



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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This document has been electronically
approved and signed.

DATE: May 27, 2020

BALLOT VOTE SHEET

TO: The Commission
Alberta E. Mills, Secretary

THROUGH: John G. Mullan, General Counsel
Mary T. Boyle, Executive Director

FROM: Hyun S. Kim, Acting Assistant General Counsel, Regulatory Affairs
Mary A. House, Attorney, Regulatory Affairs

SUBJECT: Final Rule: Safety Standard for Gates and Enclosures

BALLOT VOTE DUE Tuesday, June 2, 2020

Staff is forwarding a briefing package to the Commission, recommending that the Commission publish in the *Federal Register* the attached draft final rule establishing a consumer product safety standard for gates and enclosures. Pursuant to section 104 of the Consumer Product Safety Improvement Act of 2008 (CPSIA), the draft final rule would incorporate by reference the most recent voluntary standard, ASTM F1004-19, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures*, as the mandatory federal safety standard for gates and enclosures that fall within the scope of ASTM F1004-19. Staff recommends that the final rule include the following two alternative requirements for pressure-mounted gates that would make the standard more stringent, to further reduce the risk of injury associated with children knocking down or pushing through incorrectly installed pressure-mounted gates:

- (1) for pressure-mounted gates that include wall cups with the product to meet a 30-pound push-out force test in the standard, the gates must include a separate warning label in a conspicuous location on the top rail of the gate regarding correct installation using wall cups, or
- (2) for pressure-mounted gates that do not use wall cups to meet a 30-pound push-out force test in the standard, the gates must use visual side-pressure indicators to provide consumers feedback as to whether the gate is correctly installed.

Additionally, the draft final rule amends the Commission's regulation regarding third party conformity assessment bodies to include the mandatory standard for gates and enclosures in the list of notices of requirements issued by the Commission. The Office of the General Counsel is providing the attached draft final rule for the Commission's consideration.

Consumer Hotline and General Information: 1-800-638-2772 ★ CPSC's Web Site: <http://www.cpsc.gov>

Please indicate your vote on the following options:

- I. Approve publication of the attached document in the *Federal Register*, as drafted.

(Signature)

(Date)

- II. Approve publication of the attached document in the *Federal Register*, with the specified changes:

(Signature)

(Date)

- III. Do not approve publication of the attached document in the *Federal Register*.

(Signature)

(Date)

- IV. Take other action specified below:

(Signature)

(Date)

Attachment: Draft *Federal Register* Notice: Final Rule establishing a Safety Standard for Gates and Enclosures

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Billing Code 6355-01-P

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Parts 1112 and 1239

Docket No. CPSC-2019-0014

Safety Standard for Gates and Enclosures

AGENCY: Consumer Product Safety Commission.

ACTION: Final rule.

SUMMARY: Pursuant to the Consumer Product Safety Improvement Act of 2008 (CPSIA), the U.S. Consumer Product Safety Commission (CPSC) is issuing this final rule establishing a safety standard for gates and enclosures that are intended to confine a child. The CPSC is also amending its regulations regarding third party conformity assessment bodies to include the safety standard for gates and enclosures in the list of notices of requirements (NORs).

DATES: This rule will become effective [INSERT DATE 12 MONTHS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. The incorporation by reference of the publication listed in this rule is approved by the Director of the Federal Register as of [INSERT DATE 12 MONTHS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

FOR FURTHER INFORMATION CONTACT: Justin Jirgl, Compliance Officer, U.S. Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; telephone: 301-504-7814; e-mail: jjirgl@cpsc.gov.

SUPPLEMENTARY INFORMATION:

I. Background and Statutory Authority

Section 104(b) of the CPSIA, part of the Danny Keysar Child Product Safety Notification Act, requires the Commission to: (1) examine and assess the effectiveness of voluntary consumer

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product safety standards for durable infant or toddler products, in consultation with representatives of consumer groups, juvenile product manufacturers, and independent child product engineers and experts; and (2) promulgate consumer product safety standards for durable infant and toddler products. Standards issued under section 104 of the CPSIA are to be “substantially the same as” the applicable voluntary standards or more stringent than the voluntary standard, if the Commission determines that more stringent requirements would further reduce the risk of injury associated with the product.

The term “durable infant or toddler product” is defined in section 104(f)(1) of the CPSIA as “a durable product intended for use, or that may be reasonably expected to be used, by children under the age of 5 years,” and the statute specifies 12 categories of products that are included in the definition. Section 104(f)(2)(E) of the CPSIA specifically identifies “gates and other enclosures for confining a child” as a durable infant or toddler product. Additionally, the Commission’s regulation requiring product registration cards defines “gates and other enclosures for confining a child” as a durable infant or toddler product subject to the registration card rule. 74 FR 68668 (Dec. 29, 2009); 16 CFR 1130.2(a)(5).

As required by section 104(b)(1)(A) of the CPSIA, the Commission consulted with manufacturers, retailers, trade organizations, laboratories, consumer advocacy groups, consultants, and the public to develop this rule, largely through ASTM’s standard development process. On July 8, 2019, the Commission issued a notice of proposed rulemaking (NPR) for gates and enclosures.¹ 84 FR 32346. The NPR proposed to incorporate by reference the voluntary standard developed by ASTM International, ASTM F1004-19, *Standard Consumer*

¹ Staff’s June 19, 2019 Briefing Package for the NPR (Staff’s NPR Briefing Package) is available at: <https://www.cpsc.gov/s3fs-public/Proposed%20Rule%20-%20Safety%20Standard%20for%20Gates%20and%20Enclosures%20-%20June%202019%202019.pdf>.

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Safety Specification for Expansion Gates and Expandable Enclosures (ASTM F1004-19).

Additionally, the NPR stated that the Commission agreed that a new requirement in ASTM F1004-19 that all gates, including pressure-mounted gates, meet a 30-pound push-out force test at five test locations, will improve children's safety if the gate is installed correctly. 84 FR at 32351. The NPR discussed concerns with consumer awareness of correct pressure-mounted gate installation, and discussed improvements to ASTM F1004-19 to increase consumer awareness, including the use of visual side-pressure indicators and a separate warning label along the top rail of the gate. *Id.* at 32351-52. The NPR stated that staff would continue to work with ASTM to improve consumer awareness of the importance of proper installation of pressure-mounted gates, and requested comment on improved warnings and visual side-pressure indicators. *Id.* The Commission did not receive any comments.

Since publication of the NPR, CPSC staff has continued to work with the ASTM subcommittee on gates and enclosures on visual side-pressure indicators and a separate warning label, as outlined in the NPR. Although the ASTM standard has not yet been updated, the ASTM subcommittee is moving forward to include a separate warning label (for pressure-mounted gates that rely on the use of wall cups to meet the 30-pound push-out force test), and has started moving forward to include visual side-pressure indicators (for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test) to improve correct installation of pressure-mounted gates. Accordingly, for the final rule setting a safety standard for gates and enclosures, the Commission incorporates by reference ASTM F1004-19, with the following additional requirements, depending on the design of a pressure-mounted gate, to further reduce the risk of injury associated with incorrectly installed pressure-mounted gates:

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- (1) for pressure-mounted gates that include wall cups with the product to meet the 30-pound push-out force test,² the gates must include a separate warning label in a conspicuous location on the top rail of the gate regarding correct installation using wall cups, or
- (2) for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test, the gates must use visual side-pressure indicators to provide consumers feedback as to whether the gate is correctly installed.

Under section 14 of the CPSA, the Commission promulgated 16 CFR part 1112 to establish requirements for accreditation of third party conformity assessment bodies (or testing laboratories) to test for conformity with a children’s product safety rule. The final rule amends the list of notices of requirements (NORs) issued by the Commission in 16 CFR part 1112 to include the safety standard for gates and enclosures.

CPSC staff’s briefing package supporting this rule (Staff’s Final Rule Briefing Package), is available at: [\[Insert Link\]](#).

II. Product Description

A. Definition of “Gates and other Enclosures”

ASTM F1004–19 defines an “expansion gate” as a “barrier intended to be erected in an opening, such as a doorway, to prevent the passage of young children, but which can be removed by older persons who are able to operate the locking mechanism” (section 3.1.7). ASTM F1004–19 defines an “expandable enclosure” as a “self-supporting barrier intended to completely surround an area or play-space within which a young child may be confined” (section 3.1.6). These products are intended for young children age 6 months through 24 months (section 1.2).

² Note that section 6.7 of ASTM F1004-19 already requires that pressure-mounted gates that rely on the use of wall cups to meet the 30-pound push-out force test in section 6.3 of the standard to include the wall cups and necessary hardware to install them in the product packaging.

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Although the title of the ASTM F1004–19 standard and its definitions include the word “expansion” and “expandable” before the words “gate” and “enclosure,” respectively, the scope of the ASTM F1004–19 standard includes all children’s gates and enclosures, whether they expand or not. ASTM F1004–19 covers: “[p]roducts known as expansion gates and expandable enclosures, *or by any other name,*” (section 1.2, emphasis added).³ Both expandable gates and non-expandable gates may serve as barriers that are intended to be erected in an opening, such as a doorway, to prevent the passage of young children. Both expandable enclosures and non-expandable enclosures may serve as barriers intended to surround an area or play-space completely to confine young children. Similarly, all children’s gates and enclosures, whether they expand or not, can be removed by older persons who are able to operate the locking mechanism.

CPSC staff’s review of enclosures shows that all enclosures are expandable. Staff’s review of gates showed that there are some non-expandable, fixed-sized gates available for sale.⁴ However, most of the gates and enclosures sold in the United States that are intended for children expand because they vary in width (for gates) or shape (enclosures). CPSC staff’s review of hazard patterns indicates that all children’s gates and enclosures present the same hazards, whether they expand or not. These hazards include injuries caused by hardware-related issues, slat problems, poor quality materials and finish, design issues, and installation problems.

This final rule addresses all children’s gates and enclosures intended for confining a child, including non-expandable, fixed-sized gates and enclosures. The scope of the rule includes all products within ASTM F1004-19.

³ Gates or enclosures for non-domestic use (such as commercial or industrial), and those intended for pets only, are not covered under the scope of ASTM F1004-19.

⁴ The majority of non-expandable, fixed-size gates are sold by home-based manufacturers with very low sales volumes.

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Gates and enclosures may be made of a wide range of materials: plastic, metal, wood, cloth, mesh, or combinations of several materials. Gates typically have a means of egress that allows adults to pass through them, but some enclosures also have a means of egress (*i.e.*, some self-supporting barriers have egress panels that resemble gates). Gates may be hardware-mounted, pressure-mounted, or both. Hardware-mounted gates generally require screws and cannot be removed without tools. Pressure-mounted gates attach like a pressure-fit curtain rod, using pressure on each end to hold the gate stable. They are intended for consumers who prefer to be able to move their gate, or who do not want to mark their walls permanently. Mounting cups can be attached to one or more locations, and the gate can be removed, as needed, or moved to other locations.

B. Market Description

Approximately 127 firms supply gates and enclosures to the U.S. market. The majority of suppliers to the U.S. market are domestic, including domestic importers of gates manufactured elsewhere. About 80 very small, home-based domestic gate manufacturers exist, as well as 37 domestic entities that are considered small based on the U.S. Small Business Administration (SBA) guidelines. The remaining 10 suppliers that are not small domestic businesses include four large domestic firms and six foreign firms. In 2013, approximately 11.1 million gates/enclosures were in use in U.S. households with children under the age of 6, according to the CPSC's 2013 Durable Nursery Product Exposure Survey (DNPES).

Gates and enclosures vary widely in price. Consumers can purchase simple plastic or wooden pressure-mounted gates for as little as \$10, while hardware-mounted gates with multiple extensions, and gates intended for daycare use, can cost as much as \$700. Most gates retail for \$25 to \$200. Retail prices for enclosures and modular products that can operate as an enclosure

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or a gate range from \$60 to \$550. Fabric gates made by home-based manufacturers typically cost under \$50, while custom-made wooden gates by home-based manufacturers can run more than \$500 for gates with solid hardwood panels and decorative metal elements. Pressure-mounted gates, particularly hard plastic-molded gates, tend to be the least expensive gates and are sometimes marketed as travel gates. Hardware-mounted gates tend to be slightly more expensive than pressure-mounted gates, although there are many hardware-mounted gates available for less than \$40.

The least expensive pressure-mounted gates are a popular choice with consumers, but price may not be the predominant criterion for many customers. Out of several hundred models of gates available on the site of one prominent Internet retailer in January 2020, the 10 best-selling baby safety gates ranged in price from \$12 to \$85. On another major big box store website, the top 10 best-selling gates ranged in price from \$17 to \$100. In both cases, the best-selling gates included hardware-mounted gates and pressure-mounted gates. All of the best-selling gates were from suppliers that currently claim both ASTM compliance and JPMA certification.

III. Incident Data

A. CPSRMS Data

CPSC staff reviewed incident data associated with children's gates and enclosures as reported through the Consumer Product Safety Risk Management System (CPSRMS).⁵

Although gates and enclosures are intended for use with young children between the ages of 6

⁵ CPSC staff searched the CPSC database CPSRMS. Reported deaths and incidents are neither a complete count of all that occurred during this time period, nor a sample of known probability of selection. However, the reported incidents provide a minimum number of deaths and incidents occurring during this period and illustrate the circumstances involved in the incidents related to children's gates and enclosures.

Staff also reviewed national injury estimates, discussed below in III.B of this preamble.

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months and 24 months, interaction with the gates and enclosures with older siblings and adult caregivers is a foreseeable use pattern, and adults are required to install such products securely to prevent injuries. CPSC staff reviewed the incident data involving older children and adults to determine hazard patterns. However, staff reported incident data in the NPR and this final rule only for *injuries* sustained by children younger than 5 years of age. Gates and enclosures are not intended for children older than 23 months, and the statutory definition of “durable infant or toddler products” states that the products are “intended for use, or that may be reasonably expected to be used, by children under the age of 5 years.” Section 104(f)(1) of the CPSIA.

The NPR stated that the Commission was aware of 436 incidents in the CPSRMS data, including 108 reported injuries and 19 reported fatalities involving child gates and enclosures, occurring from January 1, 2008 to October 31, 2018. Since that data extraction, CPSC staff identified an additional 42 incidents in the CPSRMS data, occurring from November 1, 2018 to January 7, 2020, including four reported injuries and three reported fatalities. Accordingly, for the final rule, the Commission is aware of 478 incidents in the CPSRMS data, including 112 reported injuries and 22 fatalities involving gates and enclosures, which occurred from January 1, 2008 to January 7, 2020. Because reporting is ongoing, the number of reported incidents during this period may change in the future.

1. Fatalities

The Commission is aware of 22 deaths that occurred between January 1, 2008 and January 7, 2020. The NPR discussed 19 deaths, stating that 17 of the deaths were associated with the use of a gate, while two were associated with an enclosure. Fifteen of the 19 decedents discussed in the NPR drowned, 13 in a backyard pool, one in a backyard hot tub, and one in a 5-gallon bucket of water inside the house. In these incidents, the decedents managed to get past

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the gate/enclosure when it was left open or somehow was opened without the caregiver's knowledge (10 incidents); the gate/enclosure was knocked down or pushed out by the decedent because of incorrect or unsecured installation (4 incidents); or the decedent climbed over the gate/enclosure (1 incident). The decedents ranged in age from 9 months to 3 years. 84 FR at 32347.

CPSC staff identified three additional fatal incidents since the NPR, reported to have occurred during the period November 1, 2018 to January 7, 2020. All three incidents involved a gate. The new fatalities include: a 2-year-old who drowned after climbing out of a crib, knocking over a baby gate, pushing open a living room door, and gaining access to an in-ground pool; a 23-month-old who suffocated in a gate opening while attempting to climb out of a crib after a baby gate was placed over the crib; and a 2-year-old who suffered asphyxiation after her neck was caught between a baby gate, fabric sheet, and door frame.

2. Nonfatalities

The NPR described 417 nonfatal incidents, and CPSC is aware of an additional 39 nonfatal incidents since the NPR, for a total of 456 nonfatal incidents that reportedly occurred between January 1, 2008 and January 7, 2020. Of the total 456 nonfatal incidents reported, 134 incidents described an injury to a child younger than 5 years of age.

The NPR stated that three of the nonfatal injuries reportedly required hospitalization and two additional injuries needed overnight observation at a hospital. Among the hospitalized were a 2-year-old and an 18-month-old, who each suffered a near-drowning episode, and another 2-year-old ended up in a coma following a fall when she pushed through a safety gate at the top of stairs. Of the two children who were held at a hospital for overnight observation, one fell down stairs when a safety gate collapsed, and the other swallowed a bolt or screw that liberated from a

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gate. 84 FR at 32347-48. Since the NPR, CPSC is not aware of any additional hospitalizations associated with the use of gates or enclosures.

The NPR stated that 15 additional children were reported to have been treated and released from a hospital emergency department (ED). Their injuries included: (a) finger fractures, amputations, and/or lacerations usually from a finger getting caught at the hinge; and (b) near-drowning, poison ingestion, arm fracture, thermal burn, head injury, or contusions. *Id.* Since the NPR, CPSC is not aware of any additional children who were treated and released from a hospital ED associated with the use of gates or enclosures.

Among the remaining injury reports described in the NPR, some specifically mentioned the type of injury, while others only mentioned an injury, but no specifics about the injury. Head injuries, concussions, teeth avulsions, sprains, abrasions, contusions, and lacerations were some of the common injuries reported at the time of the NPR. *Id.* Since the NPR, four of the additional 39 nonfatal incidents reported an injury to a child younger than 5 years of age. Two reported injuries involved falls related to the failure or collapse of gates and enclosures, resulting in one child bumping her face on the floor after mounting an enclosure that collapsed under her weight, and one child sustaining minor bruises after falling down 14 steps when a gate failed. In two additional reported injuries, children caught their fingers in the gaps of a gate, resulting in a swollen finger, and another child who almost broke his finger in the clasp used to latch a gate.

The remaining 344 nonfatal incidents associated with gates and enclosures that occurred from January 1, 2008 through January 7, 2020, reported that no injury had occurred to a child younger than 5 years of age, or provided no information about any injury. However, staff found that many of the incident descriptions indicated potential injury or death resulting from sharp edges, pinching, falls, entrapments, and choking.

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B. National Injury Estimates

CPSC staff also reviewed injury estimates from the National Electronic Injury Surveillance System (NEISS), a statistically valid injury surveillance system.⁶ NEISS injury data are gathered from EDs of hospitals selected as a probability sample of all the U.S. hospitals with EDs. As described in the NPR briefing package, staff estimated that a total of 22,840 injuries (sample size=820, coefficient of variation=0.10) related to safety gates and enclosures were treated in U.S. hospital emergency departments from 2008 to 2017. Using NEISS data finalized in spring 2019, staff's update includes injury estimates for 2018, resulting in an estimated total of 25,430 injuries (sample size=928, coefficient of variation=0.11) related to safety gates and enclosures treated in U.S. hospital emergency departments from 2008 to 2018. Staff did not observe a statistically significant trend for this period.

Staff found no recorded fatalities in NEISS. Ninety-five percent of children who went to a hospital ED were treated and released. The breakdown by age in the NEISS data indicates: 18 percent of all children were under 1 year old; 40 percent were at least 1 year old, but less than 2 years old; and 42 percent were more than 2 years old, but less than 5 years old. Due to the limited information from NEISS injury descriptions, which are brief and injury-focused, staff could not feasibly characterize hazard patterns similar to the characterization provided in section IV of this preamble for CPSRMS incident data. Based on the limited information provided, staff found the most frequent NEISS injury characteristics:

- *Hazard* – falls (58 percent) and impact on gate/enclosure (30 percent) were the most common. Approximately 11 percent of the impact injuries occurred when a child on a flight of steps fell and hit a safety gate at the bottom of the stairs. Most of the falls occurred:

⁶ According to the NEISS publication criteria, to derive a reportable national estimate, an estimate must be 1,200 or greater, the sample size must be 20 or greater, and the coefficient of variation must be 33 percent or smaller.

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- when a child attempted to climb over or get through a barrier;
 - when a child managed to unlatch a gate/enclosure;
 - when a gate failed to stay upright and locked;
 - when a child-carrying-adult tripped over a gate/enclosure; or
 - when a child pulled on a gate/enclosure.
- *Injured body part* – head (39 percent), face (21 percent), and mouth (10 percent).
 - *Injury type* – lacerations (28 percent), internal organ injury (24 percent), and contusions/abrasions (18 percent).

IV. Hazard Pattern Identification

In the NPR briefing package, staff reviewed the CPSRMS data and identified hazard patterns for the 436 reported incidents (19 fatal and 417 nonfatal) associated with the use of safety gates and enclosures. For the final rule, staff reviewed and incorporated the additional 42 incidents found in the CPSRMS data since the NPR, for a total of 478 reported incidents (22 fatal and 456 nonfatal, including 112 reported injuries) associated with the use of gates and enclosures that occurred from January 1, 2008 to January 7, 2020. Staff found that the hazard patterns largely followed those described in the NPR, except no new incidents were identified in the following categories: *miscellaneous other issues and consumer comments, climb-over, caregiver mis-step, repaired/modified, or undetermined* issues. Staff grouped the hazard patterns into three categories: product-related, non-product-related, and undetermined. Most of the identified hazard patterns (95%) are product-related hazards. A description of the staff-identified hazard patterns, in order of descending frequency, follows.

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A. *Product-Related*

- **Hardware issues:** Of the 478 incidents, 183 (38%) reported hardware-related problems.

These problems were due to:

- lock/latch hardware (*e.g.*, lock or latch breaking, not latching correctly, opening too easily, or getting stuck);
- hinge hardware (mostly breaking and causing the gate to fall off);
- mounting hardware (mostly breaking and causing gate to fall off); or
- other hardware, such as a slide guide, or a swing-control clip, breaking or coming loose, or a suction cup coming loose.

These hardware failures were associated with 39 injuries, including bruises, contusions, lacerations, head injuries, and two fractures; five of the injuries were treated in a hospital ED, and one needed overnight observation at a hospital.

- **Slat problems:** Of the 478 incidents, 109 (23%) reported slats breaking or detaching from the safety gate or enclosure, or splitting. Sixteen injuries were reported in this category, resulting in contusions/abrasions or lacerations. Once the slat(s) broke, the child got injured on it, fell forward through the gap created, or lost balance and fell backwards. One injury incident resulted in treatment at a hospital ED.

- **Poor quality material and finish:** Of the 478 incidents, 58 (12%) reported problems with small parts liberating, splintered welding, sharp edges and protrusions, rails bending out of shape, fabric/mesh panels sagging, and poor quality of stitching on fabric panels. Eighteen injuries, mostly lacerations and abrasions, were reported in this category.

- **Design issues:** Of the 478 incident reports, 49 (10%) indicated some problems with the design of the gate or enclosure. The reported problems involved:

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- opening sizes between slats or enclosure panels that allowed, or could allow, entrapment of a child's limb or head;
- pinch-points created near an L-shaped clasp on a gate, and during the sliding action of a door on a gate or enclosure;
- a specific design, which created a foot-hold that a child could use to climb over the safety gate;
- a specific design that posed a trip hazard when the gate was in the open position;
- a gate's retraction system, where the gate fails to retract correctly after installation;
- drilled holes used for connecting gates, which allowed plastic shavings to accumulate;
- or
- a specific design involving rails at the bottom of a gate at several different heights, posing a trip hazard.

Staff identified 21 injuries and one death in this category. The injuries included swollen or pinched fingers from inserting them into openings of a gate; three fractures of the finger and one severed fingertip, all treated at a hospital ED. The death resulted from entrapment in a gate, fabric sheet, and door frame.

- ***Installation problems:*** Of the 478 incident reports, 21 (4%) indicated problems with installation due to:

- unclear installation instructions;
- mismatched dimensions between the safety gate and the doorway/hallway opening; or
- unknown reasons; in these cases, the gate/enclosure was reported to have been installed, but was “pushed out,” “pulled down,” or “knocked down.”

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Five drowning fatalities were reported in this category. In addition, staff identified four nonfatal injuries: one a hospitalization of a comatose child; another child treated and released from a hospital ED following a near-drowning episode; and the remaining two, relatively minor laceration/contusion injuries.

- ***Miscellaneous other issues and consumer comments:*** Seven of the 478 incident reports (1%) fall within the miscellaneous category, including three complaints about an ineffective recall remedy, one complaint about poor product packaging, and three consumer concerns about the safety of a specific design. One unspecified injury falls within this category.

- ***Instability issues in enclosures:*** Four of the 478 incidents (< 1%) reported problems with flimsy and/or unstable enclosures that failed to hold together. Two laceration/contusion injuries and one facial injury were reported in this category.

- ***Multiple problems from among the above:*** Twenty-two of the 478 incident reports (5%) described two or more problems from the preceding product-related issues. Two minor injuries were reported in this category.⁷

B. Non-Product-Related

Twelve of the 478 incident reports (3%) described non-product-related issues, such as incorrect use of the product, or the child managing to bypass the barrier altogether. Specifically:

- Four incidents reported the child climbing over the gate/enclosure;
- Three incidents reported caregiver missteps allowing the gate/enclosure not to be secured in place;
- Four incidents reported misuse of gates in a hazardous manner; and

⁷ Redistributing these 22 complaints among the other pertinent subcategories within the product-related issues does not alter the ranking of the listed subcategories. However, the redistribution would result in the within-subcategory incident numbers adding up to *more* than the total number of incident reports. To prevent this occurrence, the 20 incidents were grouped in a separate subcategory.

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- One report involving a gate previously repaired/modified and structurally compromised.

Nine deaths are included in this category: four due to drowning, four due to entrapments, and one due to a TV tip over. Among the three injuries, one required hospitalization following a near-drowning episode, and one fractured arm was treated at a hospital ED; the third injury was a forehead concussion.

C. Undetermined

For 13 of the 478 incident reports (3%), staff had insufficient information on the scenario-specific details to determine definitively whether the product failed or user error resulted in the incident. Accordingly, 13 incidents fall within the undetermined category. Staff found seven drowning deaths reported in this category. Among the five nonfatal injuries, one was a hospitalization due to near-drowning, two were treated at a hospital ED for poisonous ingestion and burn, respectively, and two were minor injuries.

D. Product Recalls

For the NPR, CPSC staff reviewed recalls involving children's gates and enclosures from January 2008 to December 2018. 84 FR at 32349. During that period, CPSC announced five recalls involving baby gates and one recall involving an enclosure. More than 1 million units (1,318,180), associated with 215 incidents and 13 injuries were recalled for the following hazards to children: fall, entrapments, tripping, and lacerations. No additional recalls involving gates or enclosures have occurred since December 2018.

V. Overview of ASTM F1004

A. History of ASTM F1004

The voluntary standard for gates and enclosures was first approved and published in 1986 (ASTM F1004-86, *Standard Consumer Safety Specification for First-Generation Standard*

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Expansion Gates and Expandable Enclosures). Between 1986 and 2013, ASTM F1004 underwent a series of revisions to improve the safety of gates and enclosures and to clarify the standard. Revisions included provisions to address foot-pedal actuated opening systems, warnings, evaluation of all manufacturer's recommended use positions, test fixture improvements, entrapment in openings along the side of the gate, lead-containing substances in surfaces, along with other minor clarifications and editorial corrections.

Beginning in 2014, CPSC staff worked closely with ASTM to address identified hazards and to strengthen the voluntary standard and improve the safety of children's gates and enclosures in the U.S. market. ASTM made revisions through several versions of the standard (ASTM F1004-15, ASTM F004-15a, ASTM F1004-16, ASTM F1004-16a, ASTM F1004-16b, and ASTM F1004-18) to address hazards associated with bounded openings, slat breakage/slat connection failures, mounting/hinge hardware issues, latch/lock failures, pressure gate push-out forces, and warning labels and instructions.⁸ The current voluntary standard is ASTM F1004-19, which was approved on June 1, 2019.

B. Description of the Current Voluntary Standard-ASTM F1004-19

ASTM F1004-19 includes the following key provisions: Scope (section 1), Terminology (section 3), General Requirements (section 5), Performance Requirements (section 6), Test Methods (section 7), Marking and Labeling (section 8), and Instructional Literature (section 9).

Scope. The scope of the standard states that it includes products known as expansion gates and expandable enclosures, or known by any other name, and that are intended for young children age 6 months through 24 months. ASTM has stated that the standard applies to all children's gates, including non-expandable, fixed-sized gates and enclosures.

⁸ A more detailed summary of the changes to ASTM F1004 can be found on page 8 of Staff's Final Rule Briefing Package.

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Terminology. This section provides definitions of terms specific to the standard. For example, section 3.1.7 of the ASTM F1004-19 defines an “*expansion gate*” as a “barrier intended to be erected in an opening, such as a doorway, to prevent the passage of young children (see 1.2), but which can be removed by older persons who are able to operate the locking mechanism.”

General Requirements. This section addresses numerous hazards with general requirements, most of which are also found in the other ASTM juvenile product standards. ASTM F1004–19 contains the following requirements to address safety hazards common to many juvenile products:

- Wood parts
- Screws
- Sharp edges or points
- Small parts
- Openings
- Exposed coil springs
- Scissoring, shearing, and pinching
- Labeling
- Lead in paint, and
- Protective components.

Performance Requirements and Test Methods. These sections contain performance requirements specific to children’s gates and enclosures and the test methods that must be used to assess conformity with such requirements. These requirements include:

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- **Completely bounded openings:** Openings within the gate or enclosure, and completely bounded openings between the gate and the test fixture, shall not permit the complete passage of the small torso probe when it is pushed into the opening with a 25-pound force. This requirement is intended to address incidents in which children were found with their heads entrapped after having pushed their way into gaps created between soft or flexible gate and enclosure components, and between the gate and the sides of passageways to be blocked off, for example, a door frame or wall.

- **Height of sides:** The vertical distance from the floor to the lowest point of the uppermost surface shall not be less than 22 inches when measured from the floor. This requirement is intended to prevent child occupants from being able to lean over, and then tumble over the top of the gate.

- **Vertical strength:** After a 45 pound force is exerted downward along the uppermost top rail, edge, or framing component, gates and enclosures must not fracture, disengage, fold nor have a deflection that leaves the lowest point of the top rail below 22 inches from the ground. For gates, the 45 pound vertical test force is applied five times to the mid-point of the horizontal top rail, surface, or edge of each gate (or each of the top points of a gate that doesn't have a horizontal top edge). This test is carried out with the gate installed at both the maximum and minimum opening widths recommended by the manufacturer. For enclosures, the 45-pound force is applied to every other uppermost rail, surface, or edge, and every other top joint of the enclosure. This requirement is intended to check that gates and enclosures retain child occupants, even when children hang from or attempt to climb up the gates.

- **Bottom spacing:** The space between the floor and the bottom edge of an enclosure or gate shall not permit the complete passage of the small torso probe when it is pushed into the

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opening with a 25 pound force. This requirement is intended to address incidents in which children were found with their heads entrapped under a gate, after having pushed their way, feet first, into gaps created between the gate and the floor.

- **Configuration of uppermost edge:** Partially bounded openings at any point in the uppermost edge of a gate or enclosure that is greater than 1.5 inches in width and more than 0.64 inches in depth must not allow simultaneous contact between more than one surface on opposite sides of a specified test template. The template was dimensioned to screen out non-hazardous openings with angles that are either too narrow to admit the smallest user's neck, or too wide to entrap the largest user's head. This requirement is intended to address head/neck entrapment incidents reported in the "V" shaped openings common in older, "accordion style" gates.

- **Latching/locking and hinge mechanisms:** This hardware durability test requires egress panels on gates and enclosures to be cycled through their fully open and closed positions 2,000 times. Pressure gates without egress panels are cycled through installation and removal 550 times. Cycling egress panels for 2,000 times tests the durability of gates or enclosures having egress panels that are expected to be operated twice a day through the lifetime of the product. Pressure gates without egress panels are intended to be installed in locations not accessed as frequently, and thus, are tested through a reduced 550-cycle test. This pre-conditioning test is intended to address incidents involving failures of latches, hinges, and hardware.

- **Automatic closing system:** Immediately following the cyclic preconditioning test, an egress panel marketed to have an automatic closing feature must continue to close automatically when opened to a width of 8 inches, as well as when it is opened to its maximum opening width. This requirement is intended to check that a gate closes completely and locks as it is expected

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and advertised to do, thereby reducing the likelihood of a child accessing potentially hazardous conditions on the other side of an unintentionally unsecured gate.

- **Push-out force strength:** This test must be conducted in five specified locations: the four corners of the gate, as well as the center. The test requires that a horizontal push-out force be applied five times to each of the test locations, and that the maximum force be applied before the gate pushes out of the test fixture. The test requires that data be recorded and averaged for each test location (up to a maximum of 45 pounds). The maximum force of 45 pounds was selected because it simulates the effects of the largest intended occupant's weight. The average push-out force shall exceed 30 pounds in all five test locations (and each individual force shall exceed 20 pounds) This requirement is intended to prevent a child from being able to dislodge the gate and gain access to a hazardous area the gate was meant to keep them from accessing.

- **Locking devices:** Locking devices shall meet one of two conditions: (1) if the lock is a single-action latching device, the release mechanism must require a minimum force of 10 pounds to activate and open the gate; or (2) the lock must have a double-action release mechanism. This requirement is intended to prevent a child being contained by the gate from being able to operate the locking mechanism.

- **Toys:** Toy accessories shall not be attached to, or sold with, a gate. Toy accessories attached to, removable from, or sold with an enclosure, shall meet applicable requirements of specification ASTM F963 "*Consumer Safety Specification for Toy Safety.*" This requirement is intended to ensure that any toys that come with an enclosure meet the same safety requirements as toys sold separately from an enclosure.

- **Slat Strength:** This test verifies that no wood or metal vertical members (slats) completely break, or that either end of the slats completely separate from the gate or enclosure

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when a force of 45 pounds is applied horizontally. The test is conducted on 25 percent of all gate slats, excluding adjacent slats. This requirement is intended to check that gates and enclosures retain their structural integrity when children push or pull on the gate or enclosure slats.

- **Label testing:** Paper and non-paper labels (excluding labels attached by a seam) shall not liberate without the aid of tools or solvents. Paper or non-paper labels attached by a seam shall not liberate when subjected to a 15-pound pull force. This requirement is intended to ensure that product labels are permanently affixed.

Warning, Labeling and Instructions. These provisions specify the marking, labeling, and instructional literature requirements that must appear on, or with, each gate or enclosure.

Warnings are also required on the retail packaging, unless they are visible in their entirety on the gate or enclosure at point of purchase for consumers to see.

- All gates and enclosures must include warnings on the product about the risk of serious injury or death when a product is not installed securely, must warn the consumer to never use the gate with a child who is able to climb over or dislodge the gate, and to never use the gate to prevent access to a pool.

- Pressure-mounted gates with a single-action locking mechanism on one side of the gate must include the following warning: “Install with this side AWAY from child.”

- Enclosures with locking or latching mechanisms must include the following warnings: “Use only with the [locking/latching] mechanism securely engaged.”

- Gates that do not pass the push-out test requirements without the use of wall cups must include the following warning on the product: “You MUST install wall cups to keep gate in place. Without wall cups child can push out and escape.”

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C. International Standards for Gates and Enclosures

The NPR discussed CPSC staff's review of two international standards that address gates and enclosures (1) the European Standard, EN 1930:2011/A1 Child use and care articles – Safety barriers – Safety requirements and test methods; and (2) Canadian regulation, SOR/2016-179 Expansion Gates and Expandable Enclosures Regulations (the Canadian regulation refers to an outdated 1986 version of ASTM F1004 which has been superseded by recent versions). 84 FR at 32352. In comparing these two international standards to ASTM F1004-19, staff determined that ASTM F1004-19 is adequate, or more stringent than, the international standards in addressing the hazard patterns identified in the incident data associated with gates and enclosures. *Id.*

VI. Adequacy of ASTM F1004-19 Requirements to Address Identified Hazards

For the NPR, the Commission stated that the current voluntary standard, ASTM F1004-19, adequately addresses many of the general hazards associated with the use of children's gates and enclosures, such as wood parts, sharp points, small parts, lead in paint, scissoring, shearing, pinching, openings, exposed coil springs, locking and latching, and protective components. 84 FR at 32350. Additionally, in the NPR, the Commission stated that the performance requirements and test methods in ASTM F1004-19 adequately address most of the primary hazard patterns identified in the incident data, except for consumer awareness of whether a pressure-mounted gate is installed correctly. *Id.* at 32350-52. Based on staff's assessment of all 478 reported incidents (22 fatal and 456 nonfatal; 428 associated with the use of a gate and 50 associated with the use of an enclosure) to identify hazard patterns associated with children's gates and enclosures, as well as staff's evaluation of ASTM F1004-19, for this final rule, the Commission concludes that ASTM F1004-19 adequately addresses the identified hazards

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associated with the use of gates and enclosures except for one – installation issues associated with pressure-mounted gates.⁹

Installation problems are associated with 21 incidents (4%), including five drowning fatalities. The CPSC incident data show that incidents occurred when: a product included unclear instructions; mismatched dimensions between a gate and the opening it was meant to fit into; and failure of the gate to remain upright in an opening, described as “pushed out,” “pulled down,” or “knocked down.” The most recent revision, ASTM F1004 – 19, represents a large step forward in addressing installation issues, especially related to pressure-mounted gate push-out hazards. The revision requires all gates to meet the same push-out force (*e.g.* 30 pounds) with provisions that allow the use of wall cups to meet this requirement. CPSC staff’s testing found that most pressure-mounted gates tested can meet the 30-pound push-out force requirements of ASTM F1004-19 with the use of wall cups. Correct installation of pressure-mounted gates depends on consumer awareness and behavior to install the gate correctly. Based on the incident reports and staff’s testing, the Commission concludes that additional requirements are necessary to further strengthen the standard to reduce the risk of injury associated with the use of pressure-mounted gates, by increasing the likelihood that caregivers install such gates securely to confine their child.

The Commission will finalize the rule with two alternative requirements, depending on whether wall cups are necessary to meet the 30-pound push-out force test, to address the hazards associated with incorrect installation of pressure-mounted gates. The two alternative requirements specify that: (1) for gates that use wall cups, a separate warning label in a conspicuous location on the top rail of the gate regarding correct installation using wall cups; or

⁹ See Staff Final Rule Briefing Package at Tabs B and C.

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(2) for gates that do not use wall cups, visual side-pressure indicators to provide consumers feedback about whether the gate is installed correctly.

A. *Separate Warning Label*

ASTM F1004-19 currently requires a warning statement about the hazard of installing gates without wall cups: “You MUST install wall cups to keep the gate in place. Without wall cups, child can push out and escape.” This warning statement is included within the general warning label, which can have as many as six different required messages in one location. However, the use of wall cups to meet the 30-pound push-out force test, and thus, to improve safety, relies on consumers actually installing the wall cups. To improve the likelihood that consumers will follow directions and heed the associated warning label, the location of the label is important. Installation-related incidents with pressure-mounted gates include deaths and serious injuries, and wall cups are critical features that are necessary for correct installation of some pressure-mounted gates. Accordingly, throughout the consultation process, CPSC staff consistently recommended that ASTM consider locating the pressure-gate/push-out warning as a separate and distinct warning positioned in a highly conspicuous location, such as along the top rail of the gate. A top-rail location would be within the caregiver’s line of sight and oriented in a readable direction during normal use of the gate.

In the NPR, staff indicated that further collaboration with stakeholders at ASTM could result in moving the wall cup warning language from its current location. Currently, the wall cup warning language is mixed in with the other warning statements. Staff suggested moving the warning language to a place where the warning is highly conspicuous, separate, and distinct, such as a place along the top rail of the gate that is visible to a caregiver operating the gate. However, no task group or subcommittee meetings occurred between June 2019 and December

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2019, nor did ASTM issue a ballot regarding the wall cap warning language. In December 2019, CPSC staff sent a letter¹⁰ to the ASTM subcommittee chair, requesting a subcommittee meeting to discuss specific ballot language about the warning label recommendation. The subcommittee met on January 21, 2020, and agreed to send the proposal to ballot. ASTM issued the ballot on March 5, 2020 (ASTM Ballot F15 (20-02), Item 4), and the ballot closed on April 6, 2020. The ballot received two substantive negative votes. Both negative votes noted that the balloted language stated that all “products” must contain the wall cup warning, rather than state that just pressure-mounted gates must contain the warning. On May 6, 2020, ASTM released a ballot containing a revision to the warning label location, containing a clarification to address these negatives by replacing the word “products” with “pressure-mounted gates.” This ballot closes on June 5, 2020.

To further reduce the risk of injury associated with incorrectly installed pressure-mounted gates, the final rule requires that pressure-mounted gates that rely on wall cups to meet the 30-pound push-out force requirement, must also place a warning regarding installation of wall cups along the top rail of the gate, separate and distinct from other warnings. The wording of this requirement in the final rule harmonizes with the ASTM ballot F15 (20-04), Item 6.

B. Visual Side-Pressure Indicators

Before the NPR, CPSC staff presented a series of recommendations to the F15.16 subcommittee to improve the installation of pressure-mounted gates, including improvements to the push-out test, and potentially using visual indicators to inform caregivers when a pressure-mounted gate is installed securely. Leading up to the NPR, the subcommittee made the recommended improvements in the standard to the push-out test, in addition to requiring that all

¹⁰ <https://www.regulations.gov/contentStreamer?documentId=CPSC-2019-0014-0006&contentType=pdf>

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gates (including pressure-mounted gates) meet 30 pounds of push-out resistance. Although some pressure-mounted gates are capable of meeting 30 pounds of push-out resistance without wall cups when they are installed correctly, most pressure-mounted gates likely will use wall cups. CPSC staff testing found that ASTM F1004-19 requires gates that use wall cups to come with the wall cups and other mounting hardware. As stated above in IV.A, the final rule will also require these gates to place a warning label along the top rail regarding the importance of installing wall cups.

However, for pressure-mounted gates that do not rely on wall cups to meet the 30-pound push-out force test, ASTM F1004-19 contains no requirement to provide feedback to the end consumer to indicate whether the gate is installed correctly. Instructions for pressure-mounted gates without wall cups provide little or no clear direction to help consumers know when the gate is installed correctly, or that it stays in place after several uses. For example, gates currently on the market may instruct the consumer to adjust until secure, or to push the gate to *feel* if it is secure. CPSC staff observed that even when following the manufacturer's instructions, the push-out force for some gates that use tension bolts varies each time the gate is re-installed and tested. Staff also observed that with one metal gate tested, where tension bolts and nuts are used to secure it in place, only a half rotation of the tension nuts would change the distance between the gate and the test fixture by 0.032 inches and result in a gate meeting or not meeting the 30 pound push-out force requirement. These adjustments are barely noticeable to the average consumer, who relies only on *feel*, and not precise measurements or any other feedback.

Staff testing and analysis, discussed in detail in Staff's NPR Briefing Package, Tab C, and Staff's Final Rule Briefing Package, Tab B, suggest that visual indicators can improve the safety of pressure-mounted gates that do not use wall cups. At the time of the NPR, staff

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recommended continuing to work with the ASTM subcommittee to resolve the issue of visual side-pressure indicators. However, no task group or subcommittee meetings occurred from June 2019 to December 2019; nor did ASTM issue a ballot on this matter. The NPR invited comments on this specific issue, but the Commission received no comments.

In a letter dated December 11, 2019,¹¹ CPSC staff urged discussion at an ASTM subcommittee meeting regarding ballot language to include a visual side-pressure indicator provision for pressure-mounted gates that do not use wall cups to meet the 30 pound push-out force test in the ASTM standard. On January 21, 2020, the ASTM subcommittee discussed draft language for a visual side-pressure indicator provision. ASTM subcommittee members raised concerns regarding potential issues, such as proposed language using the term “minimum pressure.” Some subcommittee members stated that this language implied that a test lab would need to measure the pressure at each corner of the gate. CPSC staff clarified that staff’s intention was that the current push-out force performance test would identify gates that indicate incorrectly that the required side pressure is maintained. However, after this discussion, the ASTM subcommittee chair reactivated the visual side-pressure indicator task group to potentially revise the draft proposed language to address subcommittee member concerns.

On March 10, 2020, the task group met to discuss the draft ballot proposal. Task group discussion centered on the testability of the visual side-pressure indicator performance requirement for pressure-mounted gates. The task group meeting concluded with the task group chair agreeing to revise the proposed ballot language to address member concerns and to resend the proposed ballot language to the task group for review. On April 2, 2020, CPSC staff received a draft proposal from the task group chair. On April 22, 2020, the task group chair

¹¹ <https://www.regulations.gov/contentStreamer?documentId=CPSC-2019-0014-0006&contentType=pdf>

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recirculated the same draft. On April 23, 2020, the task group chair indicated his intention to ballot the proposal, unless there were significant comments from the task group necessitating another meeting. CPSC staff is unaware of any further comment.

After reviewing the revised ballot language for visual side-pressure indicators, CPSC staff concluded that the proposed language adequately addresses staff's concerns and provides a visual indicator of whether a pressure-mounted gate that does not use wall cups to meet the 30-pound push-out force test is installed securely. The Commission agrees, and anticipates that ASTM will ballot this requirement within the next few months to incorporate into ASTM F1004. Accordingly, to further reduce the risk of injury associated with incorrect installation of pressure-mounted gates, the draft final rule requires that pressure-mounted gates that do not use wall cups, to meet the 30-pound push-out force test, must include visual side-pressure indicators to inform caregivers that the gate is installed securely. The language for this requirement in the final rule harmonizes with the ASTM task group draft language circulated April 22, 2020.

VII. Response to Comments

CPSC received three comments on the NPR.¹² A trade association forwarded two comments, one comment did not address the NPR. The two comments generally supported the NPR and the ASTM process. However, the commenter disagreed with the proposed 6-month effective date, anticipating the effect that the standard may have on small businesses. This commenter recommended a 12-month effective date. The Commission agrees, and the final rule contains a 12-month effective date, as discussed below in section X of this preamble.

¹² Available at <https://www.regulations.gov/docket?D=CPSC-2019-0014>

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VIII. Description of the Mandatory Standard for Gates and Enclosures

The Commission concludes that ASTM F1004-19 adequately addresses the hazards associated with gates and enclosures, except for consumer awareness about whether pressure-mounted gates are installed correctly. Thus, for the final rule on safety standards for gates and enclosures, the Commission incorporates by reference ASTM F1004-19, with the addition of the following two alternative requirements to provide consumers with additional information about correct installation of pressure-mounted gates, to further reduce the risk of injury associated with the use of pressure-mounted gates:

- (1) for pressure-mounted gates that include wall cups with the product to meet the 30-pound push-out force test, the gates must include a separate warning label in a conspicuous location on the top rail of the gate regarding correct installation using wall cups; or
- (2) for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test, the gates must use visual side-pressure indicators to provide consumers with feedback on whether the gate is installed correctly.

IX. Incorporation by Reference

Section 1239.2(a) of the final rule provides that each gate and enclosure must comply with applicable sections of ASTM F1004-19. The Office of the Federal Register (OFR) has regulations concerning incorporation by reference. 1 CFR part 51. For a final rule, agencies must discuss in the preamble to the rule the way in which materials that the agency incorporates by reference are reasonably available to interested persons, and how interested parties can obtain the materials. Additionally, the preamble to the rule must summarize the material. 1 CFR 51.5(b).

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In accordance with the OFR's requirements, section V.B of this preamble summarizes the provisions of ASTM F1004-19 that the Commission is incorporating by reference. ASTM F1004-19 is copyrighted. Before the effective date of this rule, you may view a copy of ASTM F1004-19 at: <https://www.astm.org/cpsc.htm>. Once the rule becomes effective, ASTM F1004-19 can be viewed free of charge as a read-only document at:

<https://www.astm.org/READINGLIBRARY/>. To download or print the standard, interested persons may purchase a copy of ASTM F1004-19 from ASTM, through its website (<http://www.astm.org>), or by mail from ASTM International, 100 Bar Harbor Drive, P.O. Box 0700, West Conshohocken, PA 19428. Alternatively, interested parties may inspect a copy of the standard by contacting Alberta E. Mills, Division of the Secretariat, U.S. Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; telephone: 301-504-7479; e-mail: cpSC-os@cpSC.gov.

X. Effective Date

The Administrative Procedure Act (APA) generally requires that the effective date of a rule be at least 30 days after publication of the final rule. 5 U.S.C. 553(d). CPSC generally considers 6 months to be sufficient time for suppliers of durable infant and toddler products to come into compliance with a new standard under section 104 of the CPSIA. Six months is also the period that the Juvenile Products Manufacturers Association (JPMA) typically allows for products in the JPMA certification program to transition to a new standard once that standard is published. Accordingly, the NPR proposed a 6-month effective date for gates and enclosures.

We received one comment from a trade association asking for a 12-month effective date, stating that many of its members would require "significant design changes" and need time to make these changes. The 30-pound push-out force test was added to the ASTM standard in June

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2019, and CPSC's NPR published in July 2019. Therefore, manufacturers of gates and enclosures have already had almost 12 months to address the push-out force requirements in ASTM F1004-19. However, the final rule also includes two alternative requirements to provide consumers with information or feedback on the correct installation of pressure-mounted gates. Additionally, staff advises that most of the companies selling gates and enclosures are small businesses that may need more time to redesign and test their gates to address the push-out force requirement, or work with their suppliers to purchase compliant products. For these reasons, the Commission will set a 12-month effective date for the final rule.

XI. Assessment of Small Business Impact

A. Introduction

The Regulatory Flexibility Act (RFA), 5 U.S.C. 601-612, requires that agencies review a proposed rule and a final rule for the rule's potential economic impact on small entities, including small businesses. Section 604 of the RFA generally requires that agencies prepare a final regulatory flexibility analysis (FRFA) when promulgating final rules, unless the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Staff prepared a FRFA that is available at Tab D of Staff's Final Rule Briefing Package.

Based on staff's analysis, the Commission concludes that there would not be a significant economic impact on the 23 small suppliers of compliant gates and enclosures. The Commission also expects that the impact on noncompliant suppliers will not be significant for the nine firms that have a diversified product line, or whose gates and enclosures already meet most of the requirements of the standard. However, the Commission concludes that there could be a significant economic impact on five suppliers of noncompliant gates and enclosures.

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Additionally, staff concludes that it is likely that all 80 of the very small, home-based suppliers will be significantly impacted, and compliance with the mandatory standard will require them to stop selling gates altogether. We provide a summary of the FRFA below.

B. The Market for Gates and Enclosures

Section II.B of this preamble describes the market, including a summary of retail prices, for gates and enclosures. The Durable Nursery Products Exposure Survey (DNPES) found that a slight majority (52%) of U.S. households with children under age 6 have a gate or enclosure in their home, with many households owning more than one gate, and about 11.1 million baby gates and enclosures in use in 2013.¹³

C. Suppliers of Gates and Enclosures and the Impact on Small Businesses

Staff identified 127 firms supplying gates and enclosures to the U.S. market. The majority of suppliers to the U.S. market are domestic, including domestic importers of gates manufactured elsewhere. About 80 very small, home-based domestic manufacturers sell gates.¹⁴ Staff identified another 47 firms that supply gates and/or enclosures that are not home-based and are generally larger than the home-based suppliers, nearly all of which are domestic. These firms include both manufacturers and importers. Because of firm size and/or location of manufacture, 10 companies are out of scope for this analysis on the impact on small domestic businesses. The 37 remaining firms are small domestic entities, based on U.S. Small Business Administration (SBA) guidelines for the number of employees in their North American Industry Classification System (NAICS) codes. These firms typically have at least eight to nine gate

¹³ Karen Melia and Jill Jenkins “Durable Nursery Products Exposure Survey (DNPES) – Final Summary Report”, prepared for the CPSC by Westat, November 2014.

¹⁴ These suppliers were identified online and staff believes that there may be additional home-based suppliers operating in the gates market on a very small scale (possibly including some without an on-line presence). These suppliers enter and exit on the market relatively frequently; the number found through staff research is an estimation of the actual number at any given time.

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models in their product lines, and have much larger sales volumes than the home-based suppliers. Most of the small companies making or importing gates and enclosures do not have gates as their main product line; rather, they sell other nursery items and unrelated consumer products, including toys, furniture, clothing, plastic molded items, infant sleep products, strollers, baby monitors, floor mats, bird feeders, and car seats.

1. Very Small, Home-Based Manufacturers

Approximately 80 very small, home-based manufacturers supply gates to the U.S. market. Most, if not all, of these gates would probably require substantial modifications to comply with the final rule; and staff expects that these firms will stop selling gates. These firms typically sell fewer than 100 items per year, including products other than gates. About 10 home-based manufacturers sell more than 500 items per year, including, but not limited to, gates. About six manufacturers sell fabric gates; the rest sell wooden or wooden and metal gates. Because of the cost of redesigning gates, and/or testing for compliance with the final rule, staff assumes that most of these sellers will stop selling gates when the rule becomes effective.

Staff states that small, home-based manufacturers could re-label their gates as pet gates, thus, reducing the economic impact of this rule. Online reviews of pet gates and child gates show that some parents are already purchasing pet gates for child use, while pet owners are buying child gates for pet use. However, because customers seeking to purchase baby gates will not necessarily consider buying a pet gate instead of a child gate, staff concludes that the impact would likely still be economically significant.

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2. Small Manufacturers

a. Small Manufacturers with Compliant Gates and Enclosures

Currently, 14 of the small domestic manufacturers produce gates or enclosures that comply with the previous version of the standard, ASTM F1004-18.¹⁵ Staff assumes that compliant firms will remain compliant with the voluntary standard as it evolves, because compliance is part of an established business practice. Because these firms are already testing to the previous version of the ASTM standard, staff expects that any additional third party testing costs would be minimal. Similarly, all of these firms already have warning stickers and instruction manuals that are compliant with the previous standard. Accordingly, staff expects the costs of any modifications to comply with the new standard to be insignificant.

Moreover, the final rule's change in warning label location, for gates that use wall cups to meet the 30-pound push-out force test, and the requirement for visual side-pressure indicators for gates that do not use wall cups to comply with the 30-pound push-out force test, only apply to pressure-mounted gates. Some manufacturers only supply hardware-mounted gates, or have hardware gates as most of their product line. Other manufacturers sell pressure-mounted gates with wall cups supplied, so these manufacturers would only need to change the label. Some manufacturers already sell gates with visual side-pressure indicators.

b. Small Manufacturers with Noncompliant Gates and Enclosures

Four small domestic manufacturers produce gates and enclosures that do not comply with the ASTM standard. Staff does not expect the costs of any product changes to comply with requirements for instruction manuals and labeling to be significant for any of these firms,

¹⁵ A 6-month delay typically occurs between the publication of a new ASTM voluntary standard and its adoption for compliance testing. ASTM F1004-19 was published in June 2019, and therefore, it became effective for testing purposes in January 2020.

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because they already have instruction manuals and warning labels. All four of these manufacturers appear to be familiar with at least some aspects of safety requirements for durable nursery goods, including testing for compliance. Two manufacturers were compliant with earlier versions of the ASTM standard for gates and enclosures; one manufacturer claims compliance to CPSIA section 101 and 108; and one firm manufactures other products that comply with relevant ASTM standards for durable nursery products.

For the two manufacturers of noncompliant enclosures, staff does not expect that third party testing costs will exceed 1 percent of revenue, because these two manufacturers have millions of dollars in revenue; they already certify compliance with other ASTM standards; and they have few gate or enclosure models in their product lines. For the other two small domestic manufacturers of noncompliant gates and enclosures, the impact may be significant. One of the small manufacturers makes only pressure-mounted gates, although the option for wall cups could make it relatively inexpensive for that firm to achieve compliance without significant redesign. The other manufacturer sells noncompliant gates and enclosures as most of their product line, sells both hardware-mounted and pressure-mounted gates, and some of the gates and enclosures appear to require redesign to meet the standard. If this manufacturer redesigns their product, the cost could be significant.¹⁶

3. Small Importers

a. Small Importers with Compliant Gates and Enclosures

Staff identified nine gate/enclosure importers currently in compliance with ASTM

F1004-18. Staff expects these firms, like small manufacturers of compliant gates and enclosures,

¹⁶ Firms interviewed during the development of the draft proposed rule indicated that the cost of a redesign could be between \$400,000 and \$1 million (one firm indicated that the cost could be higher in some cases), depending on the material with which the product is constructed, and the extent of the required structural changes.

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to be in compliance with ASTM F1004-19 before the draft final rule becomes effective.

Therefore, staff does not expect the economic impact to be significant for any of the importers with compliant gates or enclosures. Any third party testing costs for importers of compliant gates and enclosures would be limited to the incremental costs associated with third party testing over their current testing regime.

b. Small Importers with Noncompliant Gates and Enclosures

Staff identified 10 small importers of noncompliant gates and enclosures. Seven of these firms sell many other products. Thus, dropping gates and enclosures from their product line or finding a new supplier could have a relatively minor impact on their total revenue. Most of the noncompliant gates and enclosures already have some warning labels and instruction manuals; and some claim to be tested for lead, phthalates, and BPA. Therefore, staff concludes that the costs of third party testing to demonstrate compliance could be minimal as a percentage of sales. Staff also finds that it may be possible for these importers to find new suppliers of compliant gates and enclosures.

Several importers of noncompliant gates sell gates with multiple extensions. The ASTM standard requires that gates with extension panels must be compliant in any of the manufacturer's recommended use positions. Staff acknowledges that this could increase testing costs. Accordingly, staff believes it likely that these firms will stop selling gates with more than two extensions. Gates for these importers appear to be very similar to other compliant hardware-mounted gates; therefore, these importers may be able to achieve compliance cost-effectively by importing gates with fewer extensions.

For three of the noncompliant importers, staff believes that a significant economic impact could occur. One small importer of noncompliant enclosures appears to sell enclosures only.

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Finding an alternative supplier might pose significant costs for this firm. Perhaps this firm could find another compliant supplier relatively easily, given that many different brands of imported enclosures appear very similar; some, in fact, comply with a previous version of the ASTM standard.

The other two small importers of noncompliant gates that could be impacted significantly have gates as a large part of their product line. One of the two small importers sells hardware-mounted gates only; while the other importer already includes wall cups with their pressure-mounted gates. Therefore, staff believes their products could be compliant without significant redesign. However, third party testing to demonstrate compliance may well represent more than 1 percent of revenue for these importers. This could represent a significant impact, unless their supplier absorbs the costs.

D. Other Potential Impacts

The final rule requires suppliers of gates and enclosures to comply with the requirements of the safety standard for gates and enclosures, or stop selling noncompliant gates and enclosures. Accordingly, compliance with the final rule could impact the price and selection of gates and enclosures available to consumers. Compliance with the mandatory standard could also impact suppliers of wall cups, by increasing demand for their products.

Compliance with the standard could raise the retail price of pressure-mounted gates by \$5 to \$10. We do not believe, however, that this will significantly decrease sales of gates. The price of hardware-mounted gates is unlikely to increase; most of the bestselling gates already cost more than \$25. Additionally, many suppliers contract with foreign manufacturers, and some of the companies sell in multiple markets, including Europe, Asia, and Canada. Having a U.S. standard that is more stringent than, or different from, standards in those regions could force

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companies to develop different gates for different markets, or cause them to develop a more costly gate that meets all the standards.

Some manufacturers may market their noncompliant gates as pet gates. We can see from online reviews of pet gates and child gates that some parents already purchase pet gates for use with children, and likewise, pet owners buy child gates for pet use. Some of the pet gates already comply with ASTM and JPMA. The least expensive pet gates retail for approximately \$20, more than the current price of the least expensive child gates. Therefore, this remarketing likely will not have a measurable impact on the market for either type of gate. However, the least-expensive dog pens are about half the price of the least-expensive enclosures for children. Accordingly, some manufacturers might remarket their noncompliant enclosures as dog pens.

E. Steps to Minimize Economic Impacts on Small Entities

Based on staff's recommendation and a comment on the NPR, the final rule has a 12-month effective date. A later effective date could reduce the economic impact on firms in two ways. Firms would be less likely to experience a lapse in production/importation, which could result if they are unable to comply and obtain third-party testing within the required timeframe, or find a new supplier. Firms could also spread costs over a longer time period. Suppliers interviewed for the NPR indicated that 12 to 18 months might be necessary, if a complete product redesign were required. Unless suppliers choose to add visual side-pressure indicators to a gate that does not currently have them, or the gate/enclosure of any type does not meet multiple requirements in the ASTM standard, a complete redesign should not be necessary.

Additionally, the final rule provides suppliers of pressure-mounted gates with two alternatives to meet the requirement in the final rule to improve consumer feedback regarding installation of pressure-mounted gates. Firms can either: (1) include wall cups with the gate and

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place a separate warning label regarding the importance of installation of the wall cups on the top rail of the gate, or (2) use visual side-pressure indicators to demonstrate that the gate is installed correctly. The wall cups option will not require a redesign for gates that can meet the 30-pound push-out test with wall cups; this option only requires a new label on the top rail of the gate. Suppliers that already include effective visual side-pressure indicators on their gates will likely also be able to meet the standard without a redesign. If CPSC did not provide two options to meet the new requirement, nearly all pressure gate manufacturers would have been required to redesign their gates or would have had to include wall cups in the packaging. Providing two alternative requirements for pressure gate suppliers to meet the standard reduces the impact on small entities.

XII. Environmental Considerations

The Commission's regulations address whether the agency is required to prepare an environmental assessment or an environmental impact statement. Under these regulations, certain categories of CPSC actions normally have "little or no potential for affecting the human environment," and therefore, they do not require an environmental assessment or an environmental impact statement. Safety standards providing requirements for products come under this categorical exclusion. 16 CFR 1021.5(c)(1). The final rule for gates and enclosures falls within the categorical exemption.

XIII. Paperwork Reduction Act

The final rule contains information collection requirements that are subject to public comment and review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (PRA; 44 U.S.C. 3501–3521). Under 44 U.S.C. 3507(a)(1)(D), an agency must publish the following information:

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- a title for the collection of information;
- a summary of the collection of information;
- a brief description of the need for the information and the proposed use of the information;
- a description of the likely respondents and proposed frequency of response to the collection of information;
- an estimate of the burden that shall result from the collection of information; and
- notice that comments may be submitted to the OMB.

The preamble to the proposed rule (84 FR 32354-55) discussed the information collection burden of the proposed rule and specifically requested comments on the accuracy of our estimates. OMB assigned control number 3041-0182 for this information collection. We did not receive any comment regarding the information collection burden of the proposal. For the final rule, CPSC adjusts the number of small home-based manufacturers from 83 to 80, and the number of other suppliers from 30 to 47. In accordance with PRA requirements, the CPSC provides the following information:

Title: Safety Standard for Gates and Enclosures

Description: The final rule requires each gate and enclosure to comply with ASTM F1004-19, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures*, with an option to address installation issues associated with pressure-mounted gates. Sections 8 and 9 of ASTM F1004-19 contain requirements for marking, labeling, and instructional literature. These requirements fall within the definition of “collection of information,” as defined in 44 U.S.C. 3502(3).

Description of Respondents: Persons who manufacture or import gates or enclosures.

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Estimated Burden: We estimate the burden of this collection of information under 16 CFR part 1239, as follows:

Table 1 – Estimated Annual Reporting Burden

Burden Type	Type of Supplier	Number of Respondents	Frequency of Responses	Total Annual Responses	Hours per Response	Total Burden Hours
Labeling	Home-based manufacturers	80	2	160	7	1,120
	Other Suppliers	47	8	376	1	376
<u>Labeling Total</u>						1,496
Instructional literature	Home-based manufacturers	80	2	50	100	8,000
TOTAL BURDEN						9,496

Our estimate is based on the following:

Two groups of firms that supply gates and enclosures to the U.S. market may need to modify their existing warning labels. The first are very small, home-based manufacturers (80), who may not currently have warning labels on their gates (CPSC staff did not identify any home-based suppliers of enclosures). CPSC staff estimates that it would take home-based gate manufacturers approximately 15 hours to develop a new label; this translates to approximately 7 hours per response for this group of suppliers. Therefore, the total burden hours for very small, home-based manufacturers is 7 hours per model x 80 entities x 2 models per entity = 1,120 hours.

The second group of firms supplying gates and enclosures to the U.S. market that may need to make some modifications to their existing warning labels are non-home-based manufacturers and importers (47). These are also mostly small domestic firms, but they are not home-based firms, and they do not operate at the low production volume of the home-based

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firms. For this second group, all with existing warning labels on their products, and who are used to working with warning labels on a variety of other products, we estimate that the time required to make any modifications now or in the future would be about 1 hour per model. Based on an evaluation of supplier product lines, each entity supplies an average of 8 models of gates and/or enclosures; therefore, the estimated burden associated with labels is 1 hour per model x 47 entities x 8 models per entity = 376 hours.

The total burden hours attributable to warning labels is the sum of the burden hours for both groups of entities: very small, home-based manufacturers (1,120 burden hours) + non-home-based manufacturers and importers (376 burden hours) = 1,496 burden hours. We estimate the hourly compensation for the time required to create and update labels is \$34.26 (U.S. Bureau of Labor Statistics, “Employer Costs for Employee Compensation,” March 2020, Supplementary Table 9, total employer costs for employees in private industry: <http://www.bls.gov/ncs/>). Therefore, the estimated annual cost to industry associated with the labeling requirements is \$51,253 (\$34.26 per hour x 1,496 hours = \$51,252.96). No operating, maintenance, or capital costs are associated with the collection.

ASTM F1004-19 also requires instructions to be supplied with the product. Under the OMB’s regulations (5 CFR 1320.3(b)(2)), the time, effort, and financial resources necessary to comply with a collection of information that would be incurred by persons in the “normal course of their activities” are excluded from a burden estimate, where an agency demonstrates that the disclosure activities required to comply are “usual and customary.” As with the warning labels, the reporting burden of this requirement differs for the two groups.

Many of the home-based gate manufacturers supplying on a very small scale may provide either no instructions or only limited instructions with their products as part of their “normal

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course of activities.” CPSC staff estimates that each home-based entity supplying gates and/or enclosures might require 50 hours to develop an instruction manual to accompany their products. Although the number of home-based suppliers of gates and/or enclosures is likely, over time, to vary substantially, based on CPSC staff’s review of the marketplace, currently, there are approximately 80 home-based suppliers of gates and/or enclosures operating in the U.S. market. These firms, on average, typically supply two gates. Therefore, the costs for these firms of designing an instruction manual for their products could be as high as \$274,080 (50 hours per model x 80 entities x 2 models per entity = 8,000 hours x \$34.26 per hour = \$274,080). Not all firms would incur these costs every year, but new firms that enter the market would, and this may be a highly fluctuating market.

The non-home-based manufacturers and importers are already likely providing user instruction manuals with their products, under the normal course of their activities. Therefore, for these entities, there are no burden hours associated with providing instructions.

Based on this analysis, the proposed standard for gates and enclosures would impose an estimated total burden to industry of 9,496 hours at a cost of \$325,333 annually. In compliance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), we have submitted the information collection requirements of this final rule to OMB.

XIV. Preemption

Section 26(a) of the CPSA, 15 U.S.C. 2075(a), provides that when a consumer product safety standard is in effect and applies to a product, no state or political subdivision of a state may either establish or continue in effect a requirement dealing with the same risk of injury unless the state requirement is identical to the federal standard. Section 26(c) of the CPSA also provides that states or political subdivisions of states may apply to the Commission for an

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exemption from this preemption under certain circumstances. Section 104(b) of the CPSIA refers to the rules to be issued under that section as “consumer product safety standards.”

Therefore, the preemption provision of section 26(a) of the CPSA applies to this final rule issued under section 104.

XV. Amendment to 16 CFR part 1112 to Include NOR for Gates and Enclosures

The CPSA establishes certain requirements for product certification and testing. Products subject to a consumer product safety rule under the CPSA, or to a similar rule, ban, standard or regulation under any other act enforced by the Commission, must be certified as complying with all applicable CPSC-enforced requirements. 15 U.S.C. 2063(a). Certification of children’s products subject to a children’s product safety rule must be based on testing conducted by a CPSC-accepted third party conformity assessment body. 15 U.S.C. 2063(a)(2). The Commission must publish an NOR for the accreditation of third party conformity assessment bodies to assess conformity with a children’s product safety rule to which a children’s product is subject. 15 U.S.C. 2063(a)(3). The final rule for gates and enclosures, to be codified at 16 CFR part 1239, is a children’s product safety rule that requires the issuance of an NOR.

The Commission published a final rule, *Requirements Pertaining to Third-Party Conformity Assessment Bodies*, 78 FR 15836 (March 12, 2013), which is codified at 16 CFR part 1112 (referred to here as part 1112). Part 1112 became effective on June 10, 2013, and establishes requirements for accreditation of third party conformity assessment bodies (or laboratories) to test for conformance with a children’s product safety rule in accordance with section 14(a)(2) of the CPSA. Part 1112 also codifies a list of all of the NORs that the CPSC issued when CPSC published part 1112. All NORs issued after the Commission published part 1112 require the Commission to amend part 1112. Accordingly, the Commission amends part

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1112 to include the safety standard for gates and enclosures in the list of other children's product safety rules for which the CPSC has issued NORs.

Laboratories applying for acceptance as a CPSC-accepted third-party conformity assessment body to test to the new standard are required to meet the third party conformity assessment body accreditation requirements in part 1112. When a laboratory meets the requirements as a CPSC-accepted third party conformity assessment body, the laboratory can apply to the CPSC to have 16 CFR part 1239, *Safety Standard for Gates and Enclosures*, included in its scope of accreditation of CPSC safety rules listed for the laboratory on the CPSC's website at: www.cpsc.gov/labsearch.

The Commission certified in the NPR that the proposed NOR for gates and enclosures would not have a significant impact on a substantial number of small laboratories. 84 FR 32356. No substantive factual changes have occurred since the NPR was published, and CPSC did not receive any comments regarding the NOR. Therefore, for the final rule, the Commission continues to certify that amending part 1112 to include the NOR for the gates and enclosures final rule will not have a significant impact on a substantial number of small laboratories.

XVI. Congressional Review Act

The Congressional Review Act (CRA; 5 U.S.C. 801-808) states that, before a rule may take effect, the agency issuing the rule must submit the rule, and certain related information, to each House of Congress and the Comptroller General. 5 U.S.C. 801(a)(1). The submission must indicate whether the rule is a "major rule." The CRA states that the Office of Information and Regulatory Affairs (OIRA) determines whether a rule qualifies as a "major rule." Pursuant to the CRA, this rule does not qualify as a "major rule," as defined in 5 U.S.C. 804(2). To comply with

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the CRA, the Office of the General Counsel will submit the required information to each House of Congress and the Comptroller General.

List of Subjects

16 CFR Part 1112

Administrative practice and procedure, Audit, Consumer protection, Reporting and recordkeeping requirements, Third party conformity assessment body.

16 CFR Part 1239

Consumer protection, Imports, Incorporation by reference, Infants and children, Labeling, Law enforcement, and Toys.

For the reasons discussed in the preamble, the Commission amends Title 16 of the Code of Federal Regulations as follows:

PART 1112—REQUIREMENTS PERTAINING TO THIRD PARTY CONFORMITY ASSESSMENT BODIES

1. The authority citation for part 1112 continues to read as follows:

Authority: 15 U.S.C. 2063; Pub. L. 110-314, section 3, 122 Stat. 3016, 3017 (2008).

2. Amend § 1112.15 by adding paragraph (b)(49) to read as follows:

§ 1112.15 When can a third party conformity assessment body apply for CPSC acceptance for a particular CPSC rule and/or test method?

* * * *

(b) * *

* * * *

(49) 16 CFR part 1239, Safety Standard for Gates and Enclosures.

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* * * * *

3. Add part 1239 to read as follows:

PART 1239-SAFETY STANDARD FOR GATES AND ENCLOSURES

1239.1 Scope.

1239.2 Requirements for Gates and Enclosures.

Authority: Sec. 104, Pub. L. 110-314, 122 Stat. 3016 (15 U.S.C. 2056a).

§ 1239.1 Scope.

This part establishes a consumer product safety standard for gates and enclosures.

§ 1239.2 Requirements for gates and enclosures.

(a) Except as provided in paragraph (b) of this section, each gate and enclosure must comply with all applicable provisions of ASTM F1004-19, Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures, approved on June 1, 2019 (ASTM F1004-19). The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from ASTM International, 100 Bar Harbor Drive, P.O. Box 0700, West Conshohocken, PA 19428; <http://www.astm.org/cpsc.htm>. You may also inspect a copy: electronically at <http://www.astm.org/READINGROOM/>; in person at the Division of the Secretariat, U.S. Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814, telephone: 301-504-7479, email: cpSC-os@cpSC.gov; or in person at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email fedreg.legal@nara.gov, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(b) Comply with ASTM F1004-19 with the following additions or exclusions:

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(1) Instead of complying with section 3.1.3 of ASTM F1004-19, comply with the following:

(i) 3.1.3 *conspicuous, adj*—visible when the gate/expandable enclosure is in all manufacturer's recommended use positions, to a person standing near the gate/expandable enclosure at any one position around the gate/expandable enclosure, but not necessarily visible from all positions.

(ii) [Reserved]

(2) Add the following to paragraphs to section 3.1 of ASTM F1004-19:

(i) 3.1.16 *visual side-pressure indicator, n*—a warning system, device, or provision using contrasting colors, lights, or other similar means designed to visually alert the installer/user to the status of the side pressure of a pressure mounted gate during installation and use.

(ii) 3.1.17 *side pressure, n*—force required, at each contact location of the gate and mounting surface, to meet the requirements of 6.3 as determined by the manufacturer.

(3) Add the following paragraphs to section 6 of ASTM F1004-19:

(i) 6.8 *Visual Side-Pressure Indicators*—Any pressure-mounted gate that does not require the use of Pressure-Mounted Gate-Mounting Hardware per 6.7, to meet the performance requirements in 6.3.1, shall include Visual Side-Pressure Indicators.

(ii) 6.8.1 Visual Side-Pressure Indicators shall be conspicuous and readily identifiable to a person installing and standing near the gate.

(iii) 6.8.2 Visual Side-Pressure Indicators shall monitor pressure for each point of contact with the mounting surface utilizing one or more of the following three options. Such indicators, when the gate is tested in accordance with 7.9, shall indicate when the required side pressure has

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been attained upon installation of the gate, and continue to display the side pressure status while the gate is in a manufacturer's recommend use position.

(iv) 6.8.2.1 A single visual side-pressure indicator for each individual contact point.

(v) 6.8.2.2 A single visual side-pressure indicator for each individual rail (top and bottom), so the opposing horizontal contact points are addressed.

(vi) 6.8.2.3 A single visual side-pressure indicator for the entire gate.

(4) Instead of complying with section 7.9.1.2 of ASTM F1004-19, comply with the following:

(i) 7.9.1.2 Follow the manufacturer's installation instructions when installing the gate in the center of the test opening. For pressure-mounted gates with visual side-pressure indicators, ensure the visual side-pressure indicators are displaying the proper status per manufacturer's instructions.

(ii) [Reserved]

(5) Instead of complying with NOTE 11 of ASTM F1004-19, comply with the following:

(i) NOTE 11—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. Brackets indicate that optional wording may be used at the manufacturer's discretion if another identifier is more appropriate.

(ii) [Reserved]

(6) Do not comply with section 8.5.3 of ASTM F1004-19.

(7) Add the following paragraphs to section 8.5 of ASTM F1004-19:

(i) 8.5.8 Pressure-mounted gates that provide wall cups or other mounting hardware to meet the requirements of section 6.3 shall have the following warning in the location specified:

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You MUST install [wall cups] to keep gate in place. Without [wall cups], child can push out and escape.

(ii) 8.5.8.1 This warning shall be separate from all other warnings required on the product and shall not include any additional language.

(iii) 8.5.8.2 This warning shall be on the top rail.

(iv) 8.5.8.3 This warning shall be as close as possible to the side of the product where the locking mechanism is located. If the locking mechanism is in the center of the product, then this warning shall be adjacent to the mechanism on either side of it.

(8) Add the following paragraph to section 9 of ASTM F1004-19:

(i) 9.5. For pressure-mounted gates with visual side-pressure indicators, the instructions shall describe the function, use, and importance of the visual side-pressure indicators and shall describe how to make adjustments to meet the side-pressure requirements. Instructions shall include a reminder to routinely check the status of the side pressure indicators during ongoing use of gate.

(ii) [Reserved]

(9) Add the following paragraph to section X1.2.5 of ASTM F1004-19:

(i) X1.2.5.4 The visual side-pressure indicators requirement in 6.8 is to address incidents with pressure-mounted gates, where consumers had difficulty properly installing the gate or uncertainty in the security of the gate, which may lead to the gate being “pushed out,” “pulled down,” or “knocked over” by children.

(ii) [Reserved]

Dated: _____

Alberta E. Mills,
Secretary, Consumer Product Safety Commission



Staff Briefing Package

Gates and Enclosures Final Rule
May 27, 2020

CPSC Hotline: 1-800-638-CPSC(2772) CPSC's Web Site: <http://www.cpsc.gov>

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Briefing Memo



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

Memorandum

May 27, 2020

TO: The Commission
Alberta E. Mills, Secretary

THROUGH: John G. Mullan, General Counsel

Mary T. Boyle, Executive Director

DeWane Ray, Deputy Executive Director for Safety Operations

FROM: Duane E. Boniface, Assistant Executive Director
Office of Hazard Identification and Reduction

Hope E J. Nesteruk, Children's Program Manager
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

SUBJECT: Staff's Draft Final Rule for Gates and Enclosures under the Danny Keysar
Child Product Safety Notification Act

I. Introduction

The Danny Keysar Child Product Safety Notification Act, *i.e.*, section 104 of the Consumer Product Safety Improvement Act of 2008 (CPSIA), requires the U.S. Consumer Product Safety Commission (CPSC) to: (1) examine and assess voluntary safety standards for certain infant or toddler products, and (2) promulgate mandatory consumer product safety standards that are substantially the same as, or more stringent than, the voluntary standards if the Commission determines that more stringent standards would further reduce the risk of injury associated with these products. Section 104(f) of the CPSIA defines "durable infant or toddler products" as "durable products intended for use, or that may be reasonably expected to be used, by children under the age of 5 years." "[G]ates and other enclosures for confining a child" are specifically included as durable infant or toddler products in section 104(f)(2)(E) of the CPSIA and are codified in the Commission's regulation as a durable infant or toddler product (16 CFR § 1130.2(a)(5)).

Section 104 of the CPSIA also requires the Commission to consult with representatives of consumer groups, juvenile product manufacturers, and independent child product engineers and experts to examine and assess the effectiveness of the relevant voluntary standards. CPSC staff

regularly participates in the juvenile products subcommittee meetings of ASTM International (ASTM). ASTM subcommittees consist of members who represent producers, users, consumers, government, and academia.¹

The consultation process for this rulemaking commenced when staff presented initial recommendations during the ASTM subcommittee meeting in fall 2014. Since then, staff has been actively participating with the ASTM F15.16 subcommittee for Expansion Gates and Enclosures in revising ASTM F1004, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures*, to improve the stringency of the voluntary standard. The Commission published a notice of proposed rulemaking (NPR) in the *Federal Register* for gates and enclosures on July 8, 2019. 84 *Fed. Reg.* 32,346. The NPR proposed to incorporate by reference ASTM F1004-19, as the mandatory standard for gates and enclosures. The NPR discussed two additional safety concerns regarding pressure-mounted gates, and requested comment on these additional requirements for pressure-mounted gates, including: (1) wall cup warning label location, and (2) requirements for visual side-pressure indicators for pressure-mounted gates that do not use wall cups or other mounting hardware to meet the push-out force requirement (84 *Fed. Reg.* at 32,351-52). CPSC did not receive comment on either provision.

This staff briefing package recommends a draft final rule for gates and enclosures within the scope of ASTM F1004 – 19. According to the ASTM standard, an “expansion gate” is defined as a “barrier intended to be erected in an opening, such as a doorway, to prevent the passage of young children, but which can be removed by older persons who are able to operate the locking mechanism.” The ASTM standard also addresses “expandable enclosures,” which are defined as “self-supporting barrier[s] intended to completely surround an area or play-space within which a young child may be confined.” The meaning of “young child” is specified in the scope (§1.2) as “intended for young children aged six months through 24 months.” Although the title of the standard and both definitions include the word “expansion” before gate and enclosure, the scope of the standard states: “[p]roducts known as expansion gates and expandable enclosures, or by any other name . . .” (§ 1.2); therefore, including gates and enclosures regardless of the ability for “expansion.” Moreover, most known gates and enclosures intended for children have the ability to vary in width (for gates) or shape (enclosures); therefore, all “expand.” Staff will use the terms “gate(s)” and “enclosure(s)” without the word “expansion” as a modifier and intends this draft final rule to apply to gates and other enclosures for confining a child that fall within the scope of ASTM F1004 – 19.

This draft final rule briefing package: (1) reviews the incident data; (2) assesses the effectiveness of the current ASTM voluntary standard for gates and enclosures; (3) discusses the additional safety concerns with pressure-mounted gates identified in the July 2019 NPR, and summarizes staff’s work with the ASTM voluntary standards committee since the NPR; (4) examines recent recalls associated with gates and enclosures; (5) discusses the impact of the draft final rule on small businesses; (6) responds to public comments on the NPR; and (7) provides staff’s recommendations for a draft final rule to the Commission.

¹ ASTM International website: www.astm.org, About ASTM International.

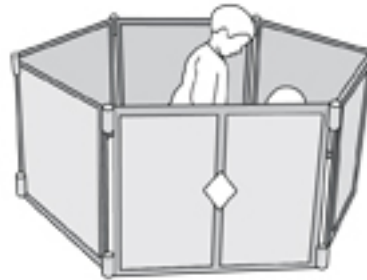
II. Background

A. Product Review

ASTM F1004 – 19 §3.1.7 provides the definition of a “gate” as a “barrier intended to be erected in an opening, such as a doorway, to prevent the passage of young children, but which can be removed by older persons who are able to operate the locking mechanism.” Section 3.1.6 provides the definition of an “enclosure” as a “self-supporting barrier intended to completely surround an area or play-space within which a young child may be confined.” Enclosures may be intended “for indoor or outdoor use, or both” and “do not include an attached floor.” Several other products currently on the market can also be used as either a hardware-mounted gate or as a freeform enclosure.



Gate



Enclosure

Figure 1. Example products

Gates and enclosures can be made of a wide range of materials: plastic, metal, wood, cloth, mesh, or combinations of several materials. As noted above, gates typically have a means of egress that allow adults to pass through them, but some enclosures do as well (*i.e.*, some self-supporting barriers have egress panels that resemble gates). Gates can be either hardware-mounted, pressure-mounted, or both. Pressure-mounted gates attach like some shower curtain rods, using pressure on each end to hold the gate stable. Pressure-mounted gates are intended for consumers who prefer to be able to move their gate in its entirety, or who do not want to permanently attach a gate to their walls. Mounting cups can be attached to one or more locations, and the gate can be removed, as needed, and even moved to other locations. Hardware-mounted gates generally require the use of screws and cannot be removed without tools.

B. NPR Summary

On July 8, 2019, the Commission published a notice of proposed rulemaking (NPR) in the *Federal Register* for gates and enclosures. 84 *Fed. Reg.* 32,346. The NPR proposed to incorporate by reference ASTM F1004-19, as the mandatory standard for gates and enclosures. Staff's incident analysis identified an installation-related hazard pattern associated with children defeating installed gates. These children were able to leave the confined area and access a more hazardous situation. Just before issuing the NPR, ASTM published a revised standard, ASTM F1004 – 19, which represented a large step forward in addressing installation issues, especially those associated with pressure-mounted gate push-out hazards. The revised standard requires that all gates must meet the same push-out force (*e.g.* 30 pounds), and it includes provisions that allow using wall cups to meet this requirement. However, CPSC staff stated that additional voluntary standards work was necessary to further strengthen the standard to increase the likelihood that caregivers install pressure-mounted gates correctly, *i.e.*, as the gate was tested, to confine their child. Specifically, the NPR discussed two safety concerns regarding pressure-mounted gates, and requested comment on these additional provisions for pressure-mounted gates, including: (1) wall cup warning label location for pressure-mounted gates that use wall cups to meet the 30-pound push-out force test, and (2) for pressure-mounted gates that do not use wall cups or other mounting hardware to meet the push-out force test, a provision for visual side-pressure indicators to inform caregivers whether the gate is correctly installed. 84 *Fed. Reg.* at 32,351-52. CPSC did not receive comment on either provision.

C. Incident Data (Tab A)

1. *NPR Summary*

In the NPR briefing package, CPSC staff identified a total of 436 incidents, including 108 reported injuries and 19 reported fatalities involving child gates and enclosures, occurring from January 1, 2008 to October 31, 2018. Since that data extraction, CPSC staff identified an additional 42 incidents that occurred from November 1, 2018 to January 7, 2020, including 4 reported injuries and 3 reported fatalities. Staff excluded injuries or fatalities sustained by anyone 5 years or older, because these products are not intended for children older than 23 months, and the statutory definition of “durable infant or toddler products” states that the products are “intended for use, or that may be reasonably expected to be used, by children under the age of 5 years,” citing Section 104(f)(1) of the CPSIA.

2. *Injury Estimates (NEISS)*

As described in the NPR briefing package, staff estimated that a total of 22,840 injuries (sample size=820, coefficient of variation=0.10) related to gates and enclosures were treated in U.S. hospital emergency departments from 2008 to 2017. With the finalization of NEISS data in spring 2019, staff's update includes injury estimates for 2018, resulting in an estimated total of 25,430 injuries (sample size=928, coefficient of variation=0.11) related to safety gates and enclosures treated in U.S. hospital emergency departments from 2008 to 2018. During this

period, staff did not observe a statistically significant trend. Staff reports injury estimates for each individual year in Tab A.

3. Injuries

Since the NPR, CPSC staff is aware of 39 reported nonfatal incidents related to gates and enclosures that occurred from November 1, 2018 to January 7, 2020. Of the 39 nonfatal incidents, 4 incidents reported an injury to a child younger than 5 years of age.

Two incidents involved injuries from falls related to the failure or collapse of gates and enclosures: in one incident, a victim bumped her face on the floor after mounting an enclosure, which collapsed under her weight. In another incident, gate failure led to a 9-month-old sustaining minor bruises after falling down 14 steps.

In two additional incidents, victims caught their fingers in the gaps of a gate. One 12-month-old victim managed to wedge his hand into the bottom of a gate between the floor and a lower rail, resulting in a swollen finger, while another victim almost broke his finger in the clasp used to latch a gate.

In the other 35 incidents, no reported injuries occurred to children younger than 5 years of age. However, many of the descriptions indicated potential injury or death to children younger than 5 years of age, such as hazards from sharp edges, pinching, falls, entrapments, and choking.

4. Fatalities

Since the NPR, CPSC staff identified 3 fatal incidents reported to have occurred from November 1, 2018 to January 7, 2020. All three incidents involved a gate.

A 2-year-old decedent drowned after climbing out of a crib, knocking over a baby gate, pushing open a living room door, and gaining access to an in-ground pool.

A 23-month-old suffocated in a gate opening while attempting to climb out of a crib after a baby gate was placed over the crib.

A 2-year-old suffered asphyxiation after her neck was caught between a baby gate, fabric sheet, and door frame.

5. Hazard Patterns

Table 1. Distribution of Reported Incidents, Fatalities, and Nonfatal Injuries Associated with Gates and Enclosures by Hazard Patterns (Incidents since NPR in Parentheses)

<i>Issues</i>	<i>Total Incidents</i>		<i>Fatalities</i>		<i>Nonfatal Injuries</i>	
	<i>Count</i>	<i>Percentage</i>	<i>Count</i>	<i>Percentage</i>	<i>Count</i>	<i>Percentage</i>
Product-Related	453 (41)	95	6 (2)	27	104 (4)	93
<i>Hardware</i>	183 (20)	38	--	--	39 (1)	35
<i>Slats</i>	109 (2)	23	--	--	16	14
<i>Material/Finish</i>	58 (8)	12	--	--	18	16
<i>Design</i>	49 (7)	10	(1)	5	21 (2)	19
<i>Installation</i>	21 (1)	4	5(1)	23	4	4
<i>Misc. Other</i>	7	1	--	--	1	< 1
<i>Instability</i>	4 (1)	< 1	--	--	3 (1)	3
<i>Multiple</i>	22 (2)	5	--	--	2	2
Non-Product-Related	12 (1)	3	9 (1)	41	3	3
<i>Climb-Over</i>	4	< 1	1	5	3	3
<i>Misuse</i>	4 (1)	< 1	4 (1)	18	--	--
<i>Caregiver Misstep</i>	3	< 1	3	14	--	--
<i>Repaired/Modified</i>	1	< 0.5	1	5	--	--
Undetermined	13	3	7	32	5	4
Total	478 (42)	100	22 (3)	100	112 (4)	100

Source: CPSC epidemiological database CPSRMS.

Note: Percentages may not sum to 100 due to rounding.

Injuries and fatalities shown were sustained by children under 5 years of age.

D. Provisions in ASTM F1004 – 19 (Tab B)

ASTM F1004-19 addresses numerous hazards with several general requirements, most of which are also found in the other ASTM juvenile product standards. The following are the general requirements contained in ASTM F1004 – 19:

- Wood parts
- Threaded fasteners may not be used on components intended to be removed by the consumer for daily operations
- Sharp points
- Small parts
- Openings
- Exposed coil springs
- Scissoring, shearing, and pinching
- Labeling
- Lead paint
- Protective components

In addition to the general requirements listed above, ASTM F1004 – 19 contains performance requirements and test methods specific to gates and enclosures, including requirements pertaining to:

- Completely bounded openings
- Height of sides
- Vertical strength
- Bottom spacing
- Configuration of uppermost edge/Partially bounded openings
- Latching/locking and hinge mechanisms
- Automatic closing system
- Push-out strength
- Locking devices
- Toys
- Slat strength
- Warning, labeling, and instructions

Many of these provisions have been strengthened through staff's consultation process with the ASTM committee that started in 2014, including provisions related to bounded openings, slat breakage/slat connection failures, mounting/hinge hardware issues, latch/lock failures, pressure gate push-out forces, and hazard communication (*i.e.*, warning labels and instructions). Tab B contains staff's full discussion of the voluntary standard provisions.

E. History of the ASTM Voluntary Standard (Tab B)

ASTM first approved and published the voluntary standard for gates and enclosures in 1986 (ASTM F1004-86, *Standard Consumer Safety Specification for First-Generation Standard Expansion Gates and Expandable Enclosures*). This standard addressed the head/neck entrapment incidents reported in the "V" shaped openings, which were typical of the accordion-style gates of the time. During this time, the subcommittee members, including CPSC staff, considered requirements for push-out force (terminology used in 1986 was *security* of a gate); however, due to technical difficulties, the subcommittee was not able to develop repeatable test methods. The task group decided to defer push-out requirements to a "second generation" of the standard, to avoid delaying the publication of requirements to address head and neck entrapment.

- *Summary of Revisions 1986-2013*
Between 1986 and 2013, ASTM F1004 underwent a series of revisions to improve the safety of gates and enclosures and to clarify the standard. Nine of these revisions occurred between 2000 and 2013. Revisions during this period included provisions to address foot-pedal actuated opening systems, warnings, evaluation of *all* manufacturer's recommended use positions, test fixture improvements, entrapment in openings along the side of the gate, lead-containing substances in surface, along with other minor clarifications and editorial corrections.

- *Revisions 2014 – Present*

Beginning in 2014, CPSC staff worked with ASTM to address identified hazards and to increase the stringency of the voluntary standard and the safety of the gates and enclosures on the U.S. market. Specifically, staff's concern extended to issues and hazards from bounded openings, slat breakage/slat connection failures, mounting/hinge hardware issues, latch/lock failures, pressure gate push-out forces, and hazard communication (*i.e.*, warning labels and instructions). Seven revisions during this time period addressed provisions for the six areas above, plus other clarifications and improvements, as shown in the table below. Tab B in the NPR package² contained additional details regarding each revision.

Issues	Hazard	Standard Version(s) addressing issue	Provisions/Revision
Bounded openings	Design(entrapment)	1004-16a 1004-18	<ul style="list-style-type: none"> • Clarify that the openings in the “Completely-Bounded Openings” performance requirement are the ones contained within the gate or enclosure, and created between the gate and the test fixture • Require completely bounded openings test to be performed with a probe in combination with a 25 lbf • Completely bounded openings and bottom spacing test to improve repeatability and reliability of results
Slat breakage/slat connection failures	Hardware Slats Material/finish	1004-15a 1004-16a 1004-18	<ul style="list-style-type: none"> • Prohibit the use of lateral/transverse joints on wood slats • Test not only every other joint between enclosure panels, but also the top rail of every other enclosure panel • Test the strength of wood and metal slats
Mounting/hinge hardware issues	Hardware Design	1004-16a 1004-18	<ul style="list-style-type: none"> • Added a hardware durability test • Test not only every other joint between enclosure panels, but also the top rail of every other enclosure panel • The latching/locking and hinge mechanism must remain engaged and operational during and upon completion of testing
Latch/lock failures	Hardware	1004-15a 1004-16a 1004-18	<ul style="list-style-type: none"> • Locks must either have double action release mechanism or else they must pass a minimum operation force requirement test • Automatic closing systems must continue to operate as advertised after the hardware cycle test is complete • The device must remain engaged and operational during and upon completion of the latching/locking and hinge mechanism testing
Remaining upright	Installation	1004-15a 1004-18	<ul style="list-style-type: none"> • Products must comply with all requirements with and without the use of any and all extension panels

² <https://www.cpsc.gov/s3fs-public/Proposed%20Rule%20-%20Safety%20Standard%20for%20Gates%20and%20Enclosures%20-%20June%2019%202019.pdf>

(including push out)		1004-19	<ul style="list-style-type: none"> • Must pass performance requirements when installed in any of the manufacturer's recommended use positions • Units must remain in the manufacturer's recommended use position and all locks/latches must function as normal upon completion of vertical strength testing • Test fixture construction and setup • Revised completely bounded openings and bottom spacing test, and push-out tests to improve repeatability and reliability of results • All gates must meet 30 pounds of push force before dislodging from the opening • Gates that use wall cups must meet certain provisions regarding packaging, warnings, and instructions
Hazard communication	Installation	1004-15 1004-18 1004-19	<ul style="list-style-type: none"> • Packaging must indicate the range of operating widths for which the gate is designed. • Installation instructions must provide information regarding where to install the gate, relative to the floor • Marking and labeling requirements to align with formatting requirements of ANSI Z535.4, <i>American National Standard for Product Safety Signs and Labels</i>, and other requirements consistent with the Ad Hoc Wording task group recommendations • Installation instructions must specify the minimum distance to the first step of the stairs for gates that are recommended for use at the top of stairs • Gates that use wall cups must include the warning "You MUST install wall cups to keep gate in place. Without wall cups, child can push out and escape."
Other		1004-16 1005-16b	<ul style="list-style-type: none"> • Clarification regarding enclosure floors • Specified order of tests

III. DISCUSSION

A. Adequacy of ASTM 1004 – 19 Requirements (Tabs B and C)

ASTM developed the voluntary standard to mitigate the risk of injury by addressing the hazard patterns associated with the use of gates and enclosures. The standard includes instructions and on-product warnings to help inform caretakers of the primary hazards that can occur when using the product.

Based on the engineering assessment (see Tab B) and human factors assessment (see Tab C), staff concludes the requirements contained in the current voluntary standard, ASTM F1004 – 19, adequately address the majority of identified hazards associated with the use of gates and enclosures, such as hardware issues, slat problems, poor quality materials and finishes, and design issues, which together account for more than three-quarters of the reported incidents. Four percent of reported incidents, and 23 percent of fatalities, are related to installation issues. The most recent revision, ASTM F1004 – 19, represents a large step forward in addressing installation issues, especially related to pressure-mounted gate push-out hazards. The revision

requires that all gates must meet the same push-out force (e.g. 30 pounds) and includes provisions that allow the use of wall cups to meet this requirement. CPSC staff testing found that most pressure-mounted gates tested can meet the 30-pound push-out force requirements of ASTM F1004-19 with the use of wall cups. However, CPSC staff concludes that additional requirements are necessary to further strengthen the standard to reduce the risk of injury associated with use of pressure-mounted gates by increasing the likelihood that caregivers install these gates securely to confine their child.

1. Warnings and Instructions

Section 8 of ASTM F1004-19 specifies labeling and warning requirements for gates and enclosures. All gates and enclosures must include warnings on the product about the risk of serious injury or death when a product is not securely installed, must warn the consumer never to use the product with a child who is able to climb over or dislodge the gate, and never to use the gate to prevent access to a pool. Pressure-mounted gates, gates with locking mechanisms, and enclosures require other warning messages specific to the hazards posed by these different types of gates or enclosures, with as many as six different messages required.

Specifically, the warnings required for all gates and enclosures are:

Children have died or been seriously injured when [gates/enclosures] are not securely installed. ALWAYS install and use [gate/enclosure] as directed using all required parts. (§ 8.5.1)

STOP using when a child can climb over or dislodge the [gate/enclosure]. (§ 8.5.2)

NEVER use to keep child away from pool. (§ 8.5.6)

Pressure-mounted gates with a single-action locking mechanism on one side of the gate must include the following warning:

Install with this side AWAY from child. (§ 8.5.3)

Enclosures with locking or latching mechanisms must include the following warnings:

Use only with the [locking/latching] mechanism securely engaged. (§8.5.4)

These warnings are also required on the retail packaging, unless the warnings are visible in their entirety to consumers on the gate at point of purchase.

Based on the placement requirements of ASTM F1004 – 19, a single warning label that includes all of the warnings shown in Figure 2 must be visible to the caregiver standing near the gate or enclosure at any one position around the gate or enclosure, but not necessarily visible from all positions.

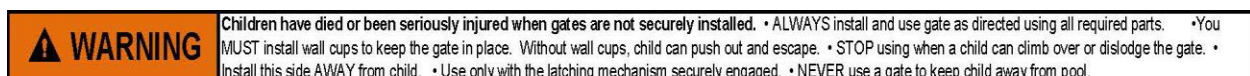


Figure 2. Example warning label

Staff concludes that strengthening the location requirement for warning messages related to the installation of pressure-mounted gates (*i.e.*, Figure 2) would increase the safety of pressure-mounted gates and further reduce the risk of injury associated with installation of these gates. This additional requirement is discussed below.

2. Additional requirements

To further reduce the risk of injury associated with incorrectly installed pressure-mounted gates, staff recommends that the final rule include two alternative requirements, discussed in the NPR, to meet the 30-pound push-out force test for these gates:

- (1) for pressure-mounted gates that use wall cups to meet the 30-pound push-out force test, the gates must include a separate warning label in the newly required location described below, or
- (2) for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test, the gates must use visual side-pressure indicators to show caregivers that the gate is correctly installed.

a. Wall Cup Warning

The use of wall cups to meet the 30-pound push-out force test, and thus, to improve safety, relies on consumers actually installing the wall cups. To improve the likelihood that consumers will install the wall cups and heed the associated warning label, the location of the label is important. Because installation-related incidents with pressure-mounted gates include deaths and serious injuries, and wall cups are critical features in the correct installation of some pressure-mounted gates. Accordingly, throughout the consultation process, CPSC staff has consistently recommended that ASTM consider locating the pressure-gate/push-out warning as a separate and distinct warning, positioned in a highly conspicuous location, such as along the top rail of the gate. A top rail location would be within the caregiver's line of sight and oriented in a readable direction during normal use of the gate.

In the NPR, staff indicated that further collaboration with stakeholders at ASTM could lead to moving the wall cup warning language to a highly conspicuous, separate, and distinct label, located along the top rail of the gate (see example below) visible to a caregiver operating the gate. Currently, the warning language is mixed in with the other warning statements. However, no task group or subcommittee meetings occurred between June 2019 and December 2019; nor did any ballot issue to this effect. In December 2019, staff sent a letter³ to the ASTM subcommittee chair requesting a subcommittee meeting and proposing specific ballot language regarding this recommendation. The subcommittee met on January 21, 2020, and agreed to send the proposal, with minor revisions, to ballot. This ballot was issued on March 5, 2020 (ASTM Ballot F15 (20-02), Item 4), and closed on April 6, 2020. The ballot received two substantive negative votes, both noting that the balloted language stated that all "products" must contain the wall cup warning, rather than just pressure-mounted gates. On May 6, 2020, ASTM released a

³ <https://www.regulations.gov/contentStreamer?documentId=CPSC-2019-0014-0006&contentType=pdf>.

ballot (F15 (20-04), Item 6) re-balloting the previous item 4 to address the negatives. The ballot replaced the word “products” with “pressure-mounted gates” for clarification. This ballot closes on June 5, 2020.

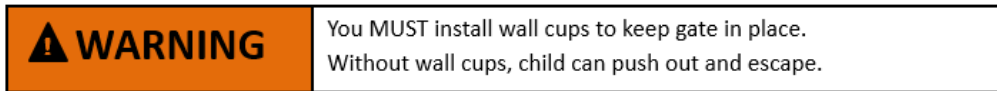


Figure 3. Wall cup warning

Accordingly, to further reduce the risk of injury associated with incorrectly installed pressure-mounted gates, staff recommends that the draft final rule require that the warning about wall cups be located along the top rail of the gate, separate and distinct from other warnings. Exact wording for the location requirement of this warning label can be found in Tab C. The wording in Tab C harmonizes with item 6 on ballot F15 (20-04).

3. *Visual Indicators*

Prior to the NPR, staff presented a series of recommendations to the F15.16 subcommittee to improve the installation of pressure-mounted gates. The recommendations included suggested improvements to the push-out test and potentially using visual indicators to inform caregivers when a pressure-mounted gate is securely installed. Leading up to the NPR, the subcommittee made the recommended improvements to the push-out test in the standard, and in addition, required that all gates (including pressure-mounted gates) meet 30 pounds of push-out resistance.

Although some pressure-mounted gates are capable of meeting 30 pounds of push-out resistance without wall cups if they are installed perfectly, most pressure-mounted gates will use wall cups, which will be required to come with the gate, to meet this requirement. However, ASTM F1004-19 contains no requirement to alert the end consumer that a pressure gate that does not use wall cups is installed correctly. Instructions for some pressure-mounted gates that do not come with wall cups provide little or no clear direction to help consumers know if the gate is installed correctly or that it will stay in place after several uses.

For example, gates currently on the market may instruct the consumer to adjust until secure, or to push the gate to *feel* that it is secure. Staff observed that even when following the manufacturer’s instructions, the push-out force for some gates that use tension bolts varied each time the gate was re-installed and tested. Staff also observed that with one metal gate, which incorporates tension bolts and nuts to secure it in place, only a half-rotation of the tension nuts would change the distance between the gate and the test fixture by 0.032 inches and result in a gate meeting or not meeting the 30-pound push-out force requirement. These adjustments are barely noticeable to the average consumer, who relies only on *feel*, not precise measurements, and gets no additional feedback.

Staff testing and analysis, discussed in detail in the NPR briefing package, Tab C, suggests that visual indicators can improve the safety of pressure-mounted gates that do not use wall cups. At the time of the NPR, staff recommended continuing to work with the ASTM subcommittee to

resolve the issue. However, no task group or subcommittee meetings occurred, nor was a ballot issued on this matter between June 2019 and December 2019. The NPR invited comments on this specific issue, but the Commission did not receive any comments.

In a letter dated December 11, 2019,⁴ CPSC staff proposed specific language to ballot for the ASTM standard. Staff's proposed language suggested visual indicators for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test. The ASTM subcommittee discussed staff's proposed language at the subcommittee meeting on January 21, 2020.⁵ Members raised concerns about potential issues, such as proposed language using the term "minimum pressure." Some subcommittee members said that staff's proposed language implied that a test lab would need to measure the pressure at each corner of the gate. CPSC staff clarified that the intent was for the current push-out force performance test to identify gates that incorrectly indicate that the required side pressure is maintained. After this discussion, however, the ASTM subcommittee chair reactivated the visual indicators task group to potentially revise staff's proposed language to address subcommittee member concerns. The task group met on March 10, 2020, to discuss the draft ballot proposal. Discussion focused on the testability of the visual side-pressure indicator performance requirement for pressure-mounted gates. Task group members achieved consensus on a path forward, with the task group chair agreeing to revise the proposed ballot language to address member concerns and resend to the task group for review.

CPSC staff received a draft proposal from the task group chair on April 2, 2020. The task group chair recirculated the same draft on April 22, 2020. On April 23, the task group chair, who is also the subcommittee chair responsible for ballot submissions, indicated his intention to ballot the proposal unless he receives significant comments from the task group necessitating another meeting. Staff is unaware of any further comment. CPSC staff evaluated the revised draft proposal and found that it adequately addressed staff's concerns and further determined that the draft proposal provided a visual indicator of whether a pressure-mounted gate that does not use wall cups to meet the 30-pound push-out force test is installed securely. Staff anticipates that ASTM will ballot this requirement within the next few months to incorporate into ASTM F1004. Accordingly, to further reduce the risk of injury associated with incorrect installation of pressure-mounted gates, staff recommends for the draft final rule that pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test shall include visual indicators to inform caregivers whether the gate is securely installed. Exact wording for the visual indicator requirement for pressure-mounted gates can be found in Tab B. This language is harmonized with the ASTM task group's revised draft proposal circulated on April 22, 2020.

B. International Standards (Tab B)

In the NPR, CPSC staff concluded that the ASTM standard is equivalent or more stringent than other international standards in most areas and addresses the hazard patterns seen in the incident data reported to the CPSC. Furthermore, CPSC staff and stakeholders collaborated to develop ASTM F1004 – 19 since its inception in 1986. Therefore, for the draft final rule, staff continues

⁴ <https://www.regulations.gov/contentStreamer?documentId=CPSC-2019-0014-0006&contentType=pdf>

⁵ <https://www.cpsc.gov/s3fs-public/2020-3-10%20%20Gates%20Visual%20Side-Pressure%20Indicator%20Task%20Group%20Meeting%20%E2%80%93%20Gates%20and%20Enclosures%20F15.16.pdf>

to conclude that ASTM F1004 – 19, with the two additional staff-recommended modifications, is more appropriate than other international standards to address the risk of injury associated with gates and enclosures.

C. Compliance Recalls

For the NPR, staff reviewed the recalls involving gates and enclosures that occurred during the period January 2008 to December 2018. During that period, five recalls occurred involving baby gates, and one recall occurred involving an enclosure. The recalls followed reported falls, entrapments, tripping, and laceration hazards to children. A total of 215 incidents were reportedly associated with the recalled products. Thirteen incidents resulted in injuries. The Office of Compliance reports no additional recalls involving gates or enclosures since December 2018.

D. Assessment of Small Business Impact of the Draft Proposed Rule (Tab D)

Staff identified 127 firms supplying gates and enclosures to the U.S. market. The majority of suppliers to the U.S. market are domestic, including domestic importers of gates manufactured elsewhere. About 80 very small home-based domestic manufacturers of gates exist, as well as 37 domestic entities that are considered small, based on the U.S. Small Business Administration (SBA) guidelines. The remaining 10 suppliers that are not small domestic businesses include four large domestic firms and six foreign firms.

As described in Tab D, staff concludes it is unlikely that there would be a significant economic impact on the 23 small domestic firms that currently sell gates and enclosures that comply with the ASTM standard. Staff also expects that nine of the small suppliers that sell non-compliant gates and enclosures will not be significantly impacted because those companies sell a variety of other products, and gates and enclosures are not a significant portion of their revenue. However, staff concludes that there may be a significant economic impact for two of the small manufacturers and three of the importers/wholesalers that have non-compliant gates or enclosures as most of their product line. In addition, staff believes it is likely that all 80 of the very small, home-based gate suppliers will be significantly impacted by the final rule because all of their gates would probably require substantial redesign to achieve compliance, and would also have to be tested by a third party to demonstrate compliance. Staff expects that the great majority of the home-based manufacturers will stop selling gates for use with children, because their revenue will not be sufficient to cover compliance and testing costs, which would include costs for structural redesign, labeling and instructions, and third party testing. Staff believes it is possible that some of these firms may re-label their gates as pet gates, thus, reducing the economic impact of this rule.

Section 104 of the CPSIA requires that the Commission promulgate a standard for gates and enclosures that is either substantially the same as the voluntary standard, or more stringent than the voluntary standard, if the Commission determines that more stringent standards would further reduce the risk of injury. Staff cannot recommend a draft final rule to address the hazard patterns associated with gates and enclosures that would reduce the impact on small entities

without making the performance requirements less stringent. If the Commission chooses to promulgate ASTM F1004 – 19 without the additional requirements for pressure-mounted gates, the standard would not reduce most of the impact on small businesses, and the hazard pattern would not be addressed.

As noted in staff’s responses to public comments, staff recommends an effective date 12 months after publication of the final rule, which will give small businesses that are not compliant more time to bring their products into compliance and arrange for third party testing.

E. Notice of Requirements

Section 14(a) of the CPSA requires that any children’s product subject to a consumer product safety rule under the CPSA must be certified as complying with all applicable CPSC-enforced requirements. The children’s product certification must be based on testing conducted by a CPSC-accepted third party conformity assessment body (test laboratory). The CPSA requires the Commission to publish a notice of requirements (NOR) for the accreditation of third party test laboratories to determine compliance with a children’s product safety rule to which a children’s product is subject. If issued, the draft final rule is a children’s product safety rule that requires the issuance of an NOR.

The Commission published a final rule, Requirements Pertaining to Third Party Conformity Assessment Bodies. 16 CFR part 1112 (78 Fed. Reg. 15836 (March 12, 2013)) (referred to here as part 1112). This rule took effect on June 10, 2013. Part 1112 establishes the requirements for accreditation of third party testing laboratories to test for compliance with a children’s product safety rule. Part 1112 codifies all of the NORs that the CPSC has published, to date, for children’s product safety rules. All new children’s product safety rules, such as a final rule on gates and enclosures, require an amendment to part 1112 to create an NOR. Therefore, staff recommends that the Commission publish a final rule updating part 1112 to include gates and enclosures in the list of children’s product safety rules for which the CPSC has issued NORs.

IV. Response to Public Comments

During the public comment period, CPSC received three comments.⁶ One comment was out of scope, and did not address the NPR. The other two comments, from the same entity, were generally supportive of the NPR and the collaboration process with ASTM. However, the commenter disagreed with the proposed 6-month effective date, due to the anticipated impact on small businesses. As discussed in the next section, staff recommends a 12-month effective date for the draft final rule.

V. Effective Date

The Administrative Procedure Act (APA) generally requires that the effective date of a rule be at least 30 days after publication of the final rule (5 U.S.C 553(d)). In the NPR, staff recommended

⁶ All available at: <https://www.regulations.gov/docket?D=CPSC-2019-0014>.

a 6-month effective date. However, staff received one comment requesting a later effective date. Staff is recommending two additional requirements in the draft final rule related to pressure-mounted gates. A later effective date could reduce the economic impact on firms in two ways. First, firms would be less likely to experience a lapse in production/importation, which could result if they are unable to comply and obtain third party testing within the required timeframe, or find a new supplier. Second, firms could spread costs over a longer time period with a later effective date. Therefore, staff recommends a 12-month effective date.

VI. Staff Conclusion and Recommendations

Staff recommends that the Commission issue the draft final rule for gates and other enclosures for confining a child. The draft final rule would incorporate by reference ASTM F1004 – 19, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures*, with modifications providing two alternative requirements to further reduce the risk of injury associated with incorrectly installed pressure-mounted gates:

- (1) for pressure-mounted gates that use wall cups to meet the 30-pound push-out force test, the gates must include a separate wall cup warning label in a newly required location along the top rail of the gate, or
- (2) for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test, the gates must use visual side-pressure indicators to show caregivers that the gate is correctly installed.

Finally, staff also recommends an effective date 12 months after publication of the final rule to allow time for gate and enclosure manufacturers to bring their products into compliance and to arrange for third party testing.

TAB A: Gates and Enclosures-Related Deaths, Injuries, and Potential Injuries Update

Date: May 22, 2020

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TO : Hope Nesteruk
Expansion Gates and Expandable Enclosures Project Manager
Division of Mechanical Engineering
Directorate for Engineering Sciences

THROUGH: Risana Chowdhury
Division Director, Division of Hazard Analysis
Directorate for Epidemiology

FROM : Ted Yang
Division of Hazard Analysis
Directorate for Epidemiology

SUBJECT : Gates and Enclosures-Related Deaths, Injuries, and Potential Injuries Update

I. Introduction

This memorandum provides updated data on child gates and enclosures that CPSC staff received after presenting the notice of proposed rulemaking (NPR) briefing package to the Commission in December 2018. The period covered by the previous data extraction, and discussed in the NPR briefing package, spanned January 1, 2008 to October 31, 2018. Staff extracted the data from incident reports in CPSC's Consumer Product Safety Risk Management System (CPSRMS) for January 1, 2008 to December 31, 2017, and characterized injuries based on National Electronic Injury Surveillance System (NEISS) records. This memorandum summarizes incident reports on child gates and enclosures received in CPSRMS from November 1, 2018 through January 7, 2020. The memo also presents national injury estimates for the period January 1, 2008 through December 31, 2018.⁷

⁷ Not all of these incidents are addressable by an action the CPSC could take. The purpose of this memorandum is not to evaluate the addressability of the incidents, but rather, to quantify the number of fatalities and injuries reported to CPSC staff and to provide, when feasible, estimates of emergency department-treated injuries.

II. Incident Data⁸

From the NPR briefing package, CPSC staff was aware of a total of 436 incidents, including 108 reported injuries and 19 reported fatalities involving child gates and enclosures, occurring from January 1, 2008 to October 31, 2018. Since that data extraction, CPSC staff identified an additional 42 incidents entered into CPSRMS from November 1, 2018 to January 7, 2020, including four reported injuries and three reported fatalities. Staff excluded injuries or fatalities sustained by anyone 5 years or older.

Because reporting is ongoing, the number of reported incidents during this period may change in the future; CPSC staff strongly discourages drawing inferences based on the year-to-year increase or decrease shown in the reported data. Table 1 shows the number of incidents reported to CPSC from January 1, 2008 through January 7, 2020.

Table 1: Reported Gates and Enclosures-Related Incidents
01/01/08 – 01/07/20
(Incidents Since NPR in Parentheses)

<i>Incident Year</i>	<i>Total Number of Reported Incidents</i>	<i>Number of Reported Fatalities</i>	<i>Number of Reported Nonfatal Injuries</i>
2008	31	1	12
2009	85	3	17
2010	97	5	17
2011	43	2	13
2012	32	--	6
2013	13	2	3
2014	30	1	5
2015	29	2	9
2016	23	--	2
2017*	22	2	11
2018*	38 (7)	3 (2)	14 (1)
2019*	(35)	(1)	(3)
Total	478 (42)	22 (3)	112 (4)

Source: CPSC epidemiological database CPSRMS.

Note: * indicates data collection is ongoing.

⁸ Staff searched the CPSC database CPSRMS. Reported incidents in the findings do not provide a complete count of all that occurred during this period. However, reported incidents do provide a minimum number of deaths and incidents occurring during this timeframe, and illustrate the circumstances involved in the incidents related to expansion gates and expandable enclosures.

Staff extracted reported incident data on 01/07/20. Staff extracted all data, coded under product code 1506 (Baby Gates or Barriers). Upon careful joint review with CPSC's Directorates for Engineering Sciences staff, staff considered some cases out of scope for purposes of this memorandum. For example, staff excluded incident reports where products were incorrectly coded as children's safety gates; staff also excluded a report of an adult tripping on a safety gate that subsequently crashed on a child. With the exception of incidents occurring in U.S. military bases, staff excluded all incidents that occurred outside of the United States. To prevent any double-counting, when staff identified multiple reports of the same incident, staff consolidated the reports and counted them as one incident.

Table 2 provides the age distribution for the 478 total incidents from January 1, 2008 to January 7, 2020. Table 2 includes age breakdowns for the combined data, as well as for gates and enclosures, separately.

Table 2: Age Distribution in Gates and Enclosures-Related Incident Reports
01/01/08 – 01/07/20
(Incidents Since NPR in Parentheses)

<i>Age</i>	<i>Total</i>		<i>Gates</i>		<i>Enclosures</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Unreported*	146 (21)	31	127 (18)	30	19 (3)	38
0 – Less Than 1 Year	63 (6)	13	51 (4)	12	12 (2)	24
1 – Less Than 2 Years	148 (7)	31	130 (5)	30	18 (2)	36
2 – 4 Years	97 (7)	20	96 (6)	22	(1)	2
5 Years or Older	24 (1)	5	24 (1)	5	--	--
Total	478 (42)	100	428 (34)	100	50 (8)	100

Source: CPSC epidemiological database CPSRMS.

Note: Percentages may not sum to 100 due to rounding.

*In this table, age “unreported” implies age was unknown or age was not reported because the incident involved no injury.

Table 3 presents the age distribution for children under 5 years, who suffered fatal or nonfatal injuries from January 1, 2008 to January 7, 2020. Table 3 includes seven additional incidents since the NPR, from November 1, 2018 to January 7, 2020. Of the seven additional incidents, three incidents involved fatalities (one 23-month-old victim and two 2-year-old victims); while four incidents involved nonfatal injuries (one 9-month-old victim, one 12 month-old victim, and two victims of unknown-age). Only one of the additional incidents involved the use of an enclosure, while the rest involved the use of a gate.

Table 3: Age Distribution in Gates and Enclosures-Related Incidents Reporting Fatalities and Nonfatal Injuries among Children Under 5 Years of Age 01/01/08 – 01/07/20
(Incidents Since NPR in Parentheses)

<i>Age of Child</i>	<i>Total</i>		<i>Gates</i>		<i>Enclosures</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Unreported*	15 (2)	11	8 (1)	7	7 (1)	44
0 – Less Than 1 Year	25 (1)	19	22 (1)	18	3	19
1 – Less Than 2 Years	53 (2)	39	47 (2)	39	6	38
2 – 4 Years	41 (2)	30	41 (2)	34	--	--
Total	134 (7)	100	118 (6)	100	16 (1)	100

Source: CPSC epidemiological database CPSRMS.

Note: Percentages may not sum to 100 due to rounding.

*In this table, age “unreported” implies age was unknown or age was not reported because the incident involved no injury.

a. *Fatalities*

Since the NPR, CPSC staff identified three fatal incidents reported to have occurred from November 1, 2018 to January 7, 2020. All three incidents involved a gate.

One 2-year-old decedent drowned after climbing out of a crib, knocking over a baby gate, pushing open a living room door, and gaining access to an in-ground pool.

In two additional incidents, a 23-month-old suffocated in a gate opening while attempting to climb out of a crib after a baby gate was placed over the crib; and a 2-year-old suffered asphyxiation after her neck was caught in a baby gate, fabric sheet, and door frame.

b. *Nonfatal Incidents*

Since the NPR, CPSC staff is aware of 39 reported nonfatal incidents related to gates and enclosures that occurred between November 1, 2018 and January 7, 2020. Of the 39 nonfatal incidents, four incidents reported an injury to a child (younger than 5 years of age).

Two incidents involved injuries from falls related to the failure or collapse of gates and enclosures: in one incident, a victim bumped her face on the floor after mounting an enclosure, which collapsed under her weight. In another incident, gate failure led to a 9-month-old sustaining minor bruises after falling down 14 steps.

In two additional incidents, victims caught their fingers in the gaps of a gate. One 12-month-old victim wedged his hand into the bottom of a gate between the floor and a lower rail, resulting in a swollen finger, while another victim almost broke his finger in the clasp used to latch a gate.

In the other 35 incidents, no reported injuries to children younger than 5 years of age occurred. However, many of the incident descriptions indicated potential injury or death from sharp edges, pinching, falls, entrapments, and choking.

III. Hazard Pattern Identification

In the NPR briefing package, staff identified the hazard patterns for 436 reported incidents (19 fatal and 417 nonfatal) associated with the use of safety gates and enclosures. For the final rule, CPSC staff did not identify any new incidents in these hazard categories: *miscellaneous other issues and consumer comments, climb-over, caregiver misstep, repaired/modified, and undetermined*. Staff categorized all 42 new incidents into the following categories discussed in the NPR, in order of descending frequency:

- **Hardware issues:** Twenty of the 42 incidents (48 percent) reported hardware problems, including:
 - lock/latch hardware (*e.g.*, lock or latch breaking, not latching correctly, or opening too easily);
 - hinge hardware (mostly loose or breaking, causing the gate to fall off);

- mounting hardware (mostly loose or breaking, causing the gate to fall off);
- other hardware (suction cup coming loose).

One injury involving minor bruising from a fall was reported in this category. Overall, including data presented at the NPR, 183 out of 478 incidents (38 percent) involved hardware issues.

- ***Poor quality material and finish:*** Eight of the 42 incidents (19 percent) reported problems with small parts liberating, broken welding, and sharp edges. No injuries were reported in this category. Overall, including data presented at the NPR, 58 out of 478 incidents (12 percent) involved issues with poor quality material and finish.
- ***Design issues:*** Seven of the 42 incidents (17 percent) reported problems with the design of the gate or enclosure. The reported problems consisted of issues with:
 - opening sizes between slats or enclosure panels, which can result in limb or head entrapment;
 - pinch-points created near an L-shaped clasp on a gate, and during the sliding action of a door on a gate;
 - a specific design, which features a foot-hold that a child can use to climb over the safety gate;
 - a gate's retraction system, where the gate fails to retract correctly after installation;
 - drilled holes used for connecting gates, which allowed plastic shavings to accumulate; or
 - a specific design involving rails at the bottom of a gate at several different heights, posing a trip hazard.

Two injuries and one death were reported in this category, including swollen or pinched fingers from inserting them into openings of a gate and a fatal entrapment in a gate, fabric sheet, and door frame. Overall, including data presented at the NPR, 49 out of 478 incidents (10 percent) involved design issues.

- ***Slat problems:*** Two of the 42 incidents (5 percent) reported slats breaking off or splitting. No injuries were reported in this category. Overall, including data presented at the NPR, 109 out of 478 incidents (23 percent) involved slat problems.
- ***Multiple problems from among the above:*** Two of the 42 incidents (5 percent) described two or more problems from the preceding product-related issues. No injuries were reported in this category. Overall, including data presented at the NPR, 22 out of 478 incidents (5 percent) involved multiple problems.⁹
- ***Installation problems:*** One of the 42 incidents (2 percent) suggested an installation problem, in which a gate was somehow “knocked down” when the child tried to leave

⁹ Redistributing these two incidents among the other categories does not alter their relative rankings. However, since the redistribution would result in the within-category incident numbers adding up to *more* than the total number of incident reports, the two incidents were grouped in a separate category.

the area. This was a fatal drowning incident. Overall, including data presented at the NPR, 21 out of 478 incidents (4 percent) involved problems with installation.

- **Stability issues in enclosures:** One of the 42 incidents (2 percent) reported problems with an enclosure failing to hold together; this resulted in a facial injury. Overall, including data presented at the NPR, four out of 478 incidents (< 1 percent) involved enclosure stability issues.
- **Misuse:** One of the 42 incidents (2 percent) reported a gate being used improperly when an adult secured a baby gate over a crib. One death resulting from entrapment was reported in this category. Overall, including data presented at the NPR, four out of 478 incidents (< 1 percent) involved a misused gate or enclosure, which were among 12 non-product-related issues reported. No additional non-product-related incidents involved children climbing over a gate/enclosure, caregiver missteps resulting in failure to secure a gate/enclosure in place, or a repaired/modified gate/enclosure.

Table 4 presents a summary of the distribution of the 478 incidents by hazard patterns, including the 42 incidents reported since publication of the NPR.

Table 4: Distribution of Reported Incidents, Fatalities, and Nonfatal Injuries Associated with Gates and Enclosures by Hazard Patterns
01/01/08 – 01/07/20
(Incidents Since NPR in Parentheses)

<i>Issues</i>	<i>Total Incidents</i>		<i>Fatalities</i>		<i>Nonfatal Injuries</i>	
	<i>Count</i>	<i>Percentage</i>	<i>Count</i>	<i>Percentage</i>	<i>Count</i>	<i>Percentage</i>
Product-Related	453 (41)	95	6 (2)	27	104 (4)	93
<i>Hardware</i>	183 (20)	38	--	--	39 (1)	35
<i>Slats</i>	109 (2)	23	--	--	16	14
<i>Material/Finish</i>	58 (8)	12	--	--	18	16
<i>Design</i>	49 (7)	10	(1)	5	21 (2)	19
<i>Installation</i>	21 (1)	4	5(1)	23	4	4
<i>Misc Other</i>	7	1	--	--	1	< 1
<i>Instability</i>	4 (1)	< 1	--	--	3 (1)	3
<i>Multiple</i>	22 (2)	5	--	--	2	2
Non-Product-Related	12 (1)	3	9 (1)	41	3	3
<i>Climb-over</i>	4	< 1	1	5	3	3
<i>Misuse</i>	4 (1)	< 1	4 (1)	18	--	--
<i>Caregiver Mis-step</i>	3	< 1	3	14	--	--
<i>Repaired/Modified</i>	1	< 0.5	1	5	--	--
Undetermined	13	3	7	32	5	4
Total	478 (42)	100	22 (3)	100	112 (4)	100

Source: CPSC epidemiological database CPSRMS.

Note: Percentages may not sum to 100 due to rounding.

Injuries and fatalities shown were sustained by children under 5 years of age.

IV. National Injury Estimates¹⁰

As described in the NPR briefing package, staff estimates that a total of 22,840 injuries (sample size=820, coefficient of variation=0.10) related to safety gates and enclosures were treated in U.S. hospital emergency departments from 2008 through 2017. Data from NEISS finalized in spring 2019, is included in staff's update and provides injury estimates for 2018, resulting in an estimated total of 25,430 injuries (sample size=928, coefficient of variation=0.11) related to safety gates and enclosures treated in U.S. hospital emergency departments from 2008 through 2018. During this period, staff did not observe a statistically significant trend. Table 5 reports staff's injury estimates for each year.

**Table 5: Safety Gates and Enclosures-Related Injuries
Among Children Under 5 Years of Age Treated in U.S. Hospital Emergency Departments
01/01/08 – 12/31/18**

Calendar Year	Estimated Injuries	Sample Size	Coefficient of Variation
2008	1,910	74	0.16
2009	1,360	66	0.18
2010	2,740	91	0.18
2011	2,450	74	0.19
2012	2,220	82	0.22
2013	2,790	82	0.19
2014	2,410	86	0.20
2015	2,010	85	0.19
2016	2,410	81	0.21
2017	2,550	99	0.22
2018	2,600	108	0.20
Total	25,430	928	0.11

Source: NEISS, CPSC. Estimates rounded to nearest 10. Estimated injuries from individual years do not sum to estimated total injuries due to rounding.

Staff found no recorded fatalities in NEISS. Staff determined that victim age distribution was very similar to the age breakdown presented in the NPR: 18 percent of all victims were under a year old; 40 percent were at least a year old, but less than 2 years of age; and 42 percent were more than 2 years old, but less than 5 years of age. Due to the limited information from NEISS injury descriptions, which are brief and injury-focused, staff could not feasibly characterize

¹⁰ The source of the injury estimates is the National Electronic Injury Surveillance System (NEISS), a statistically valid injury surveillance system. CPSC gathers NEISS injury data from emergency departments of hospitals selected as a probability sample of all the U.S. hospitals with emergency departments. The surveillance data gathered from the sample hospitals enable CPSC staff to make timely national estimates of the number of injuries associated with specific consumer products.

Staff extracted all data, coded under product code 1506 (*Baby Gates or Barriers*), on 01/07/20. Staff limited victim to less than 5 years. Staff considered certain records out-of-scope for the purposes of this memorandum. For example, staff excluded all injuries where an older sibling caused injury by pushing the victim into a gate/enclosure or by hitting a patient with a safety gate. In another example, staff excluded an uninstalled safety gate falling on a child. Staff excluded these records prior to deriving the statistical injury estimates.

hazard patterns similar to the characterization provided above for CPSRMS incident data. In terms of the most frequent NEISS injury characteristics, staff found the following, based on the limited information provided:

- Hazard – falls (58 percent) and impact on gate/enclosure (30 percent) were the most common. Most of the falls occurred when a child:
 - attempted to climb over or get through a barrier,
 - managed to unlatch a gate/enclosure,
 - interacted with a gate that failed to stay upright and locked,
 - was carried by an adult who tripped over a gate/enclosure, or
 - pulled on a gate/enclosure.

Approximately 11 percent of the impact injuries occurred when a child on a flight of steps fell and hit a safety gate at the bottom of the stairs.

- Injured body part – head (39 percent), face (21 percent), and mouth (10 percent).
- Injury type – lacerations (28 percent), internal organ injury (24 percent), and contusions/abrasions (18 percent).
- Disposition – treated and released (95 percent).

**TAB B: ESMC Staff's Review and Evaluation of ASTM
F1004-19, *Standard Consumer Safety Specification for
Expansion Gates and Expandable Enclosures***

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UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

Memorandum

May 27, 2020

TO: Hope E J. Nesteruk, Gates and Enclosures Project Manager

THROUGH: Mark Kumagai, P.E.,
Associate Executive Director, Directorate for Engineering Sciences
Director, Division of Mechanical and Combustion Engineering

FROM: Carlos Torres, Mechanical Engineer
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

SUBJECT: ESMC Staff's Review and Evaluation of ASTM F1004-19, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures*

I. INTRODUCTION

CPSC's Directorate for Engineering Sciences Division of Mechanical and Combustion Engineering (ESMC) staff reviewed the effectiveness of ASTM F1004-19, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures* for the draft Final Rule (FR) under section 104 of the Consumer Product Safety Improvement Act. ESMC staff examined the evolution of the F1004 standard, and other international children's gate and enclosure standards, and assessed whether ASTM F1004-19 addresses common hazard patterns found in reported incident data. ESMC staff recommends adopting ASTM F1004-19 into the proposed mandatory rule, with one mechanical modification for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test.

II. PRODUCTS

Figures 1 and 2 show typical gates and enclosures on the market. Currently available gates and enclosures are constructed of wood, plastic, metal, mesh, fabric, or a combination of any and all of these materials.



(a)



(b)



(c)



(d)

Figure 1: Gate Examples



Figure 2: Enclosure Examples

The products are defined by the ASTM F1004-19 standard as:

3.1.7 *expansion gate, n*—barrier intended to be erected in an opening, such as a doorway, to prevent the passage of young children, but which can be removed by older persons who are able to operate the locking mechanism.

3.1.7.1 *Discussion*—Such gates are available in a number of different styles of construction and are manufactured from a variety of different materials.

3.1.6 *expandable enclosures, n*—self-supporting barrier intended to completely surround an area or play-space within which a young child may be confined.

3.1.6.1 *Discussion*—Enclosures may be marketed for indoor or outdoor use, or both. Expandable enclosures do not include an attached floor.

A. Gates

Gate manufacturers may offer additional extension panels or the ability to widen gate panels to fit the width consumers need to block off an area. In general, gates can be separated into two main categories, based on the method by which they are installed: (1) hardware-mounted gates, or (2) pressure-mounted gates. Hardware-mounted gates are screwed into anchors or holes in the mounting surfaces and require tools for their semi-permanent installation into walls or doorways. These gates employ an egress panel that retracts (Figure 1a), or swings open (Figure 1b), to allow passage. Pressure-mounted gates require no tools because their installation is based entirely on the pressure exerted when panels or mounting pins are expanded to fit into the area being obstructed. In some cases, pressure-mounted gates may be installed without damaging the mounting surface. Pressure-mounted gates may also have egress panels to allow passage (Figure 1c), or they may allow passage by retracting and removing the expansion panel entirely (Figure 1d). Some manufacturers of pressure-mounted gates also include wall cups that can be attached to the side-mounting surface (*e.g.*, screws or double-sided tape). Once installed, the pressure pads sit inside the wall mounted cups to hold the gate more securely in position (Figure 3).

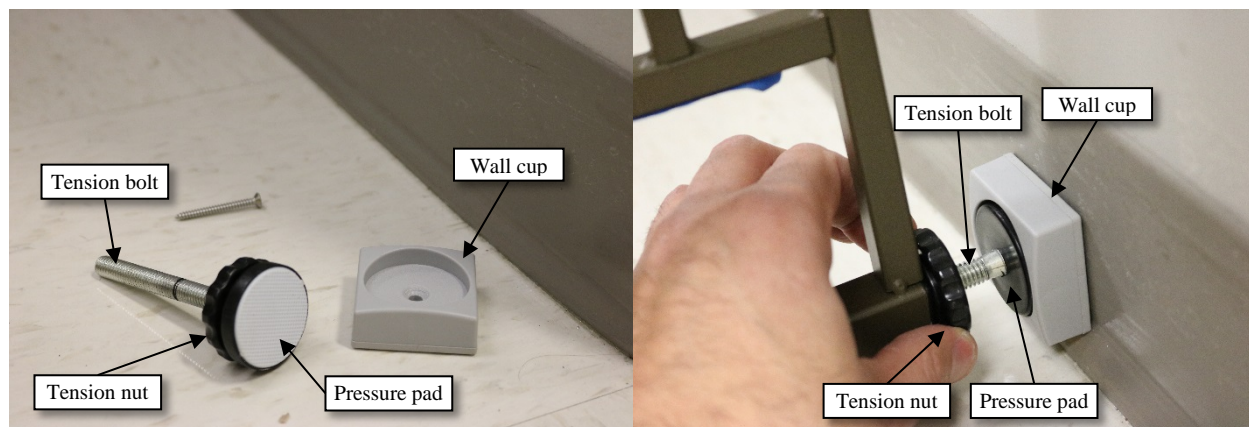


Figure 3: Wall Mounting Cups For Pressure-Mounted Gates

Manufacturers have devised a variety of locking and latching mechanisms to prevent children from passing through the barriers. Some are single-action lever arms that simply scissor

and hold the barriers in their mounted position, while others are more complex double-action release mechanisms that retain swinging “door” (or egress) panels in their closed position.

B. Enclosures

Enclosures usually come with four or more panels that can be interlocked to enclose a desired amount of space. One of the panels may be hinged to provide ease of entry/exit using a locking or latching mechanism. Additional panels may be available to purchase separately to expand the contained space even further to allow children to play safely. Several currently marketed enclosures also include toys or other entertainment features on the child’s side of the enclosure panels. Enclosures do not have floors or bottom surfaces attached. Rather, the child stands freely on whatever surface the enclosure is set. See Figure 2 for examples of currently available enclosures.

III. Description of ASTM F1004-19

ASTM F1004-19 addresses numerous hazards and includes several general requirements typically found in the other ASTM juvenile product standards. The general requirements contained in ASTM F1004-19 are set forth below:

- **Wood parts:** Exposed wood parts shall be smooth and free from splinters. Slats are not permitted to contain any lateral/transverse joints, such as finger-joints, or any other means of joining pieces of lumber end-to-end.
- **Threaded fasteners:** Threaded fasteners may not be used on components intended to be removed by the consumer for daily operations.
- **Sharp points:** There shall be no hazardous sharp edges or points as defined by 16 CFR §1500.48 and 16 CFR § 1500.49.
- **Small parts:** There shall be no small parts as defined by 16 CFR part 1501.
- **Openings:** Holes and/or slots created by wall sections of any rigid material shall be designed to prevent potential entrapment hazard for small fingers.
- **Exposed coil springs:** Exposed coil springs that generate a specified space between the coils shall be covered or designed to prevent injury from entrapment.
- **Scissoring, shearing, and pinching:** Prevent injury to the child 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.
- **Labeling:** Warning labels shall be permanent and not liberate.
- **Lead paint:** Paint and surface coating on the product shall comply with 16 CFR part 1303.
- **Protective components:** Prevent the removal of caps, sleeves, or plugs used for protection from sharp edges, points, or entrapment hazards by children.

In addition to the general requirements listed above, ASTM F1004-19 contains several performance requirements and test methods specific to gates and enclosures described below:

- **Completely bounded openings:** Openings within the gate or enclosure, and completely bounded openings between the gate and the test fixture, shall not permit the complete passage of the small torso probe when it is pushed into the opening with a 25-pound force. This performance requirement addresses incidents where children were found with their heads entrapped after having pushed their way into gaps created between soft or flexible gate and enclosure components, and between the gate and the sides of passageway to be blocked off, *e.g.*, door frame or wall.
- **Height of sides:** The vertical distance from the floor to the lowest point of the uppermost surface shall not be less than 22 inches when measured from the floor. This requirement prevents the intended occupant from being able to lean over, and then tumble all the way over the top of the gate.¹¹
- **Vertical strength:** After a 45-pound force is exerted downward along the uppermost top rail, edge, or framing component, gates and enclosures must not fracture, disengage, fold nor have a deflection that leaves the lowest point of the top rail below 22 inches from the ground. For gates, the 45-pound vertical test force is applied five times to the mid-point of the horizontal top rail, surface or edge of each gate (or each of the top points of a gate that doesn't have a horizontal top edge). This test is carried out with the gate installed at both the maximum and minimum opening widths recommended by the manufacturer. For enclosures, the 45-pound force is applied to every other uppermost rail, surface, or edge and every other top joint of the enclosure. This performance requirement ensures gates and enclosures retain their intended occupants even when children hang from or attempt to climb up the gates.¹²
- **Bottom spacing:** The space between the floor and the bottom edge of an enclosure or gate shall not permit the complete passage of the small torso probe when it is pushed into the opening with a 25-pound force. This requirement addresses incidents where children were found with their heads entrapped after having pushed their way, feet first, into gaps created between the gate and the floor.
- **Configuration of uppermost edge:** Partially bounded openings at any point in the uppermost edge of a gate or enclosure that is greater than 1.5 inches in width and more than 0.64 inches in depth must not allow simultaneous contact between more than one surface on opposite sides of the Test Template B. This requirement addresses head/neck entrapment incidents reported in the "V" shaped openings common in older, "accordion style" gates. Template dimensions screen out non-hazardous openings with angles that

¹¹ According to Rationale X1.2.5.2 included in F1004-19, the minimum height of a panel should be about 80 percent of the height of the maximum aged child in order to retain children of that specified age group (<24 months).

¹² According to Rationale X1.2.6.1, included in F1004-19, the 45-lb. load was selected as the test force because it is considered to be somewhat greater than the force that can be applied by a child of the maximum intended user age.

are either too narrow to admit the smallest user's neck, or too wide to entrap the largest user's head.

- **Latching/locking and hinge mechanisms:** This hardware durability test requires egress panels on gates and enclosures to be cycled through their fully open and closed positions 2,000 times. Pressure-mounted gates without egress panels require cycling through installation and removal 550 times. ASTM added this pre-conditioning test to address incidents involving failures of latches, hinges, and hardware. Cycling 2,000 times tests the durability of gates or enclosures having egress panels expected to be operated twice a day through the lifetime of the product. Cycling 550 times tests the durability of pressure-mounted gates without egress panels, which typically are installed in locations accessed less frequently.
- **Automatic closing system:** The ASTM standard requires that immediately following the cyclic preconditioning test, an egress panel marketed to have an automatic closing feature must continue to close automatically when opened to a width of 8 inches, as well as when it is opened to its maximum opening width. This provision ensures that a gate closes completely, and locks as expected and advertised, thereby, reducing the likelihood of an occupant accessing potentially hazardous conditions on the other side of an unintentionally unsecured gate.
- **Push-out strength:** The ASTM standard specifies five test locations: the four corners of the gate, as well as the center. The test requires that a horizontal push-out force of up to 45 pounds be applied until the gate pushes out of the test fixture. The test is performed five times to each of the five test locations, recording the maximum force applied before the gate pushes out of the test fixture. The five maximum forces at each location are then averaged. To pass the push-out force test, the average push-out force shall exceed 30 lb. in all five test locations (and no individual force less than 20 lb.). The push-out force requirement prevents the intended occupant from being able to dislodge the gate and gain access to a hazardous area the gate was meant to keep the occupant from accessing. The standard requires a maximum force of 45 lb. because that weight simulates the effects of the largest intended occupant's weight.
- **Locking Devices:** The ASTM standard requires that locking devices meet one of two conditions: (1) if the lock is a single-action latching device, the release mechanism must require a minimum force of 10 lb. to activate and open the gate, or else (2) the lock must have a double-action release mechanism. This provision prevents the intended occupant contained by the gate from being able to operate the locking mechanism.
- **Toys:** Toy accessories shall not be attached to, or sold with, a gate. Toy accessories attached to, removable from, or sold with an enclosure, shall meet applicable requirements of ASTM F963, *Consumer Safety Specification for Toy Safety*.

- **Slat Strength:** This test verifies that no wood or metal vertical members (slats) completely break or that either end of the slats completely separate from the gate or enclosure when a force of 45 pounds is applied horizontally.¹³ The test is conducted on 25 percent of all gate slats, excluding adjacent slats. This performance requirement ensures that gates and enclosures retain their structural integrity when children push or pull on the slats.
- **Label testing:** Paper and non-paper labels (excluding labels attached by a seam) shall not liberate without the aid of tools or solvents. Paper or non-paper labels attached by a seam shall not liberate when subjected to a 15-lb pull force. This requirement is intended to ensure that product labels are permanently affixed.
- **Warning, Labeling and Instructions:** Specify the marking, labeling, and instructional literature requirements that must appear on each gate or enclosure.¹⁴

IV. HISTORY OF ASTM F1004

A. Summary of Significant Revisions 1986-2013

ASTM first approved and published the voluntary standard for gates and enclosures in 1986 (ASTM F1004-86, *Standard Consumer Safety Specification for First-Generation Standard Expansion Gates and Expandable Enclosures*.) From 1986 through 2013, ASTM F1004 underwent a series of revisions to improve the safety of gates and enclosures and clarify the standard. Nine revisions occurred between 2000 and 2013. Revisions during this period included provisions to address head and neck entrapments, foot-pedal actuated opening systems, warnings, evaluation of all manufacturer's recommended-use positions, test fixture improvements, entrapment in openings along the side of the gate, lead-containing substances in surface, and other minor clarifications and editorial corrections.

Throughout the development of ASTM F1004, beginning in 1986, the subcommittee members, including CPSC staff, considered requirements for a push-out force for gates. However due to technical difficulties, the subcommittee was unable to develop a repeatable test method.

In 1997, ASTM formed a task group to revisit push-out tests and requirements in ASTM F1004. The task group began to develop the 30-lb. requirement for top-of-stairs gates, resulting in a 2000 revision that included pushout test requirements for gates to address stair falls. Gates intended for top-of-stair-use were required to withstand a 30-lb. average push force when mounted in a test frame. Gates that could not meet the 30-lb. push-out force were required to

¹³ According to Rationale X1.2.6.6 included in F1004-19, the 45 lb force was selected as the test force (with added 15 percent as a margin of safety) based on the 95th percentile "pull" force of 2-year-old males (38.5 lb) found in study titled, "A Study of the Strength Capabilities of Children Ages Two through Six," by Brown & Buchanan, 1973.

¹⁴ Refer to Tab C for Division of Human Factors memorandum for discussion.

have the following warning: *To prevent falls, never use at top of stairs*. Most pressure-mounted gates were not able to meet the 30-lb. push-out force, and thus, these gates were required to use that label.

In 2004, ASTM revised the standard to include a minimum average push-out force of 10 lb. for all gates. This requirement provided a minimum push-out force for gates that are not intended for use at the top of the stairs. The provision established earlier in the 2000 revision of the standard for top of stair gates remained in effect.

B. Summary of Significant Revisions 2014-present¹⁵

ASTM F1004 underwent seven more recent revisions, beginning with F1004-15 (approved May 2015), through the most recently approved version, F1004-19 (approved June 2019) to address hazards associated with bounded openings, slat breakage/slat connection failures, mounting/hinge hardware issues, latch/lock failures, pressure gate push-out forces, and warning labels and instructions. The ASTM F1004-19 revisions and additions included:

ASTM F1004-19 (approved on June 1, 2019) included the following revisions and additions:

- All gates will meet 30 pounds of push-out force with provisions that allow the use of wall cups to meet this requirement.
- Gates that use wall cups will require consumer interaction because the wall cups must:
 - be attached to the main panel of the gate,
 - be attached to the tension bolt pressure pads, or
 - be designed to be so integral to the gate that the gate cannot be used without wall cups.
- The packaging for wall cups must include a warning about wall cup use.
- Gates that use wall cups must include the warning language: *“You MUST install wall cups to keep gate in place. Without wall cups, child can push-out and escape.”*

V. OTHER RELEVANT STANDARDS:

Staff reviewed two international standards that address gates and enclosures:

- The European Standard, EN 1930:2011/A1 Child use and care articles – Safety barriers – Safety requirements and test methods
- The Canadian regulation, SOR/2016-179 Expansion Gates and Expandable Enclosures Regulations (the Canadian regulation refers to an outdated 1986 version of ASTM F1004 which has been superseded by recent versions.)

ESMC staff concludes that in most areas, the ASTM standard is equivalent to, or more stringent than, other international standards and addresses the hazard patterns seen in the incident data reported to the CPSC.¹⁶

¹⁵ Refer to notice of proposed rulemaking for gates and enclosures, July 8, 2019, 84 Fed. Reg. 32,346, for historical revision details.

¹⁶ Refer to notice of proposed rulemaking for gates and enclosures, July 8, 2019, 84 Fed. Reg. 32,346, for determination.

VI. ADEQUACY OF ASTM F1004-19 REQUIREMENTS

CPSC staff is aware of a total of 478 reported incidents related to gates and enclosures. Of the 478 incidents, 428 were associated with the use of a gate, while 50 were associated with an enclosure. Twenty-two of the incidents reported a fatality; 112 of the 456 nonfatal incidents reported an injury. These incidents were reported to have occurred between January 1, 2008, and January 7, 2020. Staff categorized the 478 incidents into the hazard patterns¹⁷ described below, and ESMC staff considered the adequacy of ASTM F1004-19 to address each hazard pattern.

- Hardware Issues: More than one-third of the incident reports (38%) that CPSC collected involved hardware failures: broken hinges, locks, mounting brackets. In July 2016, the ASTM subcommittee added a new hardware durability requirement to ASTM F1004-16a (section 6.2), to address these types of problems. After comprehensive lab testing, CPSC staff recommended including a latching/locking and hinge performance test that cycles gates through 2,000 complete “open and closing” cycles (550 installation/ removal cycles for pressure-mounted gates without egress panels). This test identified gates known to have hardware issues, such as those found in the incident data. ESMC staff considers this performance requirement to adequately address the hardware failures hazard pattern.
- Slat Problems: Approximately 23 percent of the incident reports involved slats breaking or detaching from gates or enclosures. The ASTM F1004-18 standard included a performance requirement (section 6.6) that slats must withstand a 45-pound force, which is the pulling force of the largest intended occupant.¹⁸ ESMC staff considers this performance requirement adequate to address the slat failure hazard pattern.
- Poor Quality Material and Finish: The incident reports (12%) captured in this category included problems with small parts breaking free to become potential choking hazards, splintering wood or welding, sharp edges, protrusions, rails bending out of shape, fabric/mesh panels sagging, and poor quality of stitching on fabric panels. ASTM F1004-19 contains many general requirements that address these issues (sections 5.1 through 5.10). In 2015, the standard expanded the wood parts provision to ban the use of transverse/lateral joints in all wood components. The 2016 and 2018 updates to the completely bounded openings and bottom spacing test, which now simulates a child pressing through openings (versus the previous, basic template evaluation), will also help reduce issues with rails or flexible barrier materials bending out of shape. ESMC staff considers these performance requirements, along with the recent revisions, to adequately address breaking gates creating choking and or laceration hazards.

¹⁷ Tab A: Gates and Enclosures-Related Deaths, Injuries, and Potential Injuries Update.

¹⁸ The 45-lb force used in the Slat Strength test was based on the 95th percentile “pull” force of 2-year-old males (38.5 lb). The “pull” force is found in a study titled, “A Study of the Strength Capabilities of Children Ages Two through Six by Brown & Buchanan, 1973. The “pull” force value was used because it was larger than the push force found in the study, and children may both push and pull on gates. The forces for a 2-year-old child were used, recognizing that this child is between the ages of 2 and 3, and larger than the recommended age for a gate or enclosure, a 15 percent safety factor was added, and then rounded up to 45 lbs.

- Design Issues: Approximately 10 percent of the incident reports involved problems with some aspect of the design of gates or enclosures, such as the opening size between slats or panels that allowed for entrapments, moving gate components causing scissoring or pinching issues, features that were able to be used as footholds, or sections that posed a trip hazard when the gate was in an open position. ASTM F1004-19 contains several performance tests (sections 7.10 and 7.11) that specifically address entrapments in openings, including the 2016 and 2018 updates to the completely bounded openings and bottom spacing tests which replaced simplistic evaluations of openings using a template with more stringent probe tests. The general openings and scissoring, shearing, and pinching performance requirements also help address reports captured in this category (sections 5.5 and 5.7, respectively). ESMC staff assessment of the latest version of the standard, including the revised performance requirements, finds these requirements to adequately address this hazard pattern.
- Installation Problems: Four percent of the incidents fall into this hazard pattern. Some of these incident reports identify problems with unclear instructions, mismatched dimensions between gates and the openings they were meant to fit into, and failure of the gate to remain upright in the opening. ASTM F1004-19 requires warning labels and instructions (sections 8 and 9) that address proper installation and are easy to read and understand. CPSC staff testing found that most pressure-mounted gates can meet the 30-pound push-out force requirements of ASTM F1004-19 with the use of wall cups. However, as discussed below, and as concluded in the Human Factors memorandum,¹⁹ for gates that do not use wall cups, “[i]ncorporating visual side-pressure indicators would be beneficial for the installer to confirm that the correct amount of side pressure is applied during installation.” Visual side-pressure indicators could provide a way for consumers to know when their gate is installed with sufficient side pressure, particularly because consumers are not expected to have or use force gauges during installation. Visual indicators may also help inform consumers when readjustment is necessary during the lifecycle of the product.
- Miscellaneous: Miscellaneous issues found in the incident reports (1%) include complaints about an ineffective recall remedy, complaint about poor product packaging, and consumer concerns about the safety of a specific design. Currently, no provisions in the ASTM standard address the various incidents that fall into this miscellaneous category. Because these miscellaneous issues are not widespread, and most of them do not relate directly to the safety of the gate or enclosure itself, ESMC staff considers the existing ASTM standard adequate.
- Enclosure Instability: A few incident reports (< 1%) came from consumers who described problems with flimsy or unstable enclosures. ASTM F1004-19 contains several requirements that help address the product durability issues reported in these enclosure incidents. The ASTM standard expanded the vertical strength requirement (section 6.1.3) to test not only the joints between the enclosure panels, but also the top rails of the panels themselves. Additionally, the new cyclic locking/latching test (section 6.2) will help

¹⁹ Refer to Tab C for Division of Human Factors memorandum for discussion.

ensure that the hardware in these products is durable and capable of withstanding regular use. Many of the general requirements, such as those concerning sharp edges, small parts, wood parts, and protective components (sections 5.1 through 5.10) also help to address issues captured in this category. ESMC staff considers these performance requirements, along with the recent revisions, to adequately address this hazard pattern.

- Multiple: Twenty-two reports (5%) described two or more problems from the preceding product-related issues. Given the assessment of the performance requirements to address these issues, as described above, ESMC staff considers the existing ASTM standard to be adequate, with the addition of visual side-pressure indicators for gates that do not rely on wall cups.
- Climb Over: ASTM does not include performance provisions that address climb over incidents. However, this hazard is addressed by warning labels instructing caregivers to stop using the gate when the child can climb over it. As discussed in the NPR²⁰, staff is not aware of an effective and reasonable performance requirement to address climb over. For this reason, ESMC considers the existing ASTM standard adequate.

²⁰ Refer to the Footholds section of Tab B in the notice of proposed rulemaking for gates and enclosures, July 8, 2019, 84 *Fed. Reg.* 32,346, for determination.

VII. VISUAL SIDE-PRESSURE INDICATORS WITHOUT WALL CUPS

Consumer failure to install a pressure-mounted gate securely accounts for 21 push-out hazards in the incident data, including five fatalities and four injuries.²¹ In January 2018, staff presented to the F15.16 subcommittee a performance requirement to improve the installation of pressure-mounted gates that do not rely on the use of wall cups to meet the 30-pound push-out force test in the standard. Staff was concerned that consumers cannot tell whether pressure-mounted gates (that are not installed using wall cups) are securely installed. Accordingly, to address these installation failures in the incident data, staff recommended requirements for visual side-pressure indicators, which would be visible to caregivers installing a gate so that they can see whether a pressure-mounted gate (without wall cups) is securely installed. Staff intended that visual side-pressure indicator requirements would be applicable to pressure-mounted gates that do not rely on wall cups to meet the 30-pound push out force test. Below we describe engineering staff's assessment of installation failures with pressure-mounted gates, updates on staff's discussion with ASTM, and staff's recommendation for the final rule.

A. Installation issues

Currently, the ASTM standard does not require pressure-mounted gates to provide consumers with a reliable feedback that the gate has been installed securely with enough side pressure to prevent a child from knocking it over. Because pressure-mounted gates rely on friction force to resist a push-out force applied to the gate, side-pressure force (*i.e.*, the normal force) is a key component of gate performance. The more side-pressure force exerted by the gate to the wall/door opening, the more resistance to push-out forces. Some designs of pressure-mounted gates require the user to push or pull on the gate to have a *feel* that the gate is securely installed (*e.g.* “turn the nut...until the gate is snug,” “turn the hand wheels until firm tension is achieved”) or to make precise measurements (*e.g.* the distance between the gate frame and the wall to ensure both sides are equally spaced, or the gap within the latch/lock mechanism). For consumers, these tasks are often subjective or cumbersome to achieve to guarantee a secure installation.²²

Through testing, staff observed that even when following the manufacturer's instructions, the push-out force varied each time a gate was re-installed and tested. Staff also observed that with one metal gate, which incorporates tension bolts and nuts to secure it in place, only a half rotation of the tension nuts would change the distance between the gate and the test fixture by 0.032 inches, and result in a gate meeting or not meeting the 30-pound push-out force requirement (Figure 4). These adjustments are barely noticeable to the average consumer, who relies only on *feel* or precise measurements, and no other feedback. Based on staff's evaluation of pressure-mounted gates on the market, staff concludes that visual side-pressure indicators could improve installation and the security performance of pressure-mounted gates that do not rely on wall cups to meet the 30-pound push-out force test. Requiring visual side-pressure indicators on these gates would confirm for consumers that a gate is installed with at least as much pressure as when it was tested.

²¹ Refer to Tab A for Division of Hazard Analysis memorandum for discussion.

²² Refer to Tab C for Division of Human Factors memorandum for discussion.

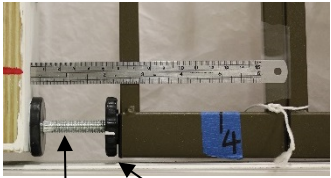
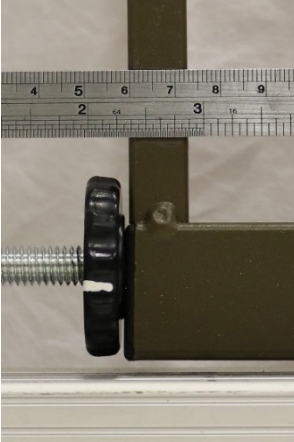
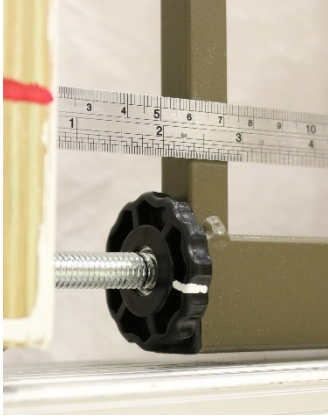
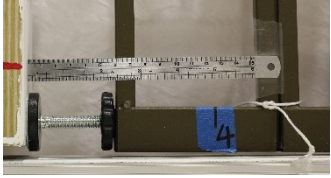
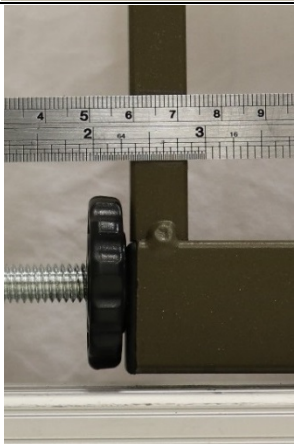
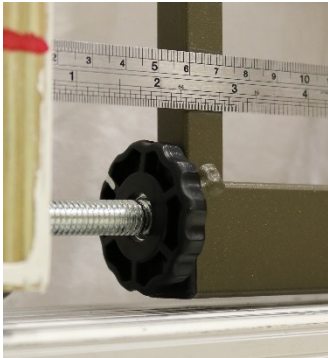
 <p>Tension bolt</p> <p>Tension nut</p>			<p>35.2 lb of push-out force.</p> <p>Met 30 lb requirement.</p>
			<p>28.7 lb of push-out force.</p> <p>Did not meet 30 lb requirement.</p>
View from user's perspective.	Close-up	Tension nut half rotation.	

Figure 4. Result of Half-Rotation of Tension Nut
(the white mark on tension nut was added by ESMC staff for ease of visualization)

Staff found four gates on the market with integrated side-pressure indicators shown in Figure 5.

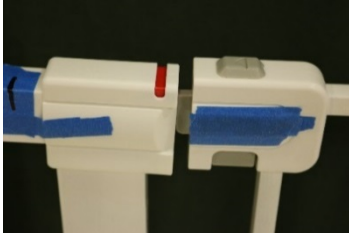
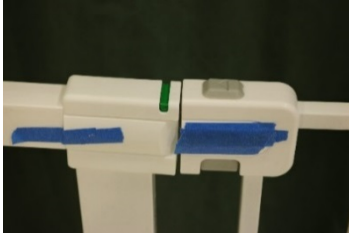


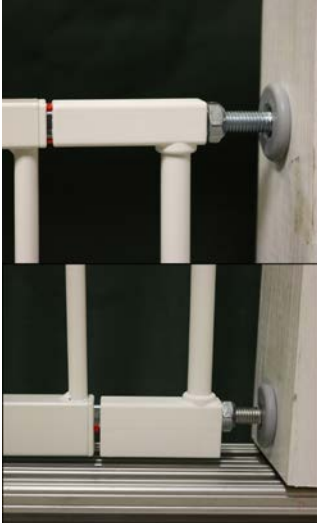

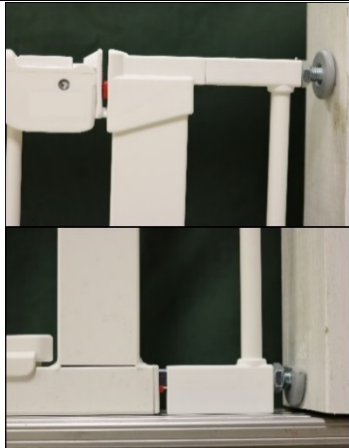

	Indicator not yet engaged. Corresponding rail has not yet reached required side pressure.	Indicator engaged. Corresponding rail has reached required side pressure.
Gate "I" (Visual pressure indicator in top rail.)		
Gate "J" (Visual pressure indicator in bottom rail.)		
Gate "K" (Visual pressure indicators in both the top and bottom rails)		
Gate "L" (Visual pressure indicators in both the top and bottom rails)		

Figure 5. Gates with Integrated Visual Side-Pressure Indicator

Staff tested each gate to the ASTM push-out requirements. Table 1 displays staff's results.

Table 1. Visual Side-Pressure Indicator Effectiveness Comparison							
Gate ID	Average Push-out Force ^{(1) (2) (3) (4)} [lb]						
	Location #1	Location #2	Location #3	Location #4	Location #5	Result ⁽⁵⁾	
Without indicator ⁽⁶⁾	A	29.1	27.8	21.7	23.2	16.8	FAIL
	D	21.0	18.1	8.4	17.8	11.0	FAIL
	F	33.7	41.2	28.8	36.4	33.0	FAIL
	H	28.7	45.0	44.5	29.8	45.0	FAIL
With indicator	I (Visual pressure indicator in top rail.)	38.2	45.0	33.9	29.9	28.4	FAIL
	J (Visual pressure indicator in bottom rail.)	26.3	23.7	29.6	45.0	45.0	FAIL
	K (Visual pressure indicators in both the top and bottom rails)	45.0	45.0	45.0	45.0	45.0	PASS
	L (Visual pressure indicators in both the top and bottom rails)	45.0	45.0	45.0	45.0	45.0	PASS

Note:

(1) Average push-out force refers to the average of 5 individual push-out readings per test method in ASTM standard, F1004-19.

(2) The maximum applied force is 45 lb per ASTM F1004-19 standard.

(3) Test location refers to the four corners and the center of the gate per notation in ASTM standard, F1004-19 shown below.

Child Side of Gate

Force

Force

Force

1

3

2

4

5

5 in.
127 mm

5 in.
127 mm

NOTE 1—For Locations 1 and 3, force is applied at the top edge.

FIG. 7 Location of Force Application

(4) Values is **red** indicate that the location did not meet the average 30 lb push-out force requirement.

(5) “PASS” refers to all five locations meeting the 30 lb push-out force requirement.

(6) Additional data was provided to the ASTM subcommittee in January 2018.

Staff's test data demonstrated that gates with incorporated side-pressure indicators performed better, for the corresponding rail, than those gates that did not include any indicator. Furthermore, gates that incorporated an indicator for both the top and bottom rails, met the 30-

pound push-out force requirement in all five locations. Staff's testing showed that indicators on the top and bottom of the gate performed better and more consistently than gates with indicators only on the top or bottom.

The indicators' design consisted generally of a compression spring located in either the lock/latch mechanism or in the frame housing behind the adjustment bolts; so when the gate is installed, the gate's contacting pads exert a force against the wall/door opening. These designs were coupled with a colored plastic marker or paint on the frame; thus, when the required side pressure is attained, these will either change color or be completely obscured by a component of the gate. Staff's evaluation of four gates manufactured with pressure indicators showed that this feature is feasible to incorporate into a gate.

B. ASTM work on visual indicators

In June 2018, after beginning discussions with the ASTM task group on visual side-pressure indicators for pressure-mounted gates, the task group decided to table the visual side-pressure indicators requirement, in favor of working to address the push-out force issue. The push-out force test was resolved and included in the most recent version of the standard, ASTM F1004 – 19. CPSC staff, however, continued to raise the issue of visual indicators, and the Commission included discussion of a visual indicator requirement in the NPR, and sought comments on the issue. CPSC did not receive any comments on visual indicators. At an ASTM subcommittee meeting in January 2020, staff and the subcommittee reviewed a proposed performance requirement to include visual side-pressure indicators on pressure-mounted gates that do not rely on wall cups to meet the 30-lb. push-out force test. In March 2020, the ASTM subcommittee reactivated the visual side-pressure indicators task group and met to consider the requirements.

The task group's focus was the testability of the proposed visual side-pressure indicator performance requirement. Several stakeholders argued that there was no proposed test method for key features of the indicator (*i.e.*, [#1] shall indicate when the minimum required side pressure has been attained upon installation of the gate, [#2] continue to display the status when the minimum side pressure is maintained.) After discussion, the task group agreed that the visual indicator could be tested in conjunction with the Horizontal Push-Out test (Section 7.9), which would satisfy testing of visual indicators. The task group chair circulated revised proposed ballot language to address testability of visual indicator performance.

ESMC staff evaluated the proposed language to require visual side-pressure indicators on pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force requirement. Staff concludes that the proposed language addresses staff's recommendation to include a visual indicator and addresses the task group concern regarding a performance test for visual indicators. The new language states: *"Such indicators, when the gate is tested in accordance with 7.9, shall indicate when the required side pressure has been attained upon installation of the gate, and continue to display the side pressure status while the gate is in a manufacturer's recommend use position."* Staff determines that the proposed language addresses the performance of visual indicators when the required pressure is attained and when the required side pressure is not attained and maintained.

For the final rule, staff recommends adding a requirement for visual indicators for pressure-mounted gates that do not use wall cups to meet the 30-pound push-out force test, as set forth in Appendix A. The language for this requirement in Appendix A is harmonized with ASTM's most recent draft proposed language (April 22, 2020), and staff anticipates that the task group will ballot this requirement within the next few months.

VIII. CONCLUSION

ESMC staff concludes that the ASTM F1004 – 19, which was developed through consultation and collaboration with CPSC staff, addresses the majority of the identified hazard patterns associated with gates and enclosures. Staff also concludes that the ASTM standard is equivalent to, or more stringent than, other international standards in most areas, and addresses the hazard patterns seen in the incident data reported to the CPSC.

Staff recommends the use of visual indicators to address incidents due to improper gate installation. Staff's testing demonstrates that visual side-pressure indicators are feasible for some pressure-mounted gate designs that do not use wall cups, and they can be effective in ensuring secure installation.

Therefore, staff recommends ASTM F1004-19 as the CPSC mandatory safety standard for gates and enclosures, with a modification (Appendix A) that adds a visual side-pressure indicator requirement for pressure-mounted gates that do not require wall cups, in addition to a modification to add the warning labeling requirement for pressure-mounted gates that use wall cups. Visual side-pressure indicator requirements would be applicable to pressure-mounted gates that do not rely on wall cups to meet the 30-pound push-out force test.

APPENDIX A: Visual Side-Pressure Indicators

(Change Key: Added words are double underlined. Deleted words have strikeout line through words.)

3. Terminology

3.1.3 conspicuous, adj—~~label which is visible~~; when the gate/expandable enclosure is in a all manufacturer's recommended use ~~position~~ positions, to a person standing near the gate/expandable enclosure at any one position around the gate/expandable enclosure, but not necessarily visible from all positions.

3.1.XX Visual Side-Pressure Indicator, n—a warning system, device, or provision using contrasting colors, lights, or other similar means designed to visually alert the installer/user to the status of the side pressure of a pressure-mounted gate during installation and use.

3.1.YY Side pressure, n—force required, at each contact location of the gate and mounting surface, to meet the requirements of 6.3, as determined by the manufacturer.

6. Performance Requirement

6.X Visual Side-Pressure Indicators: Any pressure-mounted gate that does not require the use of Pressure-Mounted Gate-Mounting Hardware per 6.7, to meet the performance requirements in 6.3.1, shall include Visual Side-Pressure Indicators.

6.X.1 Visual Side-Pressure Indicators shall be conspicuous and readily identifiable to a person installing and standing near the gate.

6.X.2 Visual Side-Pressure Indicators shall monitor pressure for each point of contact with the mounting surface utilizing one or more of the following three options. Such indicators, when the gate is tested in accordance with 7.9, shall indicate when the required side pressure has been attained upon installation of the gate, and continue to display the side-pressure status while the gate is in a manufacturer's recommend use position.

6.X.2.1 A single visual side-pressure indicator for each individual contact point.

6.X.2.2 A single visual side-pressure indicator for each individual rail (top and bottom), so the opposing horizontal contact points are addressed.

6.X.2.3 A single visual side-pressure indicator for the entire gate.

7. Test Methods

7.9.1.2 Follow the manufacturer's installation instructions when installing the gate in the center of the test opening. For pressure-mounted gates with visual side-pressure indicators, ensure the visual side-pressure indicators are displaying the proper status per manufacturer's instructions. ~~Measure the installation force. The installation force shall not exceed 25 lbf (111 N) to a hand operated mechanism or a force of 35 lbf (157 N) to a foot operated mechanism.~~

Section 9 Instructional Literature

9.5. For pressure-mounted gates with visual side-pressure indicators, the instructions shall describe the function, use, and importance of the visual side-pressure indicators and shall describe how to make adjustments to meet the side-pressure requirements. Instructions shall include a reminder to routinely check the status of the side-pressure indicators during ongoing use of gate.

Appendix (rational)

X.1.2.5.X The visual side-pressure indicators' requirement in 6.X is to address incidents with pressure-mounted gates, where consumers had difficulty properly installing the gate or uncertainty in the security of the gate, which may lead to the gate being "pushed out," "pulled down," or "knocked over" by children.

TAB C: Human Factors Assessment of ASTM F1004-19 Requirements for Expansion Gates and Expandable Enclosures

**T
A
B
C**



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

Memorandum

Date: May 27, 2020

To: Hope E J. Nesteruk, Gates and Enclosures Project Manager
Division of Mechanical and Combustion Engineering, Directorate for
Engineering Sciences

Through: Mark Kumagai, P.E.,
Associate Executive Director, Directorate for Engineering Sciences

Rana Balci-Sinha,
Director, Division of Human Factors, Directorate for Engineering Sciences

From: Jill Hurley, Engineering Psychologist,
Division of Human Factors, Directorate for Engineering Sciences

Subject: Human Factors Assessment of ASTM F1004-19 Requirements for
Expansion Gates and Expandable Enclosures

I. BACKGROUND

The ASTM International voluntary standard ASTM F1004, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures*, establishes requirements for gates and enclosures in the United States, and is intended to minimize the hazards associated with the reasonably foreseeable use and misuse, or abuse, of these products. ASTM developed this voluntary standard in response to incident data supplied by staff of the U.S. Consumer Product Safety Commission (CPSC). The most current, published version of the voluntary standard is ASTM F1004-19.

Section 8 of the voluntary standard specifies marking and labeling requirements, which include warning statements that must appear on each gate or enclosure. Section 9 specifies the instructional literature that must be provided with each gate or enclosure. In this memorandum, CPSC's Directorate for Engineering Sciences, Division of Human Factors (ESHF), updates staff's assessment of ASTM F1009-19 warning and instructional requirements since the NPR was issued.

II. DISCUSSION

A. ESHF Staff Review of Incident Data

1. REPORTED INCIDENTS

In the NPR briefing package, CPSC's Directorate for Epidemiology, Division of Hazard Analysis (EPHA) staff identified 436 reported incidents related to gates and enclosures occurring from January 1, 2008 through October 31, 2018. These incidents consist of 19 fatalities, 108 injuries, and 309 non-injury incidents. Since that data extraction, CPSC staff identified an additional 42 incidents entered into CPSRMS from November 1, 2018 to January 7, 2020, including four reported injuries and three reported fatalities.

Around four percent (21 incidents out of 478) of reported incidents were related to issues with installation, such as unclear instructions, unclear dimensions, and gates that somehow "pushed out" or pulled down. Sixteen of the 22 fatal incidents involved drowning, 14 involved a child drowning in a backyard pool, one in a backyard hot tub, and one in a 5-gallon bucket inside the house. In these 16 incidents, children were able to get past the gate/enclosure when it was left open or opened accidentally; knocked down or pushed the gate out due to incorrect or unsecured installation; or climbed over the gate/enclosure.

2. NEISS INCIDENTS

Falls were the largest hazard pattern, accounting for 58 percent of emergency department-treated injuries. EPHA was able to determine that most fall incidents were related to children climbing over the gate or enclosure; gates failing to remain upright and locked; children otherwise defeating the gate or enclosure; or a caregiver tripping on a gate while carrying a child.

B. Current ASTM Warning and Instructional Requirements

1. ON-PRODUCT WARNING REQUIREMENTS

a) Content

Section 8 of ASTM F1004-19 specifies labeling and warning requirements for gates and enclosures. All gates and enclosures must include warnings on the product about the risk of serious injury or death when a product is not installed securely; must warn the consumer never use the gate with a child who is able to climb over or dislodge the gate; and never use the gate to prevent access to a pool. Pressure-mounted gates, gates with locking mechanisms, and enclosures require other warning messages specific to the hazards posed by these different types of gates or enclosures, with as many as six different messages required.

Specifically, the warnings required for all gates and enclosures are:

Children have died or been seriously injured when [gates/enclosures] are not securely installed. (§ 8.5.1)

ALWAYS install and use [gate/enclosure] as directed using all required parts. (§

8.5.2) STOP using when a child can climb over or dislodge the [gate/enclosure]. (§

8.5.4) NEVER use to keep child away from pool. (§ 8.5.7)

Pressure-mounted gates with a single-action locking mechanism on one side of the gate must include the following warning:

Install with this side AWAY from child. (§ 8.5.5)

Enclosures with locking or latching mechanisms must include the following warnings:

Use only with the [locking/latching] mechanism securely engaged. (§8.5.6)

Gates that do not pass the push-out test requirements in §6.3.1 must include the following warning on the product.

You MUST install [wall cups] to keep gate in place. Without [wall cups] child can push out and escape. (§8.5.3)

These warnings are also required on the retail packaging, unless they are visible in their entirety on the gate for consumers to see at the point of purchase.

b) Format

The 2019 version of the ASTM standard includes updated warning format requirements to align with the ASTM Ad Hoc Wording Task Group (Ad Hoc TG) recommendations.¹ The Ad Hoc TG recommends permanent, conspicuous, and consistently formatted on-product warning labels across juvenile products. On-product warning labels that align with the task group recommendations address numerous warning format issues and improve the label's attention-getting features and readability.

Figure 1 illustrates the warning label formatting that is required in the current version of the standard. Figure 2 and Figure 3 represent best-practice examples for a horizontal list and paragraph format. Note these labels are not to scale.



Figure 1. Required warning label

¹ Ad Hoc TG harmonized the wording and language used across nursery product standards. This task group also developed recommendations for harmonizing warning format across standards. CPSC staff has worked closely with this group to develop ad hoc recommendations that are based largely on the requirements of the ANSI Z535.4, *American National Standard for Product Safety Signs and Labels* and other considerations. Ad Hoc TG contains members of the various standards affected by the durable nursery products rules, as well as the Human Factors Division hazard communication subject matter expert and CPSC representative on the ANSI Z535 committee, Timothy P. Smith.

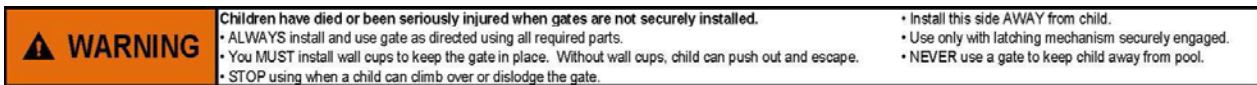


Figure 2. Horizontal warning using list format.

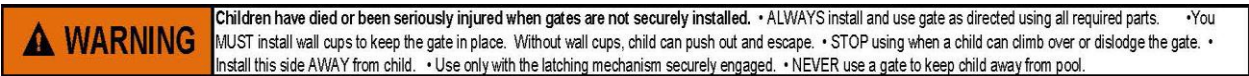


Figure 3. Horizontal warning using paragraph format.

c) Placement

The warning label is required to be in contrasting color(s), permanent, and “conspicuous,” which is defined in § 3.1.3 as a “label which is visible, when the gate/expandable enclosure is in the manufacturer’s recommended use position, to a person standing near the gate/expandable enclosure at any one position around the gate/expandable enclosure, but not necessarily visible from all positions.”

2. INSTRUCTIONAL REQUIREMENTS

Section 9 of ASTM F1004-19 specifies the instructional literature that must be provided with the gate or enclosures and aligns Section 9 of the standard with Ad Hoc wording design or form requirements for the required warning statements in the instructions.

C. Adequacy of the Current Voluntary Standard and Recommendations for Revisions

1. LABELS

The 2019 version of the ASTM standard requires the on-product warning label to have a format that aligns with Ad Hoc TG recommendations, which will address the label’s noticeability and readability. Therefore, ESHF staff agrees that these formatting requirements will reduce inconsistencies seen on current gates and enclosures, and will address numerous warning format issues related to capturing consumer attention, improving readability, and increasing hazard perception and avoidance behavior. According to the placement requirements in ASTM F1004 – 19, a single warning label that includes all of the warnings shown in Figure 2 must be “conspicuous,” which is defined as “label which is visible, when the gate/expandable enclosure is in a manufacturer’s recommended use position, to a person standing near the gate/expandable enclosure at any one position around the gate/expandable enclosure, but not necessarily visible from all positions.” Staff is satisfied with the generic warning label requirements; however, staff recommends a separate warning label specific to wall cups, as explained below.

2. PUSH-OUT REQUIREMENTS

The push-out hazard can potentially lead to severe injury (e.g., falling down stairs or accessing a hot oven.) Staff appreciates the collaboration with the ASTM subcommittee to develop a potential solution to the push-out hazards. Thus, staff is pleased that all gates are now required to meet the 30-pound push-out force test. This will assure consumers that the gate they purchase will protect their child from an unsafe environment, regardless of the installation location,

assuming the product is installed correctly. In addition, the F1004-19 standard allows using wall-cups or other mounting hardware to meet the 30-pound push-out force test. However, staff is concerned with consumer awareness regarding the proper use of wall cups, as discussed below.

a) Use of wall cups

CPSC staff testing found that most pressure-mounted gates can meet the 30-pound push-out force requirements of ASTM F1004-19 with the use of wall cups. For certain pressure-mounted gates, consumers have typically been instructed to use wall cups, if they need to install the gate at the top of the stairs. However, CPSC staff is unclear how frequently manufacturers instruct that the wall cups may be needed in locations other than the top of stairs. Therefore, staff is concerned that consumers may not be aware of the importance of wall cups at other locations. Given that a child can be exposed to hazardous environments even when they are not at the top of the stairs, beginning with the 2019 version of the standard, all gates are required to meet the higher push-out force requirements, regardless of installation location, to reduce the likelihood that the child can push out the gate. The current standard allows using wall cups or other mounting hardware during gate installation to meet the 30-lb push-out test.

Changing consumer behavior requires getting consumers to install a pressure-mounted gate using wall cups *at all times*. Some consumers are unlikely to use wall cups especially if the gate seems to be installed securely. Based on the safety hierarchy, pressure-mounted gates ideally should be designed to meet the 30-pound push-out force test, so that the gate either does not require wall cups, or it cannot be installed without the wall cups, to reduce the potential for consumers to install these gates without using the wall cups. However, staff understands from discussions with manufacturers involved in the ASTM process that integrating wall cups into the design of the product to ensure that the gate cannot be installed without wall cups is challenging. Therefore, the 2019 version of the ASTM F1004 standard attempts to inform consumers by adding a warning statement about the hazard if wall cups are not used, and instructs them to use the wall cups. This warning statement is included on the general warning label, a label with as many as six different required messages.

Warnings, if well-designed, can influence consumers' behavior by arming them with required information to make informed decisions and overcome inaccurate perceptions of safe product use. For warnings to be effective, consumers must first notice the label, then read and comprehend the label, and finally be motivated enough to comply with the warning. Placement of the warning label is critical so that consumers are likely to see the label, read it, and heed the label. Warning label research suggests that labels with prominent placement increases the likelihood of being noticed (Rogers, Lamson, & Rousseau, 2000). Therefore, a wall cup warning statement that is separate and distinct from the general warning label with no other language, and conspicuously placed on the top rail of the gate is more likely to get consumers' attention. Figure 4 shows an example label. In December 2019, staff sent a letter to the ASTM subcommittee chair requesting a subcommittee meeting and proposing specific ballot language regarding this recommendation. The subcommittee met on January 21, 2020, and agreed to send the proposal, with minor revisions, to ballot.

ASTM issued a warning label ballot on March 5, 2020 (ASTM Ballot F15 (20-02), Item 4), which closed on April 6, 2020. The ballot received two substantive negative ballots, both noting that the balloted language stated that all “products” must contain wall cups, rather than just pressure-mounted gates. On May 6, 2020, ASTM released a ballot (F15 (20-04), Item 6) re-balloting the previous item 4, with the clarification to address the negatives, by replacing the word “products” with “pressure-mounted gates.” This ballot closes on June 5, 2020. Staff harmonized the language in the Appendix with this ballot item.

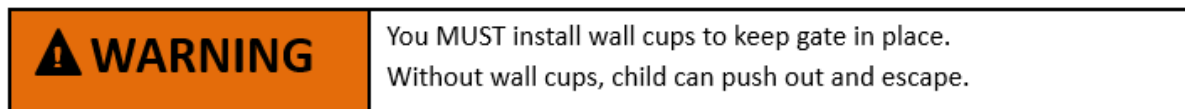


Figure 4. An example label that is dedicated to wall cup use. This label is not to scale.

b) Visual side-pressure indicators to ensure that the gate is installed correctly

The 2019 version of the standard has improved considerably in terms of the repeatability and reliability of the test methods between test labs. Before the NPR, additional testing by ESMC staff revealed that during the installation of certain pressure-mounted gates, the side force exerted was very sensitive to slight adjustments in installation, and could substantially affect test results. For example, staff commented that one gate using a bolt with a large wheel/nut to adjust the pressure, one-half rotation of the nut, could increase the (installation) side pressure enough to result in a gate meeting or not meeting the 30-pound push-out force test.² See Figure 5 below for an example of a wheel/nut mechanism used on some pressure-mounted gates.

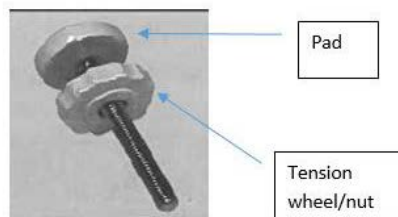


Figure 5. Example of a pressure-mounted wheel/nut.

If this slight adjustment makes the difference between a pass and fail, staff questions the standard’s ability to address variability of gate installation among test laboratories and technicians, and the resulting variability that consumers may find in installation success. Currently, the standard attempts to address this issue with certain types of pressure-mounted gates, those with hand-operated locking arms or those with foot pedal locks. Section 7.9.1.2 instructs the test technician to measure the locking force during installation and not to exceed 25 lbs. or 35 lbs, by hand or feet, respectively. However, some mounting styles used in gates, such as the one with a wheel/nut described above (Figure 5), do not require that the locking force be measured, and mounting varies based on the installer. The 2019 standard does not require these gates to provide the consumer a way to confirm objectively that the gate has been installed securely.

² Refer to TAB B for Division of Mechanical and Combustion Engineering memorandum for discussion.

Manufacturers' instructions for some pressure-mounted gates provide little or no clear direction for consumers to know whether the gate is installed correctly, or whether the gate is still in place after several uses. Examples of instructions for gates currently on the market may instruct the consumer to adjust until secure, or to push or pull on the gate to feel whether it is secure. One set of instructions found online advises the consumer to ensure that the gate is properly fixed and secured. However, the instructions provide no information on how the consumer should do this. Another set of instructions states that the gate is installed safely when the distance between the gate frame and the wall are equally spaced.³ A consumer's visual inspection or subjective feeling of a secure gate is unlikely to be effective to secure a pressure-mounted gate. Staff concludes that incorporating visual side-pressure indicators would increase safety by allowing consumers to confirm that the correct amount of side pressure is applied during installation, and that the gate is installed securely.

Effective visual side-pressure indicators would increase safety in two ways. First, visual side-pressure indicators make it more likely that test technicians will install the gate with sufficient side-force pressure, and they could provide consistency and validity to the test results. Second, visual side-pressure indicators will provide a way for consumers to know when their gate is installed securely with sufficient side pressure, particularly because consumers are not expected to have or use force gauges during installation. Visual indicators may also help inform consumers during the lifecycle of the product when readjustment is necessary. Staff concludes that the use of visual side-pressure indicators on pressure-mounted gates will further reduce the risk of injury to consumers.

III. CONCLUSION

Staff has reviewed the warnings and instructional requirements specified in sections 8 and 9 of ASTM F1004-19. Staff agrees that the ad hoc revisions to the warning label section will improve the label's visibility, readability, and hazard communication in a more consistent presentation.

Staff determines that for pressure-mounted gates that require wall cups to comply with the 30-pound push-out test, a separate warning label pertaining only to wall cups, that is located on the top rail of the gate and briefly explains the hazard and how to avoid the hazard, will increase its noticeability, readability, and hazard communication. Furthermore, for pressure-mounted gates that do not require wall cups, staff concludes that the addition of effective visual side-pressure indicators would also be beneficial to inform lab technicians and consumers that sufficient installation force has been reached during gate installation, and likewise, alert the consumer when the gate requires readjustment after continual use. To further reduce the risk of injury associated with pressure-mounted gates, HF staff recommends that for the final rule on gates, the Commission incorporate by reference ASTM F1004 – 19, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures* with the recommended modifications.

³ Refer to TAB B for Division of Mechanical and Combustion Engineering memorandum for discussion.

REFERENCES

- American National Standards Institute. (2011). *ANSI Z535.4. American national standard: Product safety signs and labels*. Rosslyn, VA: National Electrical Manufacturers Association.
- American National Standards Institute. (2011). *ANSI Z535.6. American national standard: Product safety information in product manuals, instructions, and other collateral materials*. Rosslyn, VA: National Electrical Manufacturers Association.
- Rogers, W. A., Lamson, N., & Rousseau, G. K. (2000). Warning Research: An Integrative Perspective. *Human Factors*, 42(1). 102-139

APPENDIX

Change Key: Added words are in bold font and double underlined. Deleted words have strikeout line through words. Cells where no requirement currently exists or no change is required are filled with light gray color.

Current F1004-19 (for reference only)	Draft Final Rule	Comments
8.5 Warning statements on the product shall address the following:	8.5 Warning statements on the product shall address the following:	
NOTE 11—For 8.5, “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. The words in the brackets allow wording options to be used at the manufacturer’s discretion if another identifier is more appropriate.	NOTE 11— For 8.5, “address” <u>Address</u> 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. The words in the brackets allow wording options to <u>Brackets indicate that optional wording may</u> be used at the manufacturer’s discretion if another identifier is more appropriate.	Revised for clarity and conciseness.
8.5.1 Children have died or been seriously injured when [gates/enclosures] are not securely installed.	8.5.1 Children have died or been seriously injured when [gates/enclosures] are not securely installed.	
8.5.2 ALWAYS install and use [gates/enclosures] as directed using all required parts.	8.5.2 ALWAYS install and use [gates/enclosures] as directed using all required parts.	
8.5.3 Products that provide wall cups or other hardware to meet the requirements in 6.3.1 shall address the following at a minimum: You MUST install [wall cups] to keep gate in place. Without [wall cups], child can push out and escape.	8.5.3 Products that provide wall cups or other hardware to meet the requirements in 6.3.1 shall address the following at a minimum: You MUST install [wall cups] to keep gate in place. Without [wall cups], child can push out and escape.	delete
8.5.4 STOP using when a child can climb over or dislodge the [gate/enclosure].	8.5.4 3 STOP using when a child can climb over or dislodge the [gate/enclosure].	renumber
8.5.5 Pressure-mounted gates that have single action locking mechanisms on one side of the product shall have a warning located on a vertical surface on the side with the locking mechanism stating: Install with this side AWAY from child.	8.5.5 4 Pressure-mounted gates that have single action locking mechanisms on one side of the product shall have a warning located on a vertical surface on the side with the locking mechanism stating: Install with this side AWAY from child.	renumber

Current F1004-19 (for reference only)	Draft Final Rule	Comments
8.5.6 For enclosures with locking/latching mechanisms: Use only with the [locking/latching] mechanism securely engaged.	8.5.6 5 For enclosures with locking/latching mechanisms: Use only with the [locking/latching] mechanism securely engaged.	renumber
8.5.7 NEVER use to keep child away from pool.	8.5.7 6 NEVER use to keep child away from pool.	renumber
	<u>8.5.7 Pressure-mounted gates that provide wall cups or other mounting hardware to meet the requirements of section 6.3 shall have the following warning in the location specified: You MUST install [wall cups] to keep gate in place. Without [wall cups], child can push out and escape.</u>	New warning regarding mounting hardware. Formatting to be as specified in 8.4 because it is a warning.
	<u>8.5.7.1 This warning shall be separate from all other warnings required on the product and shall not include any additional language.</u>	Specific requirements for new warning.
	<u>8.5.7.2 This warning shall be on the top rail.</u>	-
	<u>8.5.7.3 This warning shall be as close as possible to the side of the product where the locking mechanism is located. If the locking mechanism is in the center of the product, then this warning shall be adjacent to the mechanism on either side of it.</u>	-

TAB D: Final Regulatory Flexibility Analysis of the Staff-Recommended Final Rule for Gates and Enclosures and the Accreditation Requirements for Conformity Assessment Bodies for Testing Conformance to the Gates and Enclosures Standard

**T
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UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

Memorandum

Date: May 22, 2020

TO : Hope E J. Nesteruk
Project Manager, Gates and Enclosures
Children's Program Manager
Division of Mechanical Engineering
Directorate for Engineering Sciences

THROUGH: Gregory B. Rodgers, Ph.D.
Associate Executive Director
Directorate for Economic Analysis

Robert L. Franklin
Senior Staff Coordinator
Directorate for Economic Analysis

FROM : Susan Proper
Economist
Directorate for Economic Analysis

SUBJECT : Final Regulatory Flexibility Analysis of the Staff-Recommended Final Rule for
Gates and Enclosures and the Accreditation Requirements for Conformity
Assessment Bodies for Testing Conformance to the Gates and Enclosures
Standard²⁶

I. Introduction

On July 8, 2019, the U.S. Consumer Product Safety Commission (CPSC) published a notice of proposed rulemaking (NPR) in the *Federal Register* (84 *Fed. Reg.* 32,346-56). The NPR proposed to incorporate by reference the current voluntary American Society for Testing and Materials (ASTM) standard for expandable gates and enclosures, ASTM F1004-19, *Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures*.

No one submitted comments on the NPR that proposed alternatives to the standard or suggested modification of the standard. One comment presented the only substantive alternative, which sought to delay the effective date of the final rule, and move the effective date from 6

²⁶ Industrial Economics, Inc. (IEC) served as a consultant on this project, performing research and analysis to support Directorate for Economic Analysis (EC) staff.

months after the date of publication, to 1 year after the date of publication. Staff recommends that the CPSC issue a final rule that incorporates by reference the most recent ASTM standard for gates and enclosures, ASTM F1004-19, with the two modifications below:

- Pressure-mounted gates that provide wall cups or other hardware to meet the 30-pound horizontal push-out performance requirements in the ASTM standard must be marked with a separate label along the top rail, on the side with the locking mechanism (if applicable), with the following, at a minimum: “You MUST install [wall cups] to keep gate in place. Without [wall cups], child can push out and escape.” ASTM F1004-19 requires this warning, but does not specify the location on the product.
- Pressure-mounted gates that do NOT provide wall cups or other hardware to meet the 30-pound horizontal push-out performance requirements must have visual side-pressure indicators that: (1) indicate when the correct side pressure needed to meet the horizontal push-out performance requirements have been met upon installation of the gate, and (2) continue to display the status when the minimum pressure is maintained.

The preamble to the NPR discussed these two additional provisions and sought public comment. 84 *Fed. Reg.* at 32,351-52. If the Commission votes to approve publication of staff’s recommended draft final rule, ASTM’s voluntary standard, ASTM F1004-19, will become a mandatory consumer product safety standard upon the effective date of the final rule, as modified.

Section 104 of the CPSIA requires the CPSC to examine and assess the effectiveness of any voluntary consumer product safety standards for durable infant or toddler products and promulgate consumer product safety standards that are substantially the same as the voluntary standard, or more stringent than the voluntary standard, if the Commission determines that more stringent requirements would further reduce the risk of injury associated with the products. “Gates and other enclosures for confining a child” are specifically mentioned as a durable infant or toddler product in section 104(f)(2)(E) of the CPSIA. CPSC staff has determined, based on the incident data, that the requirements specified in the ASTM voluntary standard, with the recommended modifications, are sufficiently stringent to address the reported hazards associated with gates.

As required by the Regulatory Flexibility Act (RFA), this memorandum evaluates the potential economic impact on small entities, including small businesses that would result from the final rule for gates and enclosures.²⁷ Section 604 of the RFA, 5 U.S.C. 604, requires that agencies prepare a final regulatory flexibility analysis (FRFA) and make it available to the public when the final rule is published, unless the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

As explained below, a significant economic impact is unlikely for the 23 small domestic firms that currently sell compliant gates and enclosures on the U.S. market. A significant economic impact is one that would cost more than 1 percent of a firm’s expected annual revenue.

²⁷ 5 U.S.C. §§ 601-612.

Most of the small suppliers selling noncompliant gates and enclosures also will not be significantly impacted, because those companies sell a variety of other products, and gates/enclosures are not a significant portion of their revenue.

However, five small domestic manufacturers and importers that have noncompliant gates and enclosures as most of their product line could experience a significant economic impact, because the costs of redesign and testing could represent a significant amount (more than 1 percent) of their total revenue. In addition, approximately 80 very small home-based gate suppliers are likely to be significantly impacted by the final rule because all of their gates would probably require substantial redesign to achieve compliance, and would also have to be tested to demonstrate compliance. We expect that the great majority of the home-based manufacturers will stop selling gates because their revenue will not be sufficient to cover compliance and testing costs.

The FRFA must describe the impact of the rule on small entities and identify significant alternatives that accomplish the statutory objective and minimize any significant economic impact. Specifically, the FRFA must contain:

1. a description of the need for, and objectives of, the rule;
2. a statement of any significant issues raised by the public comments in response to the initial regulatory flexibility analysis for the proposed rule, and a description of any changes made by the agency in response to those comments;
3. the response of the agency to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration in response to the proposed rule, and a description of any changes made by the agency in response to those comments;
4. a description of and an estimate of the number of small entities to which the rule will apply (where feasible), or an explanation of why no such estimate is available;
5. a description of the projected reporting, recordkeeping, and other compliance requirements of the rule, including an estimate of the classes of small entities subject to the requirements and the type of professional skills necessary for the preparation of reports or records; and
6. a description of the steps the agency has taken to minimize the significant economic impact on small entities, including a statement of why any alternatives considered by the agency that would have a significant impact on small entities were rejected.

II. The Product

Gates and enclosures intended for children age 6 months through 24 months are within the scope of the ASTM standard. As specified in the standard, gates (Figure 1) are “intended to be erected in an opening, such as a doorway, to prevent the passage of young children,” but can be opened by older persons able to “operate the locking mechanism.” “Enclosures” (Figure 2) are defined as “self-supporting” barriers “intended to completely surround an area or play-space within which a young child may be confined.” Enclosures may be intended “for indoor or outdoor use, or both” and “do not include an attached floor.”

In general, gates can be categorized based on the method by which they are installed: hardware-mounted gates or pressure-mounted gates. Hardware-mounted gates are generally fastened to the wall or bannister with rigid brackets and screws. Pressure-mounted gates attach using pressure on each end to hold the gate stable, similar to some curtain or shower curtain rods. Mounting cups that add stability to pressure-mounted gates can be attached to the wall with screws or adhesive. Most gates are made of rigid plastic, wood, or metal panels. Retractable gates are a type of hardware-mounted gate where the rigid side brackets are fastened to the wall or bannister with hardware, but the gate itself is made of a flexible plastic mesh material that can be rolled up to one side when not in use.



Figure 1 – Gate

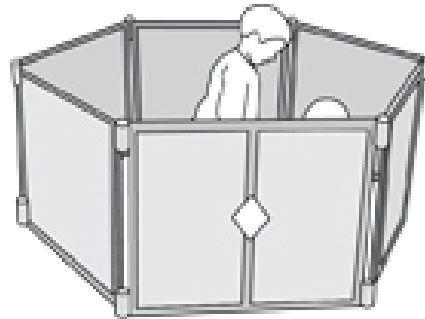


Figure 2 - Enclosure

Gates made by home-based manufacturers are different from gates sold by other manufacturers and importers. Most home-based manufacturers²⁸ sell hardware-mounted wooden gates with no expansion panels, which either latch on one side, or latch in the middle. A few

²⁸ Home-based suppliers are very small manufacturers. They typically have no employees beyond the owner, supply few products including only one or two gates, and sell fewer than 100 gates per year through online retail sites and local craft fairs. In many cases, manufacturing gates may not be the primary occupation of the owner. Additional information on home-based manufacturers can be found in Section VII.

home-based manufacturers offer gates that are a piece of soft fabric with loops on each corner that attach to the wall or bannister via a variety of mechanisms, including cable ties, plastic adhesive-backed picture hooks, fabric hook and loop fasteners, and various combinations of these elements. CPSC staff estimates that the total sales of home-based manufacturers represent less than 0.5 percent of the total gate sales in the U.S. by volume.

Most enclosures are expandable, in that panels can be added or removed; although some metal designs are a fixed size and cannot be expanded. Most enclosures are made of rigid plastic or plastic mesh panels, while some are made of wood or metal latticed panels. Only enclosures *without* attached floors are within the scope of the ASTM standard and the draft final rule. A different consumer product safety standard specifically applies to products with floors - 16 CFR part 1221 "Safety Standard for Play Yards," which incorporates by reference the ASTM standard, F406-19, "Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards."

Gates or enclosures for non-domestic use (such as commercial, agricultural, or industrial), and those intended for pets only, are not within the scope of the voluntary standard or the draft final rule. However, home-use gates are commonly advertised for both pet and child uses, and some manufacturers of pet gates meet the previous version of the ASTM standard, and are members of the Juvenile Products Manufacturers Association (JPMA) certification program. Staff did not include pet gates in our analysis, unless they are also specifically marketed for use with children. The small businesses that sell furniture for daycare centers and pre-schools also sell the same items directly to consumers and through consumer home products websites. Therefore, we consider these products to be within the scope of the standard and the draft final rule.

Freestanding barriers, such as room dividers or fireplace guards, do not meet the definition of "gate" in the ASTM standard. If the product can be re-configured into an enclosure, the product would be within the scope of the draft final rule as an enclosure.

III. The Market for Gates and Enclosures

Staff identified more than 125 firms supplying gates and enclosures to the U.S. market. About 80 of these are small, home-based businesses that sell online and at local bazaars. Most of the non-home-based suppliers are small businesses, with a few large domestic and foreign firms.

Gates are widely available through Internet general retailers, big box stores, home improvement chains, and baby supply stores. Enclosures are available from Internet general retailers, big box stores, and baby supply stores. Some suppliers sell directly to consumers through their own websites. The Durable Nursery Products Exposure Survey (DNPES) found that a slight majority (52%) of U.S. households with children under 6 have a gate or enclosure in their home, with many households owning more than one gate, and about 10.86 million baby gates and enclosures were in use in 2013.²⁹

²⁹ Karen Melia and Jill Jenkins, "Durable Nursery Products Exposure Survey (DNPES) – Final Summary Report," prepared for the CPSC by Westat, November 2014.

Gates and enclosures vary widely in price. Consumers can purchase simple plastic or wooden pressure-mounted gates for as little as \$10; while hardware-mounted gates with multiple extensions and gates intended for daycare use can cost as much as \$700. Most gates retail for \$25 to \$200. Retail prices for enclosures and modular products that can operate as an enclosure or a gate range from \$60 to \$550. Fabric gates by home-based makers are typically under \$50, while custom-made wooden gates made by home-based makers can run more than \$500 for gates with solid hardwood panels and decorative metal elements. Pressure-mounted gates, particularly hard plastic molded gates, tend to be the least expensive gates and are sometimes marketed as travel gates. Hardware-mounted gates tend to be slightly more expensive than pressure-mounted gates; although there are many hardware-mounted gates available for less than \$40.

The least expensive pressure-mounted gates are a popular choice with consumers, but price may not be the dominant criteria for many customers. Out of several hundred models of gates available on one prominent internet retailer in January 2020, the ten best-selling baby safety gates ranged in price from \$12 to \$85. On another major big box store site, the top ten best-selling gates ranged in price from \$17 to \$100. In both cases, the best-selling gates included both hardware-mounted gates and pressure-mounted gates. All of the best-selling gates were from suppliers that currently claim both ASTM compliance and JPMA certification. JPMA does not allow manufacturers in their certification program to claim compliance for a particular product category unless all of their products in that category sold in the U.S. are compliant with the current ASTM standard.

Enclosures vary widely in size, ranging from small 6-panel fixed-size metal mesh pens to 20+ modular hard plastic panel items sold with removable decorative foam mats. Some come with extra feet or fasteners so that the panels can be reconfigured into a freestanding divider or hardware-mounted gate.

Most of the non-home-based companies selling gates (whether as manufacturers or importers) sell multiple models of gates, including pressure- and hardware-mounted gates. Staff identified several widely available brands of pressure-mounted gates that already have at least one model with the visual side-pressure indicators specified in this draft final rule. Wall cups are widely available, either packaged with gates, or as an aftermarket product. Wall cups are sometimes marketed as products to protect walls from being damaged by the gate, rather than advertised as child safety products.

IV. Objective of Draft Final Rule

The objective of the draft final rule is to address the risk of injury associated with gates and enclosures. Based on 2013 National Electronic Injury Surveillance System (NEISS) injury estimates and data on the number of gates and enclosures in use from CPSC's 2013 DNPES, staff found that the risk associated with gates/enclosure use in homes is approximately 35 emergency-department treated incidents annually per 100,000 gates/barriers in use.³⁰ CPSC staff concludes that the requirements of the draft final rule address the hazard patterns identified in the

³⁰ Jenkins, Jill, and Gregory Rodgers "Combining Measures of Risk Exposure with Injury Incidence Estimates to Estimate Nursery Product Injury Rates" *Journal of Safety Research*, 72 (2020) pp. 41-46.

incident data, although staff will continue to work with ASTM to keep identifying and addressing any additional hazards.

As noted in section III of this memorandum, while the best-selling gates and enclosures are compliant with the 2018 version of the ASTM standard, noncompliant gates and enclosures are widely available from Internet retailers. In addition, the incident data include many cases of installation failures with ASTM-compliant gates, particularly pressure-mounted gates.

None of the gates and enclosures sold by home-based businesses appear to be tested for compliance with any version of the ASTM standard; nor does it appear that these gates as currently designed would comply with the standard, if tested. In contrast, most of the gates and enclosures sold by the non-home-based manufacturers comply with the current version or a previous version of the ASTM standard, although a few of the small importers and domestic manufacturers sell noncompliant gates and enclosures. These noncompliant gates and enclosures (sold by non-home-based businesses) typically have some warning labels and instruction manuals; most of these gates and enclosures claim to have been tested for lead content, and BPA and phthalates, as applicable. Some of the noncompliant gates also claim to comply with a previous version of the ASTM standard. Therefore, the redesign needed to achieve compliance with the current standard could be relatively minor.

V. Initial Regulatory Analysis Issues Raised in the Public Comments

The IRFA contained in the NPR requested public feedback on several issues.

1. What changes may be required to meet the voluntary standard, ASTM F1004-19, and in particular, would redesign be necessary?

The Commission received one comment asking to delay the effective date of the standard to allow more time for redesign.

2. What are the associated costs required to bring the products into compliance?

The Commission received no public comments in response to this question.

3. What kinds of gates are provided by home-based suppliers? What costs and time frame would be required to bring those gates into compliance? How many home-based suppliers are there? What portion of their revenue is gates?

The Commission received no public comments in response to these questions.

4. Would an alternative effective date help small manufacturers and businesses comply with the regulation? Are there other alternatives that would help mitigate the impact on small firms?

The Commission received one comment asking to delay the effective date of the standard to allow more time for redesign.

Staff concurs with the request to delay the effective date of the draft final rule to 1 year after the date of publication in the *Federal Register*. Most of the companies selling gates and enclosures are, in fact, small businesses that may need more time to redesign and test their gates, or time to work with their suppliers to purchase compliant products.

According to the requirements of section 104 of the CPSIA, any alternative requirements for gates or enclosures must be based on a determination that such alternative would result in a standard that is either substantially the same as the voluntary standard, or more stringent. The commenters did not suggest any such alternatives for gates or enclosures.

VI. Requirements of the Draft Final Rule

This section lays out the requirements of the standard and discusses the impacts on firms of all sizes. Section VII focuses on small business impacts.

A. ASTM F1004-19

Major requirements of ASTM F1004-19 are below:³¹

- Latching/locking and hinge mechanisms—intended to prevent unintentional folding or opening of the gate/enclosure while in use. Also intended to screen for hardware failures, particularly locks, latches, and hinges.
- Push-out test—intended to prevent children from being able to dislodge the gate or creating an opening through which they might pass by pushing or applying a horizontal force on the gate.
- Completely bounded openings—intended to prevent head/neck entrapment in gate openings, such as V- or triangle-shapes in the gate itself.
- Height of sides—intended to retain children the approximate height of the oldest intended user (24 months old).
- Vertical strength—intended to prevent children from dislodging a gate or enclosure by hanging on the top of the gate.
- Bottom spacing—intended to prevent children from crawling under a gate or enclosure.
- Configuration of uppermost edge—intended to prevent children from head/neck entrapment in partially bounded openings at the uppermost edge of gates/enclosures, particularly “V”-shaped openings common in older, “accordion-style” gates.
- Locking device—intended to prevent children from unlocking a gate or enclosure.
- Slat strength—intended to prevent slat breakage incidents.

³¹ For additional details, see memorandum from Carlos Torres, Division of Mechanical and Combustion Engineering Directorate for Engineering Sciences, February 2020, Subject: “ESMC Staff’s Review and Evaluation of ASTM F1004-19, Standard Consumer Safety Specification for Expansion Gates and Expandable Enclosures.”

- Lateral/traverse joints—intended to make wooden slats stronger.

The standard also includes general requirements common to most voluntary children's product safety standards regarding entrapment hazards, exposed edges, small parts, pinching hazards, and instructional literature.³² ASTM F1004-19 includes no reporting or recordkeeping requirements. However, if the draft final rule becomes effective, manufacturers and importers of gates will be subject to the tracking label and third party testing requirements under the CPSIA, including recordkeeping requirements.

ASTM F1004-19 reflected a change from earlier versions of the standard to require that all gates will be tested to the same 30-pound push-out force, regardless of where the gate is to be mounted. Previous versions of the ASTM standard had different requirements for top of stair gates versus all other gates. ASTM F1004-19 was published in June 2019, and it is already in effect as a voluntary standard. If the draft final rule becomes effective, we expect that firms currently complying with the voluntary standard, or a previous version of the voluntary standard, will continue to comply, by making the needed changes to their product line to meet the new mandatory standard.

B. Additional Requirements for pressure-mounted gates

As discussed, the draft final rule recommends that ASTM F1004-19 be adopted as the mandatory standard with the two additional requirements for warning labeling location or visual side-pressure indicators that apply only to pressure-mounted gates.

CPSC staff testing found that most pressure-mounted gates can meet the 30-pound push-out force requirements of ASTM F1004-19 with the use of wall cups. Many gate models already come with wall cups in the box. Several major brands already sell pressure-mounted gates with visual side-pressure indicators. Therefore, companies of all sizes selling pressure-mounted gates should be able to meet these requirements by including wall cups with the gate, or by incorporating, at minimal cost, visual side-pressure indicators. Wall cups are available to consumers for a retail price of \$1 to \$3 per cup when purchased in a set of four, with some cups selling for under \$1 per cup. Accordingly, the wholesale cost to gate manufacturers per cup would likely be less than \$1. Manufacturers will also have to design a new label or marking for the top rail with the new warning, at an approximate cost of \$1 per gate for the label or marking, plus about \$250 per manufacturer for the initial design costs of that label or marking.³³ Because all of the non-home-based businesses already have warning labels and instruction manuals, staff does not expect the cost of modifying those labels and manuals to be significant.

³² For additional details on the labeling and instructional literature requirements, see memorandum from Jill Hurley, Division of Human Factors, Directorate for Engineering Sciences, dated December 30, 2019, Subject: "Human Factors Assessment of ASTM F1004-19. Requirements for Expansion Gates and Expandable Enclosures (CPSIA Section 104)."

³³ Based on cost information provided by manufacturers during development of the NPR, some firms could spend up to \$10,000 to redesign the warning for a permanently marked (embossed or stamped into the frame) label. The ASTM standard specifies the warning messages and that the warning must be permanent, but not the physical format that the warning must take. Some gates have warning stickers or decals, while others have the warnings permanently marked on the structure of the gate, so the cost of changing the warning can require retooling the marking template or redesigning the sticker or decal.

If a manufacturer chooses to satisfy compliance with visual side-pressure indicators rather than use wall cups, then pressure-mounted gates that do not already have visual side-pressure indicators would have to be redesigned. Based on interviews with manufacturers during development of the NPR, a redesign of that magnitude could cost \$400,000 to \$1 million for a product line of multiple gate models. Gates with visual side-pressure indicators currently retail for \$10 to \$20 more than similar gates without visual side-pressure indicators. The gates that have visual side-pressure indicators retail for about \$40 to \$170, with most priced under \$100. This suggests that manufacturers can make relatively inexpensive gates with effective visual side-pressure indicators.

In either case, the cost of wall cups, or the cost of supplying visual side-pressure indicators, might be passed on to consumers. For the cheapest pressure-mounted gates, including wall cups and a separate warning label might add \$5 to the retail price of the gate, but the gate would still cost under \$25. Most of the higher-priced, pressure-mounted gates already come with wall cups or side-pressure indicators, so these products might not have any price increases as a result of this rule.

C. Third Party Testing

Under section 14 of the CPSA, once the new gate and enclosure requirements become effective, all manufacturers and importers will be subject to the Testing and Labeling Pertaining to Product Certification rule (16 CFR part 1107), which requires that manufacturers and importers certify that their products comply with the applicable children's product safety standards, based on third party testing. For gates and enclosures, the third party testing costs are expected to range from about \$500 to \$1,500 per sample tested, depending primarily upon the type of gate, as well as whether the testing is conducted in the United States or overseas. The ASTM standard requires that expansion gates and enclosures comply with the standard in each of the manufacturer's recommended use positions, which could increase testing costs for products with multiple extensions. (Some gates currently come with multiple extensions, expanding the gate up to 10 or 12 feet, although this is not common.) These cost estimates are for testing compliance with the physical or mechanical requirements in the standard only. As allowed by the component part testing rule (16 CFR part 1109), manufacturers and importers may rely upon third party tests or certifications obtained by their suppliers, which could reduce the impact of testing costs. The incremental testing costs would also be lower for compliant gates and enclosures, if such products are already being third party tested to assure conformance with the voluntary standard.

VII. Suppliers of Gates and Enclosures and the Impact on Small Businesses

Staff identified 127 firms supplying gates and enclosures to the U.S. market. The vast majority of suppliers to the U.S. market are domestic, including domestic importers of gates manufactured elsewhere. About 80 very small, home-based domestic manufacturers sell gates.³⁴

Staff identified another 47 firms that supply gates and/or enclosures that are not home-based. These 47 firms are generally larger than the domestic home-based suppliers. These firms include both manufacturers and importers. Four of these firms are large domestic entities, and six are foreign companies. Because of firm size and/or location of manufacture, these 10 companies are out of scope for this analysis of the impact on small domestic businesses. The 37 remaining firms are small domestic entities, based on U.S. Small Business Administration (SBA) guidelines for the number of employees in their North American Industry Classification System (NAICS) codes. These firms typically have at least eight to nine gate models in their product lines, and have much larger sales volumes than the home-based suppliers. Most of the small companies making or importing gates and enclosures do not have gates as their main product line; rather, they sell other nursery items and unrelated consumer products, including toys, furniture, clothing, plastic molded items, infant sleep products, strollers, baby monitors, floor mats, bird feeders, and car seats.

Table 1. Firms in the U.S. Gate and Enclosure Market³⁵

CATEGORY	NUMBER OF FIRMS SUPPLYING GATES AND ENCLOSURES
Total Firms	127
Total Domestic Firms	121
Very small home-based manufacturers	80*
Small	37
Manufacturers	18
Compliant with ASTM F1004-18 voluntary standard	14
Not compliant with ASTM F1004-18 voluntary standard	4
Importers	19
Compliant with ASTM F1004-18 voluntary standard	9
Not compliant with ASTM F1004-18 voluntary standard	10
Large	4

³⁴ These suppliers were identified online, and staff believes that there may be additional home-based suppliers operating in the gates market on a very small scale (possibly including some without an online presence). These suppliers enter and exit the market relatively frequently; the number found through staff research is an estimation of the actual number at any given time.

³⁵ Staff made these determinations using information from Dun & Bradstreet and ReferenceUSAGov, as well as firm websites.

Total Foreign Firms	6
Small domestic manufacturers and importers (highlighted rows) are the focus of this analysis. * Staff identified 80 home-based manufacturers selling gates online, but there are likely additional home-based manufacturers that staff was unable to identify (possibly including some without an online presence).	

A. Very Small Home-Based Manufacturers

Approximately 80 very small, home-based manufacturers supply gates to the U.S. market. Most, if not all, of these gates would probably require substantial modifications to comply with the draft final rule, and staff expects that these firms will stop selling gates. These firms typically sell less than 100 items per year, including the sale of products other than gates. About 10 home-based manufacturers sell more than 500 items per year, including, but not limited to, gates. About six manufacturers sell fabric gates; the rest sell wood or wood and metal gates. The number of very small, home-based manufacturers changes frequently as the costs of market entry and exit are low – listing fees are typically \$1 per item or less for commonly used online marketplace sites.

Fabric gates are fastened to wall hooks or bannisters with fabric ties, elastic cords, or similar methods. These gates would require significant product modifications to comply with the performance requirements of the draft final rule. The cost of re-engineering the product and testing to demonstrate compliance would likely exceed the yearly revenue of these sellers. Therefore, we assume most of these sellers will stop selling gates when the rule becomes effective.

Most of the remaining home-based firms supply gates made of solid wood, with a few using slats or metal spindles; all are hardware mounted. These gates could likely meet the 30-pound push-out force requirement and 45-pound vertical stability requirement in the ASTM standard. However, these gates would probably require extensive modifications to meet the other requirements for double-action release latches, bottom spacing, entrapment hazards, sharp edges, and pinch hazards. Third party testing would be required to demonstrate such compliance. Therefore, we assume most of these sellers will also stop selling gates when the rule becomes effective.

All 80 of the very small, home-based manufacturers are likely to be significantly impacted by the third party testing costs. Testing would cost at about \$500 to \$1,500 per sample tested, and multiple samples would be required. The very small, home-based firms also do not appear to have any warning labels on their gates or instructional literature that would meet the requirements in the ASTM standard. Staff does not believe that the gate sales for any of these firms would be sufficiently large to justify the cost of developing labels and third party testing their gates, in addition to the cost of redesigning their gates to meet the safety standard.

Small, home-based manufacturers could re-label their gates as pet gates, thus, reducing the economic impact of this rule. Online reviews of pet gates and child gates show that some parents are already purchasing pet gates for child use; meanwhile, pet owners are buying child gates for pet use. However, because customers seeking to purchase baby gates will not necessarily

consider buying a pet gate as an alternative, staff concludes that the impact still would likely be economically significant.

B. Small Manufacturers

1. Small Manufacturers with Compliant Gates and Enclosures

Currently, 14 of the small domestic manufacturers produce gates or enclosures that comply with the previous version of the standard, ASTM F1004-18.³⁶ Staff assumes that compliant firms will remain compliant with the voluntary standard as it evolves, because compliance is part of an established business practice. Because these firms are already testing to the previous version of the ASTM standard, staff expects that any additional third party testing costs would be minimal. Similarly, all of these firms already have warning stickers and instruction manuals that are compliant with the previous standard, so staff expects costs to be insignificant for any modifications to comply with the new standard.

The change in warning label location for wall cups and the requirement for visual side-pressure indicators will only apply to pressure-mounted gates. Some manufacturers only supply hardware-mounted gates, or have hardware gates as most of their product line. Other manufacturers sell pressure-mounted gates with wall cups supplied, so they would only have to change the label. Some manufacturers already sell gates with visual side-pressure indicators.

2. Small Manufacturers with Noncompliant Gates and Enclosures

Four small domestic manufacturers produce gates and enclosures that do not comply with the voluntary standard. Staff does not expect these firms to incur significant costs for any product changes to comply with requirements for instruction manuals and labeling, because they already have instruction manuals and warning labels. All four of these manufacturers appear to be familiar with at least some aspects of safety requirements for durable nursery goods, including testing for compliance. Two manufacturers were compliant with earlier versions of the ASTM standard for gates and enclosures; one manufacturer claims compliance to CPSIA section 101 and 108; and one firm manufactures other products that are compliant with relevant ASTM standards for durable nursery products.

For the two manufacturers of noncompliant enclosures, staff does not expect that third party testing costs will exceed 1 percent of revenue, because these two manufacturers have millions of dollars in revenue, already certify compliance for other ASTM standards, and have few gate or enclosure models in their product lines. Gates and enclosures are not their primary business.

For the other two small domestic manufacturers of noncompliant gates and enclosures, the impact may be significant. One of the small manufacturers makes only pressure-mounted gates, although the option for wall cups could make it relatively inexpensive for that firm to achieve compliance without significant redesign. The other manufacturer sells noncompliant gates and

³⁶ A 6-month delay typically occurs between the publication of a new ASTM voluntary standard and its adoption for compliance testing. ASTM F1004-19 was published in June 2019, and therefore, the standard became effective for testing purposes in January 2020.

enclosures as most of their product line; sells both hardware-mounted and pressure-mounted gates; and some of their gates and enclosures appear to require redesign to meet the standard. If this manufacturer redesigns their products, the cost could be significant. Firms interviewed during the development of the draft proposed rule indicated that the cost of a redesign could be between \$400,000 and \$1 million,³⁷ depending on the material used to construct the product, and the extent of the structural changes required.

C. Small Importers

1. Small Importers with Compliant Gates and Enclosures

Staff identified nine gate/enclosure importers currently in compliance with ASTM F1004-18. As with small manufacturers of compliant gates and enclosures, staff expects these firms to be in compliance with ASTM F1004-19 before the draft final rule becomes effective. Therefore, staff does not expect the economic impact to be significant for any of the importers with compliant gates or enclosures. Any third party testing costs for importers of compliant gates and enclosures would be limited to the incremental costs associated with third party testing over their current testing regime.

2. Small Importers with Noncompliant Gates and Enclosures

Staff identified 10 small importers of noncompliant gates and enclosures. Seven of these firms sell many other products; so dropping gates and enclosures from their product line, or finding a new supplier, could have a relatively minor impact on their total revenue. Most of the noncompliant gates and enclosures already have some warning labels and instruction manuals; and some claim to be tested for lead, phthalates, and BPA. Thus, it is also possible that the costs of third party testing to demonstrate compliance could be minimal compared to sales. Staff also expects it is possible that these importers will be able to find new suppliers of compliant gates and enclosures.

Several importers of noncompliant gates sell gates with multiple extensions. The ASTM standard requires that gates with extension panels must be compliant in any of the manufacturer's recommended use positions, which could increase testing costs. Accordingly, staff believes it is likely that these firms will stop selling gates with more than two extensions. Gates for these importers appear to be very similar to other compliant hardware-mounted gates. Therefore, these importers may be able to achieve compliance in a cost effective manner by importing gates with fewer extensions.

For three of the noncompliant importers, staff believes they could experience a significant economic impact. One small importer of noncompliant enclosures appears to sell only enclosures. Finding an alternative supplier might result in significant costs for this firm. Perhaps this firm could find another compliant supplier relatively easily, as many different

³⁷ One firm indicated that the cost could be higher in some cases.

brands of imported enclosures appear to be very similar, and some comply with a previous version of the ASTM standard.

The other two small importers of noncompliant gates that could experience a significant economic impact have gates as a large part of their product line. One of the two small importers only sells hardware-mounted gates, while the other already includes wall cups with their pressure-mounted gates. Therefore, staff believes that it is possible that their products could comply without significant redesign. However, third party testing to demonstrate compliance may well represent more than 1 percent of revenue for these importers, which could be a significant economic impact, unless their supplier absorbs the costs.

D. Other Potential Impacts

The draft final rule will require suppliers of gates and enclosures to comply with the requirements of the consumer product safety standard or stop selling noncompliant gates and enclosures. Accordingly, compliance with the draft final rule could impact the price and selection of gates and enclosures available to consumers. Compliance with the mandatory standard could also impact suppliers of wall cups, by increasing demand for their products.

Compliance with the standard could raise the retail price of pressure-mounted gates by \$5 to \$10. We do not believe, however, that this will significantly decrease sales of gates. The price of hardware-mounted gates is unlikely to increase. As noted, most of the bestselling gates already cost more than \$25.

Many suppliers contract with foreign manufacturers, and some of the companies sell in multiple markets, including Europe, Asia, and Canada. Having a U.S. standard that is more stringent than, or different from, standards in those regions could force companies to develop different gates for different markets, or develop a more costly gate that meets all the standards.

Some manufacturers may market their noncompliant gates as pet gates. We can see from online reviews of pet gates and child gates that some parents are already purchasing pet gates for child use, while pet owners are buying child gates for pet use. Some of the pet gates are already ASTM and JPMA compliant. The least expensive pet gates retail for around \$20, above the current price of the least expensive child gates. Therefore, this re-marketing will not likely have a measurable impact on the market for either type of gate. However, the least expensive dog pens are about half the price of the least expensive enclosures for children. Consequently, some manufacturers might re-market their noncompliant enclosures as dog pens.

E. Summary of Impacts

Staff concludes that there would not be a significant economic impact on the 23 small suppliers of compliant gates and enclosures. Staff also expects that the impact on noncompliant suppliers will not be significant for the nine firms that have a diversified product line, or whose gates and enclosures already meet most of the requirements of the standard. However, staff concludes that there could be a significant economic impact on five suppliers of noncompliant gates and enclosures (2 manufacturers and 3 importers). Additionally, staff concludes that it is

likely that all 80 of the very small, home-based suppliers will be significantly impacted and compliance with the mandatory standard will require them to stop selling gates altogether.

VIII. Steps CPSC Has Taken to Minimize Economic Impacts on Small Entities

Staff recommends a 1-year delay in the effective date of the draft final rule, in response to a public comment. A later effective date could reduce the economic impact on firms in two ways. Firms would be less likely to experience a lapse in production/importation, which could result if they are unable to comply and third party test within the required timeframe, or find a new supplier. Firms could also spread costs over a longer period. Suppliers interviewed for the proposed rulemaking indicated that 12 to 18 months might be necessary, if a complete product redesign were required. Unless suppliers choose to add visual side-pressure indicators to a gate that does not currently have them, or the gate/enclosure of any type does not meet multiple requirements in the ASTM standard, a complete redesign should not be necessary.

This draft final rule provides suppliers of pressure-mounted gates with two alternatives to meet the standard; either wall cups or visual side pressure indicators. The wall cups option will not require a redesign for gates that can meet the 30-pound push-out test with wall cups; only a new label on the top rail will be required. Suppliers that already include effective visual side-pressure indicators in their gates will likely also be able to meet the standard without a redesign. If CPSC required only one option, nearly all pressure-mounted gate manufacturers would have to redesign their gates or include wall cups in the box. Providing two options for pressure gate suppliers to meet the standard reduces the impact on small entities. CPSC's in-house testing found that most gates can meet the 30-pound push-out requirement with wall cups. None of the home-based businesses make pressure-mounted gates. Most of the small manufacturers and importers already comply with a previous version of the ASTM standard. Firms that sell pressure-mounted gates can meet the new requirements by including a set of wall cups in the box. Perhaps these firms can pass on the extra cost of the wall cups (about \$5-\$10) to consumers. Small manufacturers with multiple models will possibly meet the standard, at least in the short term, by discontinuing pressure-mounted gate models but continuing to sell their hardware-mounted models. Because some pressure-mounted gates on the market already meet the requirements of the standard with either wall cups or visual side pressure indicators, pressure-mounted gates will still be available for consumers who wish to purchase them.

IX. Small Business Impacts of the Accreditation Requirements for Testing Laboratories

In accordance with section 14 of the CPSA, all children's products that are subject to a children's product safety rule must be tested by a CPSC-accepted third party conformity assessment body (*i.e.*, testing laboratory) for compliance with applicable children's product safety rules. Testing laboratories that want to conduct this testing must meet the notice of requirements (NOR) pertaining to third party conformity testing. NORs have been codified for existing rules at 16 CFR part 1112. Consequently, staff recommends that the Commission amend 16 CFR part 1112 to establish the NOR for testing laboratories that want to test for compliance

with the gates and enclosures final rule. This section assesses the impact of the amendment on small laboratories.

Staff conducted a final regulatory flexibility analysis (FRFA) as part of the promulgation of the original 1112 rule (78 FR 15836, 15855-58), as required by the RFA. Briefly, the FRFA concluded that the accreditation requirements would not have a significant adverse impact on a substantial number of small laboratories because no requirements were imposed on laboratories that did not intend to provide third party testing services. The only laboratories that were expected to provide such services were those that anticipated receiving sufficient revenue from the mandated testing to justify accepting the requirements as a business decision.

Based on similar reasoning, amending part 1112 to include the NOR for the gates and enclosures standard will not have a significant adverse impact on small laboratories. Moreover, based upon the number of laboratories in the United States that have applied for CPSC acceptance of the accreditation to test for conformance to other juvenile product standards, we expect that only a few laboratories will seek CPSC acceptance of their accreditation to test for conformance with the gates and enclosures standard. Most of these laboratories will have already been accredited to test for conformance to other juvenile product standards, and the only costs to them would be the cost of adding the gates and enclosures standard to their scope of accreditation, a cost that test laboratories have indicated is extremely low when they are already accredited for other section 104 rules. As a consequence, the Commission could certify that the NOR for the gates and enclosures standard will not have a significant impact on a substantial number of small testing entities.