range.
- 4.4 All testing required by this specification shall be conducted on the same product unless otherwise specified.

## 5. General Requirements

~~5.1 Any product under this consumer safety specification shall comply with all other applicable mandatory federal statutes and regulations (for example, CPSIA, 16 CFR 1632, 16 CFR 1633, and so forth).~~

5.1 There shall be no hazardous points or edges as defined by 16 CFR 1500.48 and 16 CFR 1500.49 before and after testing to this consumer safety specification.

NOTE 1—Mattresses that do not have any exterior components other than ticking (for example, vents, vibrating motors, zippers, and so forth) or any protruding components are considered exempt from these requirements.

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 consumer safety specification.

5.3 Any paint and surface coatings on the product shall comply with 16 CFR 1303.

5.4 *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 and 0.375 in. (5.33 and 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. The product shall be evaluated in all the manufacturer's recommended use positions.

5.4.1 This requirement applies to vents, zipper tabs, and any other rigid components that may be designed into a mattress.

5.5 *Labeling:* <https://standards.iteh.ai/catalog/standards/sist/2999b300-ac7b-455a-9924-e7aacb34f/astm-f2933-21a>

5.5.1 Warning labels (whether paper or non-paper) shall be permanent when tested in accordance with 6.1. Non-coated paper warning label shall not be applied on either side of sleeping surface.

NOTE 2—Non-coated paper label may absorb water and can deteriorate.

5.5.2 Warning statements applied directly onto the surface of the mattress by hot stamping, heat transfer, printing, and so forth shall be permanent when tested in accordance with 6.1.4.

5.5.3 Non-paper labels shall not liberate small parts when tested in accordance with 6.1.5.

5.6 *Mattress Dimensions:*

5.6.1 *Full-Size Crib Mattresses:*

5.6.1.1 *Mattress Size*—The dimensions of a full-size crib mattress shall measure at least  $27\frac{1}{4}$  in. (690 mm) wide and  $51\frac{5}{8}$  in. (1310 mm) long when tested in accordance with 6.2.

5.6.2 *Non-Full-Size Crib Mattresses:*

5.6.2.1 *Mattress Size*—The dimensions of a mattress supplied with a non-full-size baby crib shall be such that the mattress, when inserted in the center of the crib, in a noncompressed state at any of the adjustable positions of the mattress support, shall not leave

a gap of more than ½ in. (12.7 mm) at any point between the perimeter of the mattress and the perimeter of the crib. When the mattress is placed against the perimeter of the crib, the resulting gap shall not exceed 1.0 in. (25.4 mm).

#### 5.6.2.2 *Mattress Thickness:*

(1) A mattress supplied with a non-full-size crib shall, in a ~~non-compressed~~non-compressed state, have a thickness that will provide a minimum effective crib-side height dimension of at least 20 in. (508 mm) as measured from the upper surface of the mattress to the upper surface of the crib side or end panel. For this measurement, the crib side shall be in its highest adjustable position and the mattress support in its lowest adjustable position.

(2) A mattress supplied with a non-full-size crib shall, in a ~~non-compressed~~non-compressed state, have a thickness that will provide a minimum effective crib-side height dimension of at least 3 in. (76 mm) as measured from the upper surface of the mattress to the upper surface of the crib side or end panel. For this measurement, the crib side shall be in its lowest adjustable position and the mattress support in its highest adjustable position.

5.7 *Mattress Seam Stitching*—All seam stitching that is accessible to the occupant shall be lock-stitching.

NOTE 3—The seam stitching on the inside of product is not considered accessible to the occupant.

5.8 *After-Market Mattress for Play Yard and Non-Full Size Crib*—For the purposes of this section, the term product refers to a play yard or non-full-size crib.

#### 5.8.1 *For ~~Mesh/Fabric Sided~~Mesh/Fabric-sided Products and ~~Rigid Sided~~Rigid-sided Non-Rectangular Products:*

5.8.1.1 The aftermarket mattress and product it is tested in shall meet the applicable requirements of the following sections of Consumer Safety Specification **F406** when tested with each brand and model of product for which it is intended to replace the mattress: *Stability; Cord/Strap Length; Mattress; Mattresses for ~~Rigid-sided~~Rigid Sided Products; Crib Side Height; Height of Sides; Floor Strength; Mattress Vertical Displacement.*

5.8.1.2 If the aftermarket mattress is intended to be used in the bassinet of a play yard with a bassinet attachment, the mattress shall also meet the specifications of the following sections of Consumer Safety Specification **F2194** when tested with each brand and model for which it is intended to replace the mattress: *Pad Thickness for Fabric or Mesh Sided Products; Pad dimensions; Dimensions; Side Height; Bassinets with Segmented Mattresses.*

This section applies only to a play yard mattress that is interchangeably used as a play yard mattress and as a bassinet mattress/pad.

5.8.1.3 The aftermarket mattress must be at least the same size as the original equipment mattress or larger and lay flat on the floor of the product, in contact with the play yard mattress support structure or floor.

5.8.1.4 If the original equipment mattress includes a floor support structure, the aftermarket mattress must include a floor support structure that is at least as thick as the original equipment mattress floor support structure.

5.8.1.5 If the original equipment mattress includes storage accommodations for the product instruction manual, the aftermarket mattress shall provide equivalent storage accommodations for the product instruction manual.

## 6. Test Methods

### 6.1 *Permanency of Labels and Warnings:*

6.1.1 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 upon removal, or such action damages the surface to which it is attached.

6.1.2 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.

6.1.3 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 clamp with a ¾-in. (19-mm) diameter clamping surface. Apply the force evenly over 5 s and maintain for an additional 10 s.

### 6.1.4 *Adhesion Test for Warnings Applied Directly onto the Surface of the Product:*

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

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

6.1.4.3 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.

6.1.5 A non-paper label, during an attempt to remove it without the aid of tools or solvents, shall not be removed nor shall not fit entirely within the small parts cylinder defined in 16 CFR 1501 if it can be removed.

## 6.2 *Mattress Dimensional Measurements for Full-Size Crib Mattress:*

### 6.2.1 *Test Equipment—Mattress Measuring Box:*

6.2.1.1 The mattress measuring box is a rectangular box with rigid walls having interior dimensions at least 29½ in. by 54 in. (749 mm by 1372 mm) with walls at least 8 in. (203 mm) high that are perpendicular to the floor. The wall and floor thicknesses should be sufficient to avoid warping or deformation during testing. See **Fig. 1** for example.

6.2.1.2 The interior floor of the box should be made of or covered with a material that provides a smooth surface that allows the mattress to slide freely.

6.2.1.3 One short side of the box should have a sliding panel measuring 26⅛ in. ± ½ in. (664 mm ± 12.7 mm) with its end located ½ in. ± ¼ in. (12.7 mm ± 6.3 mm) from the inside surface of Wall D in **Fig. 1**. This panel will be called Panel A.

6.2.1.4 One long side of the box should have a sliding panel measuring 50½ in. ± ½ in. (1283 mm ± 12.7 mm) with its end located ½ in. ± ¼ in. (12.7 mm ± 6.3 mm) from the inside surface of Wall C in **Fig. 1**. This panel will be called Panel B.

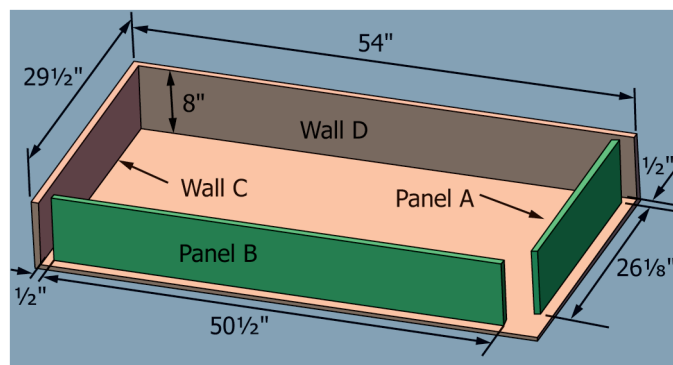
### 6.2.2 *Test Method:*

6.2.2.1 Place the mattress into the mattress measuring box so it is touching Walls C and D.

6.2.2.2 To position the mattress in the measuring box, gradually apply a 7 lbf (31.1 N) force to the midpoint of Panel A. Release this force. Then gradually apply a 14 lbf (62.3 N) force to the midpoint of Panel B. Release this force.

6.2.2.3 Apply a 7 lbf ± 1 lbf (31.1 N ± 4.4 N) force to the midpoint of Panel A within a period of 5 s. Within 30 s of application of the force to Panel A, and while maintaining this force, apply a 14 lbf ± 1 lbf (62.3 N ± 4.4 N) force to the midpoint of Panel B within a period of 5 s.

6.2.2.4 Apply the forces from **6.2.2.3** for 60 s. With forces still applied, applied to the midpoints of Panels A and B, measure the length and width of the interior dimension measured from the horizontal midpoints of Panel A to Wall C (length) and Panel B to Wall D (width). These measurements are to be considered the mattress dimensions.



**FIG. 1 Crib Mattress Measuring Box (1 in. = 2.54 cm)**

## 7. Marking and Labeling

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

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

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

7.2 The marking and labeling on the mattress shall be permanent.

~~7.3 The warning statements in this consumer safety specification cannot be placed on any other labels.~~ Any upholstery labeling required by law (for example, 16 CFR 1633 label or state law labels) shall not be used to meet the requirements of this section.

~~7.4 Warning statements shall be easy to read and understand. The warning statements shall be conspicuous, permanent (as defined in 6.1), and in sans-serif type.~~ Warning Design for Mattress:

7.4.1 The warnings shall be easy to read and understand and be in the English language at a minimum.

7.4.2 Any marking or labeling provided in addition to those required by this section shall not contradict or confuse the meaning of the required information, or be otherwise misleading to the consumer.

7.4.3 The warnings shall be conspicuous and permanent.

7.4.4 The warnings shall conform to ANSI Z535.4 – 2011, American National Standard for Product Safety Signs and Labels, sections 6.1–6.4, 7.2–7.6.3, and 8.1, with the following changes.

7.4.4.1 In sections 6.2.2, 7.3, 7.5, and 8.1.2, replace “should” with “shall.”

7.4.4.2 In section 7.6.3, replace “should (when feasible)” with “shall.”

7.4.4.3 Strike the word “safety” when used immediately before a color (for example, replace “safety white” with “white”).

NOTE 4—For reference, ANSI Z535.1 provides a system for specifying safety colors.

~~7.4.5 The warning label shall include a delineated signal word panel containing the safety alert symbol followed “by” and the signal word “WARNING” on a contrasting background. The letters and safety alert symbol shall not be less than 0.2 in. (5 mm) high. The remaining shall be at least 0.2 in. (5 mm) high. The remainder of the text shall be in characters whose upper case is shall be at least 0.1 in. (2.5 mm) high, except where otherwise specified.~~

NOTE 5—For improved warning readability, typefaces with large height-to-width ratios, which are commonly identified as “condensed,” “compressed,” “narrow,” or similar should be avoided.

~~7.4.6 The warning label shall meet one of the following conditions:~~ Message Panel Text Layout:

~~7.4.6.1 The safety alert symbol shall be an orange filled triangle on a contrasting background.~~ text shall be left-aligned, ragged-right for all but one-line text messages, which can be left-aligned or centered.

NOTE 6—Left-aligned means that the text is aligned along the left margin, and, in the case of multiple columns of text, along the left side of each individual column. See Fig. X1.1 in the appendix for examples of left-aligned text.

~~7.4.6.2 The signal word panel containing both the safety alert symbol and signal word shall be orange in color on a contrasting label (for example, orange background on white label).~~ text in each column should be arranged in list or outline format, with precautionary (hazard avoidance) statements preceded by bullet points. Multiple precautionary statements shall be separated by bullet points if paragraph formatting is used.



7.2.2.3 The entire warning label shall be orange with the warning text and symbols in contrasting color (for example, orange label with black text and symbols):

7.4.7 Example warnings in the format described in this section are shown in Fig. 2, Fig. 3, and Fig. 4.

7.5 Warning Statements—The following warning statements shall be included exactly as stated below. Each mattress shall have warning statements to address the following, at a minimum.



NOTE 7—Address means that verbiage other than what is shown can be used as long as the meaning is the same or information that is product-specific is presented.

NOTE 8—The blank should be filled with “1½ (3.8 cm)” for full-size crib mattresses or “1 in. (2.5 cm)” for all other products.

~~Failure to SUFFOCATION HAZARD~~ follow these warnings could result in serious injury or death. To prevent deaths, the U.S. Consumer Product Safety Commission (CPSC), the American Academy of Pediatrics (AAP), and the National Institute of Child Health and Human Development (NICHD) recommend the following:  
**To reduce the Babies have suffocated:** risk of Sudden Infant Death Syndrome (SIDS) and suffocation, pediatricians recommend healthy infants be placed on their backs to sleep, unless otherwise advised by your physician:  
 • Infants can suffocate on soft bedding. Never place a pillow or comforter under sleeping infant for additional padding or as a mattress substitute. on pillows, comforters, and extra padding  
 • in gaps between a wrong-sized mattress, or extra padding, and side walls of product.  
**NEVER** add soft bedding, padding, or an extra mattress.  
**ONLY USE** one mattress at a time.  
**ALWAYS** check mattress fit **every time you change the sheets** by pushing mattress tight to one corner. Look for any gaps between the mattress and the side walls. If a gap is larger than     , do not use the mattress.  
**ALWAYS** place baby on back to sleep to reduce the risks of SIDS and suffocation.  
 • ~~Do~~**DO NOT** not cover the faces or heads of babies with a blanket or over bundle them in clothing and blankets. Overheating can lead to over-bundle them. Overheating can increase the risk of SIDS.

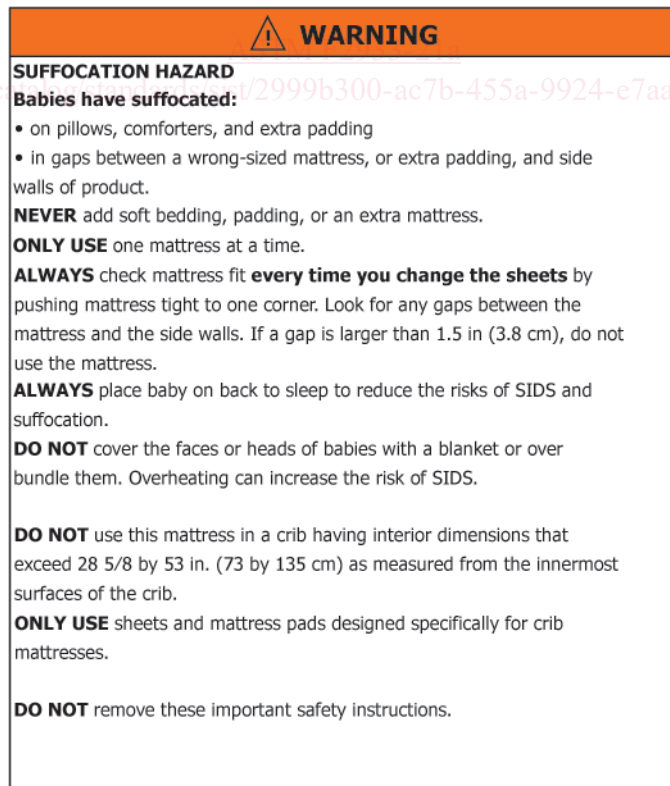


FIG. 2 Example of Warnings for Full Size Crib Mattresses