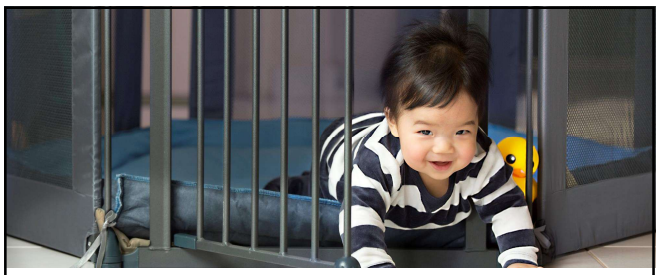

C&P – Connectivity and Products

Keeping Baby Safe: Cots/Cribs, Playpens and Safety Gates

1

Speakers

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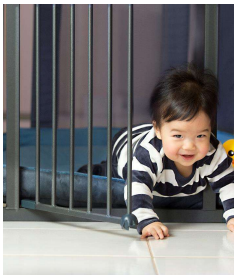
2



Content

- Different products for keeping babies safe
  - Cots/cribs
  - Playpens
  - Safety gates
- Which standard for which market
- Application of safety requirements : rationales and major differences

3

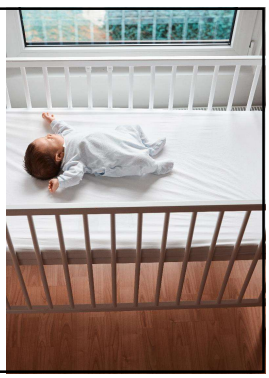
Keeping babies safe

4

Cots / Cribs

ISO 7175 1 & 2: 2019

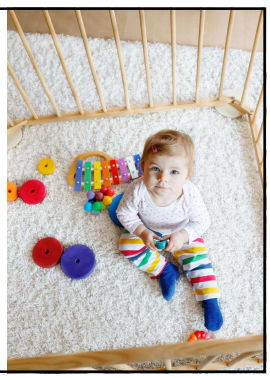
- SOR 2016-152 – Canada
- EN716 parts 1 & 2: 2017 – Europe
- Full size ASTM F1169-19 – 16CFR1219; Non-full size ASTM F406-19 – 16CFR1220 – USA
- QB 2453 – China
- NBR 15860 parts 1 & 2: 2016; Inmetro 143/2021 – Brazil
- AS/NZS 2195 + A2: 2015; AS/NZS 2172: 2013; CPN N° 4; CPN N° 6 – Australia – New Zealand



5

Playpens / Play Yards

- SOR 2018-186 – Canada
- EN12227: 2010 – Europe
- ASTM F406-19; 16CFR1221 – USA
- GB 29281 – China



6

Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

SCOPES

EN 716
For children's cots for domestic use with an internal length greater than 900 mm but not more than 1 400 mm.

No dimensions for Playpen EN12227

ASTM F406 – Non-full-size baby cribs
For structural integrity and performance requirements for non-full-size cribs/play yards, both rigid sided and mesh/fabric assemblies. The height of the product is less than 35 in. (890mm).Non-full-size crib has an interior length dimension either greater than 55in.(139.7cm) or smaller than 49.75in.(126.3cm), or greater than 77.7cm or smaller than 64.3cm, or both.

ASTM F1169 – Full-size baby cribs
For a bed that is designed to provide sleeping accommodations for an infant that is intended for use in the home and the interior dimensions shall be 71±1.6cm wide and 133±1.6cm long

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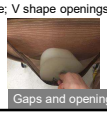
Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

EN716
Prevent finger entrapment: 5, 7, 12 and 18 mm
Other entrapment (limb): 25, 45 mm
Avoid body entrapment: 60, 65, and 85 mm
Small head – large head outside; V- shape openings
Force 30N

EN12227
Prevent finger entrapment 7 and 12 mm
Prevent body entrapment :
hip probe – width 65 mm
Small head, large head outside; V shape openings
Force 30N

ASTM F406/1169
Prevent finger entrapment 5,33 and 9,53 mm, 32 mm
Opening in cantilever accessories: small head, large head
Distance between slats 60 mm at any point
Wedge block 63 mm – 90 N



Gaps and openings, entrapment hazard

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Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

EN716
500 mm over mattress (or mark for height of mattress)
200 mm over mattress when bed base is adjusted in the highest position

EN12227
600 mm

Footholds
4 triangles corresponding to a width of 5 mm minimum

ASTM F406/1169
558 mm over bed base → 508 mm with mattress
127 mm over bed base when side adjusted in the lowest position without mattress （moveable sides）
228 mm over bed base when side is adjusted in the highest position with mattress （stationary sides）

Toe hold
10 mm

Height of product, footholds

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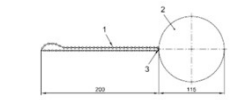
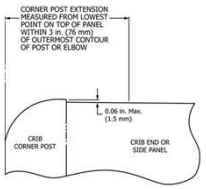
Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

EN716/EN12227
Ball chain loop and spherical mass



ASTM F406/ASTM F1169
Measure of corner posts



Entanglement / Snagging hazards

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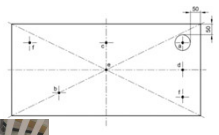
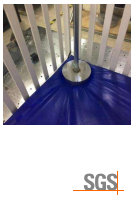
Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

- 10 kg
- 1000 cycles (not more than 30 cycles per minute)
- Height : 150 mm;
- 6 points




Mattress Support System Vertical Impact Test （Rigid Sided Units）：
- 20 kg;
- Height:150mm;
- 150 times at center and each corner at a rate of one impact every 4 s.




Strength of the base

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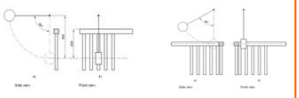
Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

- Static load test of side slats: 250N, 30s
- Strength of sides or side slats (impact test):
  2 kg
  10 times on each slat
- Strength of corners (impact test): 5 impacts from inside the cot and 5 impacts from outside



- Impact test
  Weight 13.6-kg
  Height of fall : 76 mm
  Frequency: 250 times at a rate of 4±1s/cycle
- Crib Side Static Test
  Weight 45.4 kg at the point of impact test
  Duration: 30 s
- Crib Side Spindle/Slat Torque Test
  Torque of 3.4 Nm at the midpoint in height each
- Spindle or slat strength:
  355.8 N at the midpoint of 25% of the spindle/slat.
  If one fails but the force is over 266,9 N test another 25%


Strength of slats

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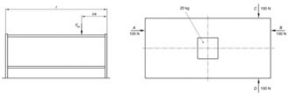
Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

- Vertical static load test:
  300 N, 10 times
- Durability test
  100 N, 2000 times on each point



- Cyclic Test for Rigid Sided Units:

Load : 120 ± 9 N;
Frequency: no less than 155 ± 5 cycles per minute;
Cycles : 9000 for each side and each direction
a. Horizontal cyclic test
b. Vertical cyclic test

Strength of frame and fastenings

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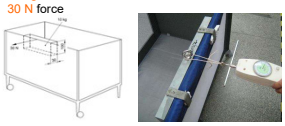
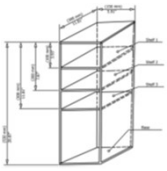
Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

Adjust the cot base to its highest position
10 kg
30 N force



23kg
10° inclined platform



Stability

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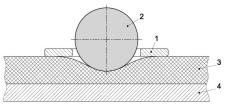
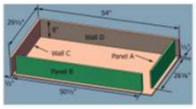
Full-size and non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

If a mattress is provided it needs to comply with EN16890



Non-Full-Size Cribs
Each product SHALL be sold with the mattress included AND need to comply to the requirement of ASTM F2933

Mattress Dimensional requirement
Apply 7 lbf (31.1 N) force to Panel A, 14 ± 1 lbf (62.3 ± 4.4 N) force to Panel B to measure



Mattress

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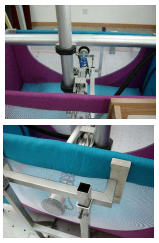
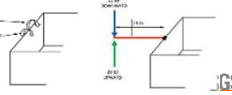
Non-full-size baby cribs / Cots, Playpens / Play Yards : Safety Issues and gap analysis of standards

250N, 30s



Sewn Assembly: lock-stitching (child accessible) or a chain stitch (key thread is not accessible to the occupant);
Seam Strength: 130N (D1683/D1683M);
Mesh/Fabric Attachment Strength: 130N, 10s;
Mattress Vertical Displacement: 66N, 133mm;
Top Rail Configuration: The included (inside) angle ≥75°

Top Rail to Corner Post Attachment:



Mesh/Fabric

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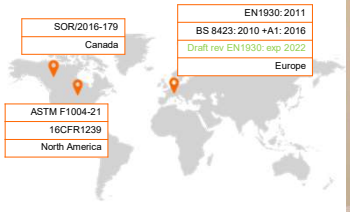
Safety gates, expandable enclosures



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Safety gates, expandable enclosures: Safety Issues and gap analysis of standards

SCOPES

EN1930
Domestic indoor use which are designed to be fitted across openings to limit a child's access inside the home and to prevent young children up to 24 months of age passing through.

(*) The standard does not address :

ASTM F1004
Expansion gates and expandable enclosures, or by any other name, which are in the scope of this consumer safety specification are intended for young children aged six months through 24 months

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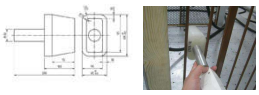
Safety gates, expandable enclosures: Safety Issues and gap analysis of standards

EN1930

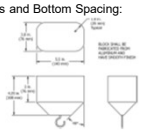
Prevent finger entrapment: 7mm, 12mm
Other gaps (body): hip probe 65 mm
Force 30N for 3 s



* Probe made of polyoxymethylen (POM)

ASTM F1004

Prevent finger entrapment 5,33mm and 9,53 mm
Completely-bounded Openings and Bottom Spacing:
Small torso template, 111N



Partially-bounded Openings at the Uppermost Edge:
Test Template B

Gaps and openings, entrapment hazard

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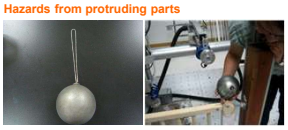
Safety gates, expandable enclosures: Safety Issues and gap analysis of standards

EN1930

Hazards from protruding parts



Toys
Safety barriers shall NOT incorporate toys

ASTM F1004
/

Protruding hazard

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Safety gates, expandable enclosures: Safety Issues and gap analysis of standards

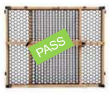
EN1930

Height : 650 mm under 250 N

Footholds
4 triangles corresponding to a width of 5 mm minimum

ASTM F1004

Height: 560 mm under 200N



Height and locking mechanism

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Safety gates, expandable enclosures: Safety Issues and gap analysis of standards

EN1930

Opening and closing system

1. at least two consecutive actions are required to release the opening system or
2. at least two separate but simultaneous actions are required to release the opening system operating on different principles

Automatic closing systems tested in any position to check effectiveness.

*3. an opening system that is positioned at a minimum height of 120 cm above the floor

ASTM F1004

Locking mechanism:
1) *Pressure-Mounted Gates*
2) *Units with Egress Panels*
3) *Automatic Closing Systems*

Height and locking mechanism

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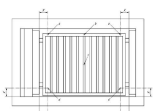
Safety gates, expandable enclosures: Safety Issues and gap analysis of standards

EN1930

Rattle test : 1000 Cycles, 120 $^{+5}_{0}$ RPM

Push –pull test : 10000cycles, (140 ± 10) N in each direction, 0,5$^{+0,05}_{0}$Hz

Impact test 10 kg



* Improvement of the description of test frame

ASTM F1004

Horizontal Push-Out:
Average push-out force>133N
Push-out of each point force>89N

Effectiveness/ strength and durability test

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Thank you for listening

- Enter your questions in the Q&A box
- Let us hear your thoughts by answering the polls by the end of Q&A

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