

Navigating Playground Surfacing: Making Smart Choices for Safety, Fun and Learning

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Introduction

School starts in September, and that signals the official end to summer for all school-aged children. Though some may think this would lead to a drop in community park and playground attendance, some playgrounds will actually increase in attendance, due to shared programs with schools. Because of this, it's extremely important for playground owners to assess the fitness of their facilities and, if needed, to perform maintenance and upgrades to the equipment and surfacing. Owners should make a habit of performing maintenance activities in the Fall and Spring to ensure consistency. Often, it's the playground equipment that gets the initial attention. Sliding boards, swings, bridges and climbing walls can show obvious signs of wear and tear. These all need to be reviewed and repaired to make sure that the equipment is not damaged or dangerous. But the most common threat of noncompliance on playgrounds is right under our feet – the surfacing. Playground surfacing is also victim to weather and wear and tear, and some surfaces need constant maintenance to ensure safety. *More than 80 percent of injuries on playgrounds occur from falls*, and installation and proper maintenance of an IPEMA (International Play Equipment Manufacturers Association)-certified, American with Disabilities (ADA)-compliant and shock-absorbent surface material can help minimize this risk of injury.

Importance of Safe Surfacing

Kids today can have very different experiences on the playground than many of us did as children. When I went to school, we played on asphalt because conventional wisdom at the time was that it was softer than concrete. Surfaces such as asphalt, concrete and even grass have been eliminated on today's playgrounds. New, impact attenuating surface materials on playgrounds are the result of extensive research to determine the best ways to prevent life-threatening injuries from falls while maintaining universal functionality.

A Brief History

In the mid-to late 1970s, playground owners began moving away from the old surfacing and began installing uniform rubber mats and experimenting with “loose fill” surfacing, which was spread around and under playground equipment. During this transition period, unfortunately, loose-fill surfaces such as sand, pea gravel, wood chips and garden mulch were thought to be adequate shock-absorbing materials. Unfortunately, all of these surfaces had inherent major flaws that made them *unsuitable and unsafe* for playground surfaces.

The shift to impact-attenuating surfaces such as Engineered Wood Fiber, rubber tiles and Poured-in-Place (PIP) led to a remarkable reduction in life-debilitating playground injuries. This move started on a regional basis, first appearing in Los Angeles, New York and

Chicago and began to flourish in the 1980's and 1990's throughout the country. As the safety benefits of this surfacing became known, the material gained popularity. Kids enjoyed the soft cushioning and experimented in their play because of it. For example, children were not likely to jump from high surfaces on a playground with asphalt or concrete underneath, but with soft surfacing, they felt more comfortable with height and jumping.

Not only did kids and parents like the surfacing, but there were several other stakeholders with a vested interest in finding safe products to install as playground surfacing. Playground owners and operators feared the effects of an increasingly litigious society and wanted to make their playgrounds as safe as possible. Consumer advocates began researching and drafting playground safety standards to serve as guidelines for purchasing public playground equipment and surfacing.

In 1991, the Consumer Product Safety Commission (CPSC) revised their *Handbook for Public Playground Safety* to include types of surfacing and their respective fall heights. "Fall height" refers to a critical height value of at least the height of the highest designated play surface on the equipment. With the CPSC's data, the American Society for Testing and Materials (ASTM) took it a step further by creating ASTM F1292 – *Standard Specification for Impact Attenuation Under and Around Playground Equipment*. in 1991.

This standard provided a useful test method for measuring the impact attenuation of the surfacing material to prevent a life debilitating injury. Manufacturers utilized independent testing laboratories to validate the fall height protection their surfacing provided. This standard, which has undergone several important revisions, is still used today for manufacturers to test their surfacing and understand the resiliency of the surfacing in an appropriate playground setting.

In addition, the playground industry understood that playground surfacing added much more to a playground than just a surface for kids to play on. Playground surfacing provides play value to children – and can be used to enhance a child's play experience. For example, rubberized tiles and poured-in-place surfacing can be spread in creative ways, with colorful, fantasy designs such as rivers and oceans, jungles and forests and can even provide life-sized playing boards for various games. Engineered Wood Fiber provides the softest and most natural surface for children to play on. Equal thought and effort needs to be put into decisions about playground surfacing as is playground equipment. Some of the best, most creative playgrounds in the world feature a variety of equipment, natural elements and different types of surfacing that allow for both maximum creativity and safety.

IPEMA Certification Program

The most important way to help ensure safe surfacing is to choose to install an IPEMA- (International Play Equipment Manufacturers Association) Certified product. IPEMA runs a program to independently test and certify safety in both playground equipment structures and surfacing. The certification program uses a third-party validator, Detroit Testing Laboratory (DTL) to perform manufacturing site inspections, surfacing product tests to ASTM F1292 (the impact attenuation standard) ASTM International F2075 (purity and particle size) and reviews manufacturer's compliance records periodically as a part of this program. ASTM Standard F2075 tests for the presence of "tramp metals" (such

as nails, staples (and/or other heavy metals often present in recycled materials) and also tests to ensure that the material meets particle size requirements.

Types of Surfacing

There are several types of modern playground surfacing you're likely to see on playgrounds today:

- **Engineered Wood Fiber** – Engineered wood fiber (EWF) is manufactured from natural wood that is often surplus cut-offs, a part of the lumber manufacturing process. It is non-toxic and does not contain chemicals or artificial ingredients. EWF can be virgin or recycled wood, but Fibar does not recommend using recycled material. There is always a chance of metal particles in this type of material. EWF is scientifically manufactured to meet the demanding criteria of the ASTM F2075 Standard.
- **Poured-in-Place** – Poured-in-place (PIP) surfacing is made from rubber granules, urethane, and recycled tire buffings that are mixed and installed on site. Generally, PIP consists of a cushion layer of resilient rubber that is bound together with a top wear course. The wear course is typically made from a durable and colorful rubber or can be a synthetic turf grass-like material.
- **Rubber Mulch** – Rubber mulch consists of granular rubber particles, also referred to as rubber chunks, nuggets and shredded rubber. It is largely made from recycled tire rubber that is cleaned and often colored.
- **Rubber Tiles** – Rubber tiles consist of granular rubber particles that are cleaned and formed together into a uniform tile. They are non-toxic and are primarily made from recycled rubber tiles.

There are a few other factors to consider when choosing a type of surfacing for a playground:

- **Drainage** – Engineered Wood Fiber surfaces can shift with weather and use, so it's critical to consider drainage routes and patterns and to perform routine maintenance to ensure continued safety. Many products come with drainage systems that reside below the loose-fill material to alleviate water problems.
- **Accessibility:** The Americans with Disabilities Act (ADA) requires playgrounds be accessible to wheelchairs and other mobility devices, and the ASTM has created Standard F1951 for compliance. Check to make sure a manufacturer is compliant with this standard before purchasing materials for your accessible routes of travel.

Importance of Safe Play

The biggest mistake in the modern playground is that attention is not paid to the surfacing and it's an afterthought. Too often, there are very tall playground structures towering over a surface of sand or pea gravel, which does not afford adequate impact attenuation for the fall heights of the equipment. Further, neither sand nor pea gravel meet American with Disabilities (ADA) requirements for accessibility. Other times there are wood chips and mulch that are made from a municipality's wood chipper and dispersed under a playground – it may offer some attenuation, but generally has not been tested and can decompose rapidly and can give the children, parents and owner/operators a false sense of security.

The most important action to take to ensure a safe playground surface is to work with IPEMA member companies for adequate, safe surfacing material and require that the products that you're putting in your play environment are IPEMA certified.

To learn more about IPEMA's playground equipment and surfacing program, visit www.ipema.org. To learn more about the important benefits of play for children, visit www.voiceofplay.com.