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# Consumer Product Standards Improving People's Lives

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Every day, people around the world expect that their purchases — from sports equipment to vacuum cleaners — will be reliable and perform as expected. ASTM International standards play a crucial role in helping to ensure the quality and safety of these and other products, building trust between manufacturers and consumers.

# ASTM standards help manufacturers deliver quality products to consumers.

**By fostering reliability, performance and safety, ASTM standards empower manufacturers to succeed while also building consumer confidence.**

## **An Open and Collaborative Process**

The ASTM process is known for openness, collaboration and transparency. Achieving the goal of safer, better consumer products requires cooperation among manufacturers, trade associations, government officials and consumers themselves. ASTM provides the space for these stakeholders to come together and create high quality standards.

Several ASTM committees develop consensus-based standards that foster safety and performance while helping to meet global marketplace demands. While the use of ASTM standards is voluntary, government regulators around the world have cited thousands of ASTM standards in legislation and codes due to their quality and due to ASTM's commitment to the principles of the World Trade Organization's Technical Barriers to Trade Agreement.

In the consumer products industry, several ASTM technical committees create and revise standards that support a wide range of areas, including:

- Toys and other children's products, such as cribs and playground equipment;
- Household items such as candles;
- Cleaning products such as vacuum cleaners, brooms and mops;
- Sports equipment such as safety helmets;
- Leisure activities like amusement rides and more.

## **ASTM Committee F15: Setting Standards for Consumer Safety**

ASTM International's largest consumer product standards group is Committee F15, which has developed safety standards for more than 40 years.

The committee's broad global membership includes more than 1,000 stakeholders from the manufacturing and retail sectors as well as representatives from government agencies and internationally respected trade and consumer groups.



## **ASTM F963 on Toys**

The specification for toy safety plays an important role in contributing to the safety of children.

F15 includes more than 50 subcommittees, each of which focuses on writing standards for a specific product area. The members of these groups work proactively in the public interest, forming new task groups whenever necessary to address urgent safety issues, including newly identified product hazards.

## **Ensuring Safer Toys through F963**

ASTM standards play a vital and visible role in supporting child safety, particularly with regard to toys. F15's world-renowned consumer safety specification for toy safety (F963) establishes safety requirements for toys for children under age 14.

F963 includes guidelines and test methods to prevent injuries related to choking, sharp edges, magnet ingestion, jaw entrapment, acoustics issues, flammability, impaction and more.

Originally approved in 1986, the standard has been revised many times to incorporate new product technologies and innovations. Additional refinements for the standard are also underway.

F963 became mandatory in the United States in 2008 when the landmark U.S. Consumer Product Safety Improvement Act was signed into law. All toys sold in the United States must meet F963 safety requirements.

# Keeping People Safe in and around the Home



- Safety standards for full-size baby cribs (F1169) and non-full-size baby cribs/play yards (F406) promote safe sleep environments through requirements and tests for hazards, including structural integrity, entanglement on corner post extensions and more. These standards also cover requirements for warning labels and instructional materials.
- A safety specification for crib mattresses (F2933) helps ensure a safe sleep area, addressing concerns related to mattress thickness, the gap between a mattress and crib rails, and the crib height from the top of a mattress. Also, a specification for bedside sleepers (F2906) has been incorporated in the U.S. Consumer Product Safety Improvement Act.
- A specification for corded baby monitors (F2951) provides requirements for labeling, instructional material and packaging.
- A standard (F2907) helps infant sling carrier manufacturers ensure that they are creating the safest possible products.
- Standards for children’s and adult jewelry (F2923 and F2999) help reduce hazards through requirements and test methods for certain elements and mechanical parts.
- A safety standard for labeling and packaging individually wrapped liquid laundry detergent packets (F3159) requires warning labels and opaque or other packaging designed to mask visibility. F3159 aims to decrease incidents of accidental ingestion by children.
- With regard to furniture safety, a specification aims to prevent dressers and other items from tipping over (F2057), helping to reduce accidents. The standard provides a procedure to test the unit’s stability.
- Two companion standards help keep small children from falling from windows. A safety specification for window fall prevention devices for non-emergency escape (egress) and rescue (ingress) windows (F2006) establishes requirements intended to reduce the risk of injury and death to children aged 5 and under through accidental falls from open windows more than 75 feet (23 m) above the ground. Another specification addresses the requirements for emergency escape (egress) release mechanisms (F2090) on window fall prevention devices for windows less than 75 feet (23 m) above the ground.
- A specification for child-resistant closures (F2517) on portable gasoline containers helps prevent accidental fires and burns. In the United States, this standard became law through the Children’s Gasoline Burn Prevention Act.
- For backyard pools, a specification for residential pool alarms (F2208) helps lower the risk of children drowning. The standard details performance requirements for pool and spa alarms; it covers devices that provide rapid, automatic detection and alarm when a 1-year-old or older child enters a swimming pool accidentally.



Committee F15's child safety standards activities also consider home playground equipment and play devices.

### Safety while Playing

Committee F15's child safety standards also include home playground equipment and play devices.

- Playground standards cover equipment for both public and home use, addressing issues such as head and neck entrapment, playground layout, accessibility, maintenance and labeling. The standards include performance specifications for public playground equipment for children from 2 to 12 years old (F1487) as well as children 6 months through 23 months (F2373). Residential play equipment is addressed by another specification (F1148). These standards are regularly revised to reflect the latest industry developments and innovations.
- A standard for impact attenuation of surfacing materials (F1292) aims to help prevent head injuries from falls. The standard covers performance requirements for playground surfaces and references other related ASTM playground safety standards.
- A standard for inflatable play devices for home use (F2729) specifies various types of amusements for children ages 2 to 12 years. In addition to general requirements, the standard covers calibration, marking, labeling and instructions.

### Safer Sports, Thanks to ASTM F08

From serious professional athletes to the millions of people who play recreationally, standards from Committee F08 on Sports Equipment, Playing Surfaces and Facilities help make sports safer for everyone.

Formed in 1969, Committee F08 develops standards to reduce the inherent risk of injuries. The group has grown to include over 900 members who participate in more than 25 subcommittees responsible for 170+ standards. These standards cover a wide scope: headgear and helmets, bicycles, paintball, athletic footwear, eye safety, baseball and softball equipment, camping, fitness products and more.

The committee works closely with third-party groups that certify products as meeting ASTM or other standards. This allows for better understanding of the intent of the test methods and specifications as well as better implementation of testing practices in their facilities. Many rules from the National Collegiate Athletic Association and the National Federation of State High School Associations are based on F08 standards.

Several areas of F08 standards follow.

### Better Headgear and Helmets

One of Committee F08's most active subcommittees is F08.53 on Headgear and Helmets, which is responsible for more than 20 standards, including headgear for martial arts, soccer, bicycling, football, baseball, pole vaulting, speed skating and more.

- A specification for recreational snow sport helmets (F2040) is the standard to which skiing and snowboarding helmets comply in North America and elsewhere.
- Helmets used in short track speed ice skating are covered in another specification (F1849).
- For soccer, a specification addresses performance requirements for headgear intended to reduce the forces reaching the impact area of the head (F2439).
- A specification used in equine sports and horseback riding covers performance criteria and test methods for equestrian protective headgear (F1163).
- Another standard specification defines performance requirements for women's lacrosse headgear, excluding goalkeepers (F3137).

### Enhancing the Performance of Sports Equipment

Several ASTM Committee F08 standards contribute to the performance, quality and reliability of equipment used in many team and individual sports.

- A specification used in horse racing (in a controlled environment) covers minimum performance criteria and describes test methods for body protectors (F2681).
- The bicycling subcommittee (F08.10) is responsible for a number of standards, including several specifications for frames. Also, the durability and strength of bike frames are verified with the help of standard procedures (F2711). Another standard includes a test, warnings and owner manual content for trailer cycles (F2917).
- Protecting athletes' eyes is the goal of the Subcommittee F08.57 on Eye Safety for Sports, which has developed a standard for eye protection for sports such as women's lacrosse, field hockey, basketball, baseball, soccer, skiing and paintball (F803). Another eye protection standard has been created for airsoft, a growing recreational game similar to paintball (F2879). F08 has developed other airsoft standards for field operation (F2940) and player safety briefings (F2941).



The standards of  
ASTM Committee  
F08 on Sports  
Equipment, Playing  
Surfaces and  
Facilities assist  
in making sports  
safer for all who  
participate.



- A subcommittee focused on treestands used in hunting (F08.18) has developed several standard practices that support uniform user instructions; labeling; safety devices; test methods that determine stability and load capacity; and guidance for establishing a quality assurance program.
- A standard from Subcommittee F08.12 on Gymnastics and Wrestling Equipment alerts and reminds users about hazards and handling issues related to wrestling mats (F2983). The guide for labeling and care instructions for these mats provides recommendations for manufacturers.
- Inclusive fitness equipment standards specify universal designs for use by people with functional limitations and impairments (F3021) and how to evaluate equipment design (F3022).

### Standards Improve Athletic Fields

Another important objective of Committee F08 is athletic field improvement. Through the efforts of several subcommittees, F08 has contributed standards that enhance the quality of a variety of natural and artificial playing surfaces.

- Sports like baseball and football, which rely heavily on natural grass, are supported by standards such as a guide for maintaining cool season turfgrasses on fields (F2060).
- Sports stadiums and fields outfitted with artificial turf are supported by standards from Subcommittee on Artificial Turf Surfaces and Systems (F08.65). Standards include a specification for impact attenuation of turf playing systems as measured in the field (F1936).

- F08.65 is also addressing the issue of drainage failures, a problem for owners and operators of synthetic turf fields. For example, a standard (F2898) provides a vertical permeability test of synthetic turf that helps designers, testing agencies and contractors minimize problems associated with field drainage.
- To quickly evaluate the soil of athletic fields or golf courses, Subcommittee F08.64 on Natural Playing Surfaces developed a standard to assess soil density (F3013) without the delays associated with formal lab testing programs. Specifically, the test method determines in-place density of topsoil and blended soils prior to planting.
- “Warning tracks,” located on the edges of playing fields, warn players that they are approaching a fence or out-of-bounds area. A standard guides the construction and maintenance of warning tracks, with the goal of helping players maintain a good footing while still sensing a different texture from the surrounding playing surface (F2270).
- A proposed standard is underway to specify crumb rubber used as fill with synthetic turf. The scope will include test methods to measure performance and safety parameters of the material.

### Keeping People Safe on the Slopes

Committee F27 on Snow Skiing helps protect people when skiing or snowboarding through equipment standards that work to reduce the potential risk of injury. These standards provide valuable tools and guidance for manufacturers as well as retail and rental shops, helping them to provide durable, well-functioning equipment.

- A standard on selecting release torque values for alpine ski bindings (F939) supports proper performance of the ski-boot-binding system. This standard is useful to both binding manufacturers (for installation and use instructions) and ski shop operators (for adjusting already mounted bindings).
- For snowboards, an ASTM test evaluates the binding-to-snowboard insert retention strength (F3030). It can also help compare the durability of different materials and designs.
- Helmets for skiing, snowboarding and other alpine sports are detailed in a standard specification (F2040) from Committee F08. The standard provides performance requirements related to anvil testing, acceleration and retention tests.
- Subcommittee F27.70 on Freestyle Terrain Jump Features has begun work on a standard to define terminology for jumps.
- *Special Technical Publication 1553, Skiing Trauma and Safety: 19th Volume* ([www.astm.org/STP1553](http://www.astm.org/STP1553)), continues a series of works collecting the latest research for identifying and evaluating all aspects of safety in skiing, snowboarding and skiboarding. Topics include wrist guards, jumping, resort safety, epidemiology, helmets and hip injuries.



Photo courtesy of US Lacrosse

### Women's Lacrosse

A standard specifies women's lacrosse headgear (F3137).

### Safer Amusement Rides and Devices

Globally recognized as the leading authority in its field, Committee F24 on Amusement Rides and Devices has provided standards that support safety and high quality manufacturing in this field for over 35 years.

The committee has a strong global membership, which enhances the acceptance of its standards by a range of stakeholders, including the International Association of Amusement Parks and Attractions, the Outdoor Amusement Business Association, and the Amusement Industry Manufacturers and Suppliers International.

The committee's flagship standard — known as the "world standard" — covers the design of amusement rides and devices (F2291). The standard was and is developed through collaborative efforts of ride experts and other stakeholders across the globe.

Other notable standards from the group include a guide for auditing amusement rides and devices (F2974) and practices addressing the design, manufacture and operation of water slides (F2376) and inflatable amusements (F2374).

Bolivia, Canada, Chile, Peru and other countries use F24 standards, which are available in English, Spanish, French-Canadian, Chinese and Japanese. Annual subscriptions to these standards are available at [www.astm.org/COMMITTEE/F24\\_pubs](http://www.astm.org/COMMITTEE/F24_pubs).

Subcommittees in F24 also create standards for unique recreational activities.

- A standard addresses the design, manufacture, installation, operation, maintenance, inspection and modification of trampoline courts (F2970).
- A standard supports the operation, maintenance and safety of parasailing equipment, crew proficiency and flying passengers aloft (F3099).
- An aerial adventures standard covers functional, operational and participation requirements for zip lines, ropes courses, challenge courses, aerial trekking courses and canopy tours (F2959).

### Even More Consumer Product Standards

There are many more examples of ASTM standards that increase product safety for consumers.

- Committee D10 on Packaging created a standard classification for child-resistant packages (D3475), which helps protect children from reaching container contents by defining the motions, skills or tools required for screw and snap-top closures.
- Another D10 packaging standard provides requirements for anesthesiology syringe labels, including colors that identify drug content (D4774), while another standard enhances label shape, size, color, layout, typeface and barcoding (D4267).
- The packaging committee is also working on a method to assess restricted delivery systems for liquid consumer products. The standard will provide mechanical tests that simulate shaking, squeezing and drinking from a bottle — actions that children might take to try and consume adult medicine.



### Ropes Courses

An aerial adventures standard covers functional, operational and participation requirements for zip lines, ropes courses, challenge courses, aerial trekking courses and canopy tours (F2959).

- Committee F11 on Vacuum Cleaners has developed more than 35 standards that enhance the filtration efficiency, durability and air performance characteristics of vacuum cleaners.
- F11 standards include a widely used test for evaluating how well household and commercial vacuums perform in removing dirt from carpet (F608). Other tests include a method that helps assess the carpet cleaning effectiveness of a wet extraction cleaning system (F2828) and a specification for HEPA (high efficiency particulate air) filtration system performance of residential and commercial vacuum cleaners (F3150).
- Manufacturers use a standard method for central vacuum cleaners that helps determine sustained air performance and exhaust emissions (F2826). The standard helps them ensure that their products can be rated so that consumers can select a product that meets their needs and price point.
- Another committee, D11 on Rubber, is responsible for standards for products such as rubber surgical gloves (D3577) and condoms (D3492). Specifications for both of these products address requirements for performance and safety.
- A labeling standard from Committee D01 on Paint and Related Coatings, Materials and Applications addresses potential health hazards associated with art materials such as paint and crayons (D4236). Other D01 standards (D7354 and D7355) cover how to clean up and dispose of paint and solvent waste.

Whether it is the countless products that support and enhance our daily lives, or the wide range of leisure and recreational activities we enjoy, consumers everywhere can continue to count on the safety and support provided by ASTM standards.



## ASTM International technical committees highlighted in this piece include:

- D10 on Packaging
- D11 on Rubber
- F08 on Sports Equipment, Playing Surfaces and Facilities
- F11 on Vacuum Cleaners
- F15 on Consumer Products
- F24 on Amusement Rides and Devices
- F27 on Snow Skiing



### ASTM INTERNATIONAL Helping our world work better

Over 12,000 ASTM standards operate globally. Defined and set by us, they improve the lives of millions every day.

Combined with our innovative business services, they enhance performance and help everyone have confidence in the things they buy and use – from the toy in a child's hand to the aircraft overhead.

Working across borders, disciplines and industries we harness the expertise of over 30,000 members to create consensus and improve performance in manufacturing and materials, products and processes, systems and services.

Understanding commercial needs and consumer priorities, we touch every part of everyday life: helping our world work better.

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