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GB 29281-2012

Safety requirements for playpens and similar cribs

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Foreword

Provisions in Chapter 4 of this Standard are mandatory, and the rest are recommendatory.

This Standard is prepared according to the rules specified in GB/T 1.1-2009.

This Standard refers to BS EN 12227-1:1999 *Household Playpen Part 1: Safety Requirements*, BS EN 12227-2: 1999 *Household Playpen Part 2: Test Method*, ISO 7175-1:1997 *Household Cribs and Small Folding Bed Part 1: Safety Requirements*, ISO 7175-2:1997 *Household Cribs and Small Folding Bed Part 2: Test Method*; the degree of consistency is not equivalent.

This Standard is proposed by China National Light Industry Council.

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Safety requirements for playpens and similar cribs

1 Scope

This Standard specifies the safety requirements and test methods of playpens and similar cribs.

This Standard applies to the household playpens and similar cribs used for children not more than 15kg. It is not applicable to cradles and hammocks.

This Standard does not apply to hanging toys, fitness toys and similar toys of playpens and similar cribs. It also does not apply to the safety technical requirements when playpens and similar cribs are converted to other functions.

2 Normative References

The articles contained in the following documents have become this Standard when they are quoted herein. For the dated documents so quoted, all the modifications (Including all corrections) or revisions made thereafter shall be applicable to this Standard.

GB/T 2912.1-2009 Textiles—Determination of formaldehyde—Part 1: Free and hydrolyzed formaldehyde (water extraction method)

GB/T 3920-2008 Textiles—Tests for colour fastness—Colour fastness to rubbing

GB/T 3922-1995 Textiles--Testing method for colour fastness to perspiration

GB 5296.5-2006 Instructions for use of products of consumer interest—Part 5: toys

GB 5296.6-2004 Instructions for use of products of consumer interest—Part 6: furniture

GB/T 5713-1997 Textiles-Tests for colour fastness-Colour fastness to water

GB 6675 National safety technical code for toys

GB/T 7573-2009 Textiles—Determination of pH of aqueous extract

GB/T 10807-2006 Flexible cellular polymeric materials—Determination of hardness (indentation technique)

GB/T 17592-2011 Textiles—Determination of the banned azo colourants

GB 18401 National general safety technical code for textile products

GB 18584 Indoor decorating and refurbishing materials--Limit of harmful substances of

wood based furniture

GB/T 18886-2002 Textiles-Tests for fastness-Colour fastness to saliva

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions shall apply.

3.1

Playpen

A device, scheduled to accommodate children in short-term and surrounded by guardrails for children to play within.

3.2

Similar crib

The crib which may be used for playpen

3.3

Folding playpen and similar crib

The playpens and similar cribs that can be removed or folded for the convenience of transportation and storage

3.4

Access zone

In normal use and foreseeable use, the accessible surrounding areas of playpens and similar cribs

Playpens and similar cribs is composed of enclosed side panels and the side panel which may pierce out from the side. Make any point of the piercing side panel or any point above the panel as the centre, the zone within the radius of 300mm is called access zone.

3.4.1

Access zone 1

The entire interior zone of the playpens and similar cribs from where hands cannot come out; and the exterior zone which is 1400mm above the bottom and 300mm below the upper frame, tested vertically with reference to the bedding plane of the playpens and similar cribs; [interior zone + exterior zone] is called access zone 1 [see the dotted line in Figure 1a)].

If it is covered by mattress, the bedding plane is deemed as inaccessible part.

d) There [shall] be two separate locking mechanisms with the distance of at least 850mm that can operate simultaneously.

The inward-folding playpens or similar cribs shall be equipped with at least two locking mechanisms. If there is only one locking mechanism, while the weight of the child on the bedding plane has a positive effect on the locking, it can be equivalent to two sets of locking mechanism.

When tested according to 5.9, the folding locking mechanism shall act correctly.

4.2.3.6 Other locking mechanisms

When tested according to 5.9.3, other locking mechanisms not used for the rollover and folding devices shall be applied with at least 50N force to loosen the locking mechanism.

4.2.3.7 Side panel rollover device

The device used to control the side panel rollover shall work automatically, and its composition shall comply with one of the following conditions:

- a) The two tightening devices with the distance of at least 850mm shall move simultaneously;
- b) There are at least two independent systems operating in different principles simultaneously;
- c) There are at least two coherent systems operating in different principles, and when the second system is operating, the first shall maintain its state;
- d) When tested according to 5.9.3, at least 50N force shall be applied to loosen the locking device.

4.2.4 Filling material of the playpens and similar cribs

When tested according to the program described in 5.7, no filler shall be pulled out.

4.2.5 Castor or roller

In addition to the following two conditions, the castor or roller shall not be installed:

- a) When there is castor or roller, at least two legs are without castor or roller.
- b) When there are four or more castors or rollers, at least two castors or rollers can be locked.

After being locked, the castors or rollers shall be prevented from rolling; when tested according to 5.13, the castors or rollers shall not be unlocked.

4.2.1.1 The hole, opening and gap where fingers may be clamped

In access zone 1 and access zone 2:

- a) There shall be no pipe with opening at the end;
- b) When tested according to 5.3.2.2, there shall be no hole and gap with size of more than 5mm but smaller than 12mm, except for those with depth smaller than 10mm;
- c) The maximum allowable diameter of the assembly hole is 7mm;
- d) According to 5.3.2.2, when tested by conical head with the diameter of 7mm and 30N thrust, the conical head shall not pass through the holes of the mesh.

4.2.1.2 The hole, opening and gap where limbs may be clamped

When tested according to 5.3.2.3, there shall be no hole, opening and gap with the diameter of more than or equal to 25mm but smaller than 45mm in access zone 1.

4.2.1.3 The hole, opening and gap where head, neck and body may be clamped

It shall comply with the following requirements:

- a) When tested according to 5.3.2.4, there shall be no semi-enclosed and V-shaped openings in access zone 1;
- b) When tested according to 5.3.2.5, there shall be no hole, opening and gap with the diameter of more than or equal to 65mm in access zone 1;
- c) When tested according to 5.3.2.5, any hole, opening and gap in access zone 2 shall not allow type I probe to pass through completely, or allow type II probe to pass through completely and contact to the lowest point of the hole fully. If the type II probe cannot contact to the lowest point of the hole, the gauge feeler with diameter of 25mm shall not pass through the gap between the type II probe and the lowest point of the hole.

4.2.1.4 Base [Translator: Bedding plane]

It shall comply with the following requirements:

- a) [If] The bedding plane is composed of mesh structure, [then] mesh holes with the diameter of more than or equal to 85mm are not acceptable. If the bedding plane is composed of wire mesh, the diameter of the wire shall be not smaller than 2mm;
- b) If the bedding plane is composed of slats, the gap between the two adjacent slats shall not be more than or equal to 60mm.

Table 2 The allowable maximum/minimum size of the hole, opening and gap

d) There [shall] be two separate locking mechanisms with the distance of at least 850mm that can operate simultaneously.

The inward-folding playpens or similar cribs shall be equipped with at least two locking mechanisms. If there is only one locking mechanism, while the weight of the child on the bedding plane has a positive effect on the locking, it can be equivalent to two sets of locking mechanism.

When tested according to 5.9, the folding locking mechanism shall act correctly.

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When tested according to 5.9.3, other locking mechanisms not used for the rollover and folding devices shall be applied with at least 50N force to loosen the locking mechanism.

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The device used to control the side panel rollover shall work automatically, and its composition shall comply with one of the following conditions:

- a) The two tightening devices with the distance of at least 850mm shall move simultaneously;
- b) There are at least two independent systems operating in different principles simultaneously;
- c) There are at least two coherent systems operating in different principles, and when the second system is operating, the first shall maintain its state;
- d) When tested according to 5.9.3, at least 50N force shall be applied to loosen the locking device.

4.2.4 Filling material of the playpens and similar cribs

When tested according to the program described in 5.7, no filler shall be pulled out.

4.2.5 Castor or roller

In addition to the following two conditions, the castor or roller shall not be installed:

- a) When there is castor or roller, at least two legs are without castor or roller.
- b) When there are four or more castors or rollers, at least two castors or rollers can be locked.

After being locked, the castors or rollers shall be prevented from rolling; when tested according to 5.13, the castors or rollers shall not be unlocked.

When tested according to 5.12, the playpens and similar cribs shall have at least three legs and (or) wheels not in the same direct-line to keep a continuous contact with the floor.

4.2.11 Size

4.2.11.1 When tested according to 5.3.1, and tested under load according to 5.11.3.1, the minimum vertical distance between the bedding plane or any foothold point and any part of the upper surface of the playpen shall at least be 600mm. After the removal of the test force, the distance is still at least 600mm. If the conditions of 5.5 are met, the foothold point is existed.

4.2.11.2 If an adjustable bedding plane is installed, when the bedding plane is adjusted to the highest position, the minimum vertical distance between the upper surface of the bedding plane and any part of the upper surface of the bed guardrail at the lowest position shall at least be 300mm.

4.2.11.3 The thickness of the rope on the playpens and similar cribs used to fasten or grip shall be more than or equal to 1.5mm.

4.2.11.4 When stretched using a force of $25\text{N} \pm 2\text{N}$, the free length of the rope or other thin fabric strip must not exceed 220mm.

4.2.11.5 When stretched using a force of $25\text{N} \pm 2\text{N}$, the circumference of the rope loop which may form a loop or fixed ring shall be less than 360mm.

4.2.12 Small parts

4.2.12.1 When tested according to 5.6, any parts or components that can fall off and can be held or bitten by the baby (including parts which can be removed without tools) shall not be allowed to be fallen into the small parts tester.

4.2.12.2 In the access zone 1, self-adhesive stickers or decals shall not be used.

4.3 Packaging

Any plastic cover used for packaging playpens or similar cribs shall comply with the requirements of plastic bags and plastic film in GB 6675, or warnings shall be significantly marked as follows:

"Before using, remove the plastic cover; in order to avoid the danger of suffocation, destroy the plastic cover, or keep it out of reach of children."

recommended;

- j) To indicate: When a child can climb out from the playpens and similar cribs or when the height has reached xxx, you shall stop using the product;
- k) Warnings shall be placed in a significant position, and shall be easy to identify, and state that failing to follow these warnings and instructions can result in serious injury;
- l) **Warning: Never leave anything that may be used as a foothold point or may cause suffocation and strangulation in the playpens and similar cribs;**
- m) **Warning: Open fire and other strong heat sources such as sparks, gas flames must be avoided around the playpens and similar cribs;**
- n) **Warning: The playpens and similar cribs must not be used if any part of them is damaged, torn or lost;**
- o) **Warning: When children begin to stand by supporting with hands or knees, if toys are not removed, entanglement or strangulation injury may occur;**
- p) **Warning: When children are playing in the playpens and similar cribs, never leave the children unattended.**

5 Test method

5.1 General provisions

If not specifically stated, the precision of all dynamometry shall be $\pm 5\%$; the precision of all mass shall be $\pm 0.5\%$; the precision of all sizes shall be ± 0.5 mm. Test method of this Standard is used to test the playpens and similar cribs which have been installed for use.

Before the test, the specimen shall be placed in the indoor condition of 15-25°C for at least 48h. When the test method standards referenced for detection are specified, the test shall be conducted according to the referenced test method standards and any other places different from the requirements of the standard shall be indicated in the report.

Before the test, quality of each fabric shall be determined. Unless the manufacturer specifies a different washing method, other washable fabrics shall be washed and roller-dried for six times.

Any suitable commercial washing machine, washer dryer or home use washing machine and dryer can be used for this test.

5.2.4 The flammable properties of the fabric materials used for the playpens and similar cribs shall be tested according to the test method specified in GB 6675.

5.2.5 The formaldehyde emissions of the wooden playpens and similar cribs shall be tested according to the test method specified in GB 18584.

5.3 Measurement of structure size

5.3.1 Measurement of slide plate height

Measure the distance between the lowest point of bedding plane (removing the mattress) and upper end of the side. If there is foothold point, measure the distance between foothold position and upper end of the side. After completing vertical static load test according to 5.11.3.1, relieve applied force and then measure side plate height.

5.3.2 Measurement of hole opening and gap on rigid materials

5.3.2.1 The pipe with opening at the end

Visually inspect whether there is pipe with opening at the end within access zone.

5.3.2.2 Holes where fingers may be clamped

Use slip gauge with conical head diameter of 7mm and 12mm to inspect all accessible holes, gaps and openings in access zone 1 and access zone 2.

Apply force to the slip gauge as shown in Table 3. Observe whether slip gauge can pass the hole. And detect the gaps between adjacent components. Apply 30N force to the conical head of 7mm diameter. And apply no force to conical head of 12mm diameter. Inspect whether depth exceeds 10mm.

5.3.2.8 Rope and rope loop

Apply $25\text{N} \pm 2\text{N}$ tensile force on rope. Measure the thickness of rope line of three to five points along the rope with thickness tester with accuracy of $\pm 0.1\text{mm}$. Calculate average thickness of the rope. The thickness shall comply with 4.2.11.3. Free length of rope and rope loop from fixed point to its tail end shall comply with requirements 4.2.11.4, 4.2.11.5.

5.4 Shear and squeeze points

Detect whether shear and squeeze points exist between moving components with conical heads of diameter of 5mm and 18mm, if any, inspect whether it complies with requirements of 4.2.3. See informative Annex B for “Inspection Flow Chart of Shear and Squeeze Points”.

5.5 Foothold Point

Place the marked side of test template on the surface to be measured, including uneven surface and surface formed by two adjacent surfaces. Test template may be tilted against horizontal plane and closely stick to the surface to be measured. If it complies with conditions in a) or b) or c), a foothold point is existed.

When testing the surface of the rigid structure covered by soft material or braided fabric, place the test template on the surface and apply a horizontal thrust of 30N; this stress shall be combined with a vertical force not less than 50N via point A and B (see Figure 9) of the test template. If there are four adjacent marked triangles blocked by the surface to be measured, a foothold point is existed.

a) There are components with sufficient area to provide support

For the surface with a slant angle of less than 55° to the horizontal plane, place a test template on it, and if there are four adjacent marked triangles blocked by the surface to be measured, a foothold point is existed. See examples of Figure 10 a) and b).

Note: This means that the support area is at least 50mm^2 .

b) There are thin components with sufficient length to provide support

For the surface of a thin component with a slant angle less than 55° to the horizontal plane, place a test template on it; if the length of the thin component exceeds the length of the two bold-marked lines of the test template, a foothold point is existed. See examples of Figure 10 c). If there exists one gap on the surface of the thin component, side of the gap

5.10.2 Shock test (Impact test)

Place the playpens and similar cribs on the floor which shall be level, rigid and flat.

Put the soft test mattress flat on the bedding plane. The soft test mattress is composed of soft polyester foam with a thickness of 50mm; the bulk density of the mattress is (30 ± 2) kg/m³; test it according to method A of GB/T 10807-2006; its pressing hardness index is (170 ± 20) N. During the test, an area of at least 400mm×800mm shall be provided for the soft test mattress, but it shall not be more than the mattress base surface. Outer cover for the soft test mattress shall be cotton cover with 100g/m²-120g/m².

Place the bedding plane at the lowest position and let loose the basal impactor (see Figure 16) for 1000 times from 150mm above the bedding plane; it shall not exceed 30 times/min; let the impactor fall freely at the impact test position (see Figure 17).

If the height of the bedding plane is adjustable and the support structure is different from that at the lowest position, place bedding plane at the highest position, and repeat the test at around the connection point.

Note 1: Guide rail (to guide impactor) is recommended.

Note 2: The test is not necessary if all impact points on the bedding plane are in contact with the floor.

Select the following points for impact test (see Figure 17):

- a) Any corner;
- b) The seemingly weakest position at the bottom. If there is no obvious weak position, choose the diagonal position of a);
- c) Center of the side edge;
- d) Center of the bottom edge;
- e) Center of the bedding plane;
- f) Around the connection point;

At point a, c and d in Figure 17, the horizontal distance between the side of impactor and interior surface of the frame is not more than 50 mm.

Remove the soft test mattress. And inspect the specimen if any part of playpens is disengaged, fractured or cracked.

Table A.1 Table of standard provision corresponding to size in Figure A.1 to
Figure A.3

Code	Corresponding provisions	Size/mm
<i>a</i>	4.2.1.1d)	7
<i>b</i>	4.2.1.3a)	65
<i>c</i>	4.2.1.4	85
<i>h</i>	4.2.11.2	300
<i>H</i>	4.2.11.1	600

Annex B

(Informative)

Flow chart for shear and squeeze points test

B.1 Flow chart for shear and squeeze points test (see Figure B.1) is used as guidance for systematic inspection under various functional conditions, and testing any possible situation listed in the following table.

References and Original Chinese Documents

[1] GB 29281-2012 Playpens and similar crib safety requirements.

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