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 help manufacturers to succeed while also building consumer confidence.

An Open and Collaborative Process
The ASTM International process is known for openness, collaboration, and transparency. Through the process, manufacturers, trade associations, government officials, and consumers come together to develop standards — including many for consumer products — that aim to better protect everyone.

These standards foster safety and performance while helping to meet global marketplace demands. While the use of ASTM International standards is voluntary, government regulators around the world cite these standards in legislation 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 develop 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; trade and child protective groups, and consumers.

F15 includes some 60 subcommittees, each of which develops 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 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 toys. The 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 toy-related injuries, including those from choking, sharp edges, magnet ingestion, jaw entrapment, acoustics issues, flammability, impaction, and more.

Originally approved in 1986, the standard has been revised numerous 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 and entanglement on corner post extensions. 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 is intended 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 to help 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
ASTM International’s child safety standards also address 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.

Better Headgear and Helmets
The subcommittee on headgear and helmets (F08.53) oversees more than 15 standards, including headgear for martial arts, soccer, bicycling, lacrosse, baseball, pole vaulting, speed skating, and more.

- A specification for recreational snow sport helmets (F2040) is used in compliance 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).

Safer Sports, Thanks to Standards
From serious professional athletes to the millions of people who play recreationally, standards from the committee on sports equipment, playing surfaces, and facilities (F08) help make sports safer for everyone.

The F08 committee develops standards that help reduce the risk of injuries. Today, the group has over 800 members who participate in more than 25 subcommittees responsible for 180+ standards. These standards cover a wide scope: headgear and helmets, bicycles, paintball, athletic footwear, eye safety, baseball and softball equipment, camping, fitness equipment, and more.

The committee works closely with third-party groups that certify products as meeting ASTM or other standards. The Safety Equipment Institute, an ASTM International affiliate, provides such services.

Certification 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.

Enhancing the Performance of Sports Equipment
Several F08 standards contribute to the performance, quality, and reliability of equipment used in team and individual sports.

- A specification used in horse racing (in a controlled environment) covers minimum performance criteria and test methods for body protectors (F2681).
- The bicycling subcommittee (F08.10) is responsible for a number of standards, including several for frames. Frame durability and strength can be verified with the performance tests in one standard (F2711). Another includes a test, warnings, and owner manual content for trailer cycles (F2917).
- The subcommittee on eye safety for sports (F08.57) works to help protect athletes’ eyes. The group 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 developed for airsoft, a growing recreational game similar to paintball (F2879). F08 has developed additional airsoft standards for field operation (F2940) and player safety briefings (F2941).
- A subcommittee focused on treestands used in hunting (F08.18) has developed 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.

The standards of ASTM committee on sports equipment, playing surfaces, and facilities (F08) assist in making sports safer for all who participate.
− A standard from the subcommittee on gymnastics and wrestling equipment (F08.12) alerts and reminds users about hazards and handling issues related to wrestling mats (F2983). The guide also includes mat labeling and care instructions, which provide 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).
− A new subcommittee on water sports equipment (F27.80) will develop standards that can help test and enhance the performance and safety of products such as water skis, wake boards, inflatables/towables, and other related equipment.

Standards Improve Athletic Fields

Standards from the F08 committee also focus on athletic field improvement. Through the work of several subcommittees, F08 is responsible for 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 the 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, the subcommittee on natural playing surfaces (F08.64) 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 standard from the subcommittee on artificial turf surfaces and systems (F08.65) addresses the amount of certain metals that might be extracted from synthetic turf infill materials if ingested (F3188).

Safer Participation in Snow and Water Sports

The committee on snow and water sports (F27) aims to help protect people through standards that reduce the risk of injury. These standards guide manufacturers as well as retail and rental shops in providing 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.
− The subcommittee on freestyle terrain jump features (F27.70) has developed a standard that defines terminology for jumps in a snow sport freestyle terrain park (F3237).
− Special Technical Publication 1553, Skiing Trauma and Safety: 19th Volume (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 snowboarding. Topics include wrist guards, jumping, resort safety, epidemiology, helmets, and hip injuries.

Women’s Lacrosse
A standard specifies women’s lacrosse headgear (F3137).
Safer Amusement Rides and Devices
Globally recognized as a leading authority in its field, the committee on amusement rides and devices (F24) works on standards that support safety and high quality manufacturing in this field.

The committee has a strong global membership, which enhances the acceptance of its standards by stakeholders, which include 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 describes criteria and references for designs and major modifications.

Other notable F24 standards include a guide for auditing amusement rides and devices (F2974), which now gives specifics for nondestructive testing program auditors, as well as practices addressing the design, manufacture, and operation of water slides (F2376), and inflatable amusements (F2374).

Many countries use these amusement standards, which are available in English, Canadian French, Chinese, Japanese, and Spanish.

The committee also creates standards related to other recreational activities.
- One standard addresses the design, manufacture, installation, operation, maintenance, inspection, and modification of trampoline courts (F2970).
- Another 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)
- An additional standard addresses design, manufacture, installation, operation, maintenance, auditing, and major modifications of bungee jumping installations.

Even More Consumer Product Standards
Additional standards increase product safety for consumers. Some examples follow.
- The committee on primary barrier packaging (F02) is responsible for a standard addressing child-resistant packages (D3475). The standard describes the motions, skills, or tools required for screw and snap-top closures.
- Another F02 packaging standard provides requirements for anesthesiology syringe labels, including colors that identify drug content (D4774), while another standard addresses label shape, size, color, layout, typeface, and barcoding (D4267).
- The 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).

- The committee on vacuum cleaners (F11) 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 ensure that products can be rated, guiding consumers in selecting a product that meets their needs and price point.
- Another committee, on rubber (D11), 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 the committee on paint and related coatings, materials, and applications (D01) 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 count on the support for safety that ASTM standards provide.
ASTM International technical committees highlighted in this piece include:

- Amusement Rides and Devices (F24)
- Consumer Products (F15)
- Primary Barrier Packaging (F02)
- Packaging (D10)
- Rubber (D11)
- Snow and Water Sports (F27)
- Sports Equipment, Playing Surfaces, and Facilities (F08)
- Vacuum Cleaners (F11)