



Windows



Railings



Gates & Stairs



Playgrounds

Head Entrapment

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There are 2 main risks with spaces:

- Falls
- Entrapment (fingers, neck, head)

This presentation focuses on Head Entrapment.

References

To understand the best practices for childproofing, we will reference the following:

- Baby Gate Instructions
- Crib Standards
- Building Codes
- ASTM F1004 for Baby Gates *
- ASTM F2090 for Window Fall Prevention Devices *
- Playground Standards

* ASTM (originally known as the American Society for Testing and Materials) is now ASTM International (go to www.astm.org to purchase standards)

Gate Instructions

- Gates that are JPMA Certified will follow ASTM F1004
 - This standard is for young children, ages 6 months – 2 years.
- Some gates/gate instructions will follow the European gate standard (EN 1930).
- As installers, it is important to follow the manufacturers' instructions.
- The challenge is the instructions are for installation on 2 flat surfaces like a doorway.

JPMA = Juvenile Products Manufacturers Association. For more information, visit www.jpma.org.

Crib Standards

- Crib Standards (Federal and ASTM)
 - 2 3/8" (soda can test) maximum spacing allowed.
 - Spacing is smaller than some of the other references because cribs are for infant use.

Building Codes

- Building Codes are NOT **child safety** codes and may not be the best reference for best practice for all spacing issues for childproofing/home safety.
 - Useful for railings *as one reference* for educating parents about risks.
 - Most are based on spacing of less than 4 inches.
 - Not the best reference for baby gates and risks for infants and toddlers.

ASTM F1004-13 for Gates*

- Baby gates that are JPMA Certified are required to follow ASTM F1004 so instructions will follow this standard.
- Not all gates are JPMA certified (pet gates).
- For ages 6 months – 2 years.
- Openings should not allow the passage of the ASTM F1004 Small Torso Template A (3 inches x 5.5 inches).

* F1004-13 = the last two numbers show the year of the latest revision of the standard (2013)

ASTM F1004 History

According to F1004:

“The Small Torso Template was modified in 2000 to address incidents of children passing through gate openings feet first and becoming entrapped by the head.”

Gate Modifications



Space between wall and 1st vertical rail is over 3 inches.

These would not follow spacing requirements in F1004 tested with the Small Torso Template 3" x 5.5".



Space between wall and 1st vertical rail is over 3 inches.

Most manufacturers design pressure pads so they can't be extended this far.

The Cat!

- It is very difficult to meet the needs of a child AND the needs of the cat when childproofing. As childproofers, we need to meet the needs of the child.
- Gates installed 5” from the floor will not follow:
 - The Manufacturer’s Instructions
 - ASTM F1004 for Baby Gates
 - JPMA Certification

Window Devices

ASTM F2090

- With emergency escape (egress) release mechanisms
- Limits all spacing to less than 4 inches.
- For children: Ages 5 and under.
- 4 inches is from related building codes and standards for guardrails.



ASTM F2006 Standard Safety Specification for Window Fall Prevention Devices for Non-Emergency Escape (Egress) and Rescue (Ingress) Windows. This safety specification applies only to devices intended to be applied to windows installed at heights of more than 75 ft (23 m) above ground level in multiple family dwelling buildings. This safety specification is not intended to apply to windows below 75 ft (23 m) because all windows below 75 ft (23 m) that are operable could be used as a possible secondary means of escape. The standard has the same spacing (less than 4") and intended age of use (ages 5 and under) as F2090.

Playground Safety

CPSC standards for public playgrounds address kids **6 months - 12 years old***

- **6-23 month** old play areas:
 - Play areas are tested with Toddler Small Torso Template (3" x 5" oblong) and possibly the Large Head Template (9" diameter circle)
 - The goal is for spaces to be smaller than 3 inches or larger than 9 inches to prevent head entrapment.
- **2-5 yr old and 6-12 year old** play areas:
 - Pre-school and school-age areas are tested with Small Torso Template (3.5" x 6.2" oblong) and possibly with the Large Head Template (9" diameter circle).
 - The goal is for spaces to be smaller than 3.5 inches or larger than 9" to prevent head entrapment.
- Different requirements are in place to prevent falls from guardrails.



[Public Playground Safety Handbook](#)

*CPSC 3.3 and B.2.4 address entrapment

Neck Entrapment

- ASTM F1004 has test requirements to prevent neck entrapment for partially bounded openings. There is another template in the standard to test for this.
- **Partially-bounded opening** is defined in ASTM F1004 as “an opening in the main structure of a product that is not enclosed totally by boundaries on all sides.” (Examples: V-shape in the top of an accordion gate or a rectangular notch resulting from a gap between a wall and a gate.)

Best Practice Tips (related to neck entrapment *)

- Gate mounts and modifications should be at least as tall as the height of the GATE.
- If the gate mount is shorter than the gate, you run the risk of the gate no longer passing ASTM F1004.
- Reminder, the gate instructions are designed for two tall hard flat surfaces like a doorway.

*For additional information, please review ASTM F1004 available for purchase at www.astm.org).

Conclusion

Because we are dealing with very young children (and their siblings), best practice involves using the appropriate references.

For baby gates – best practice is ASTM F1004.

Use the ASTM Small Torso Template A with gates (3" x 5.5").

Spacing References

Topic	Age Group	Maximum Spacing	Standard for Children
Playgrounds	6-23 months	Under 3 inches (or over 9 inches for ladders) *	ASTM F2373
Playgrounds	2-12 years	Under 3.5 inches (or over 9 inches for ladders) *	ASTM 1487
Gates	6-24 months	Less than 3 inches	ASTM F1004
Cribs	Birth – 35"	2 3/8 inches	ASTM & Federal
Window Guards	Under 5 years	Less than 4 inches	ASTM F2090, F2006
Building codes	NA	Less than 4 inches	Not a child safety code

* Please review the standard for more details on spacing requirements for ladders and other structures. This presentation focuses on Head Entrapment.

Questions

Q: If the space between the balusters on a railing is almost 4 inches, do I need to recommend a banister guard?

A: You should have a discussion with them about banister guards. This is not an easy Yes or No answer. Best practice would involve an explanation to your client about multiple references for spaces. Explain that most building codes require a spacing less than 4 inches but building codes are not designed for small children. **It is possible that a small child could fall or become entrapped in a 4 inch space. Reminder: sometimes their bodies fit through a railing but their head becomes entrapped.** Also, explain the playground reference is 3 inches for 6-24 months and 3.5 inches for 2-12 year olds. Remind them about supervision and how quickly children find trouble. Parents may choose to add a banister guard. Document your discussion in your notes.

Questions

Q: If the spacing between the balusters on the railing is 5 inches, do I recommend a banister guard?

A: Yes.

Q: If the spacing is over 4 inches, do I recommend a banister guard?

A: Yes.

Q: If the spacing is 3.75 inches, do I recommend a banister guard?

A: You should discuss banister guards. Have a discussion with them about the playground safety references.

When installing the banister guard, please insure that you do not create a hazard with a new space. For example, if the height of your railing guard does not meet the horizontal top handrail, you may have a potentially dangerous gap between the top of the railing guard and the bottom of the horizontal handrail.

Questions

Q: I thought the old spacing for gates was based on 4 inches. Did it change?

A: In 2000, ASTM changed the standard to 3 inches. Even before the change, some gates did not allow 4 inches and had stricter spacing requirements with installation.

Note: Limbs could still become entrapped in the spacing between vertical bars/rails, similar to a crib. The spacing requirements and templates do not prevent ALL types of entrapment

Questions

Q: Where do you learn more about the ASTM standards?

A: Members can purchase ASTM standards at www.astm.org. The IAFCS is not permitted to distribute copies of the standard because of strict copyright requirements from ASTM.

Questions

Q: What spacing do we follow for installation of Bedrails?

A: Please refer to the Manufacturer's instructions for assembly, installation and use.

BEDRAILS ARE NOT DESIGNED FOR BABIES – THEY ARE DESIGNED FOR CHILDREN OVER 2 YEARS OLD.

Questions

Q: Should IAFC members inspect outdoor play equipment?

A: You may not be an expert on outdoor safety. For inspecting outdoor play equipment, check out the certification program: <http://www.playgroundsafety.org>

There are many issues besides head entrapment and spacing. The age of children and the age of the equipment are factors that should be considered.

There are some simple playground safety tips that you can provide parents:

<http://www.injuryfree.org/resources/PlaygroundInjuryPreventionChecklist.pdf>

<http://www.cpsc.gov/cpsc/pub/pubs/pg1.pdf>

[CPSC Resources](#)

One recent revision to the playground standards: monkey bars should not have swings, etc. hanging from them. Children have received serious injuries when falling from monkey bars onto swings, etc.