



# Playground Surfacing Materials ADA-Approved and Non-Approved

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**On March 15, 2011 The U.S. DEPARTMENT OF JUSTICE 2010 ADA Standards go into effect with specific new sections that govern the design, construction and numbers of accessible elements in playgrounds.**

Section 240 of the 2010 Standards provides scoping for play areas and section 1008 provides the technical requirements.

Section 240.1 of the 2010 Standards establishes play area requirements for children ages 2 and over and covers separate play areas within a site for specific age groups. Section 240.1 also provides four exceptions to the requirements that apply to family child care facilities, relocation of existing play components in existing play areas, amusement attractions, and alterations to play components where the ground surface is not altered.

Section 1008.2.6 of the 2010 Standards provides technical requirements for accessible ground surfaces for play areas on accessible routes, clear floor or ground spaces, and turning spaces. These ground surfaces must follow special rules, incorporated by reference from nationally recognized standards for accessibility and safety in play areas, including those issued by the American Society for Testing and Materials (ASTM).

ASTM code standards identify ways to test and compare surfacing materials. They do not identify specific materials; rather, they establish standards that must be met if the materials are to be used in ADA-compliant playgrounds. The selection of materials must be based on many characteristics of the individual play areas: height of equipment; age of users; dispersion of elements; normal weather conditions; maintenance costs; installation costs; equipment life expectancy; and environmental concerns.

There are basically two options for ADA-compliant surfacing materials, loose fill materials or synthetic materials. The functionality of the different types of materials is the most significant concern for a school or public entity that is installing or upgrading a playground. When choosing between types of surfacing materials there are three criteria that must be used to assess functionality in an ADA-approved play area.

1. What is the force of impact from a fall in a use zone, in and around playground equipment? The code requirements are referenced and established by ASTM Standard 1292-99 and ASTM F 1292-04. These codes provide a uniform means to measure and compare characteristics of surfacing materials to determine whether materials provide a safe surface under and around playground equipment. These standards are also referenced when an accessible surface is required inside a play area use zone where a fall attenuating surface is also required. The standards cover the minimum impact attenuation requirements, when tested in accordance with Test Method F 355, for surface systems to be used under and around any piece of playground equipment from which a person may fall.
2. Where are the accessible Routes located both in and around playground components and to and from playgrounds themselves? These requirements can be found in ASTM F 1487 and ASTM 1487-01, which establishes a nationally recognized safety standard for public playground equipment to avoid injuries identified by the U.S. Consumer Product Safety Commission. ASTM 1487 defines the use zone as the ground area beneath and immediately adjacent to a play structure or play equipment that is designed for unrestricted



circulation around the equipment and on whose surface it is predicted that a user would land when falling from or exiting pertinent play structures or equipment. ASTM F 1487 identifies the play area standard when defining accessible routes, which overlap use zones that require fall attenuating surfaces. In short, if the use zone of a playground is not entirely surfaced with an accessible material, at least one accessible route within the use zone must be provided from the perimeter to all accessible play structures or components within the playground.

3. What are the surface characteristics of playground surfaces that allow for compaction, propulsion and turning capabilities for mobility devices on playground surfaces? These standards are addressed in ASTM F 1951-99.

ASTM F 1951-99 establishes a uniform means to measure the characteristics of surface systems in order to provide performance specifications to be used when selecting materials for use as an accessible surface under and around playground equipment. Surface materials that comply with this standard and are located in the use zone must also comply with ASTM F 1292. The test methods in this standard address access for children and adults who may traverse the surfacing to aid children who are playing. When a surface is tested it must have an average work per foot value for straight propulsion and for turning less than the average work per foot values for straight propulsion and for turning, respectively, on a hard, smooth surface with a grade of 7% (1:14). Some of the surfacing materials do not meet the level of compliance for both impact attenuating surfaces and compaction for mobility devices that the standards address but the materials, when tested to the AMSE Standards; do meet the definition of the new regulations. Here are a few specifications and recommendations for the different types of surfacing materials.

## Loose Fill

All loose fill surfacing requires daily raking to maintain the required depth of the material to ensure the safety of children. Replenishment is also required as loose fill gets packed down or kicked away. Often this type of maintenance does not take place, creating unsafe playgrounds. In addition, loose fill is often tracked into buildings requiring additional maintenance indoors. These are the most common types of loose fill:

### Pea gravel, sand and wood chips

These materials do meet compliance standards for impact attenuating surfaces, but they seldom meet the standard for propulsion and turning requirements in the ASTM standards and are not recognized as ADA-approved materials. Other surfacing materials can be used to create paths to the entry point of the play equipment and render your playgrounds compliant.

#### Pea gravel

Pros: The material is quite cheap and easy to maintain. It allows for good drainage and does not attract animals.

Cons: It can be a hazard if it is thrown by persons in the playground and daycare providers have reported that pea gravel fits well in a nostril or an ear, which can result in an unwanted visit to the doctor or emergency room. It creates a problem for maintenance of the grass and surfaces surrounding the playground. Lawn mowers can throw the gravel significant distances.

The material cannot be used if the fall height within the playground is greater than 5 feet.

#### Sand

Pros: Sand is one of the easiest products to maintain. You just need to level out the sand if it gets windswept. Children love to play in sand.

Cons: Cats often use the sand as a litter box—a health code concern. Broken glass and other debris can also become buried in sand and present other hazards. Furthermore, in freezing conditions, sand can become as hard as concrete and can only be used after the sun warms the surface or the materials are loosened manually.

The material cannot be used if the fall height within the playground is greater than 4 feet.

### **Wood Chips (not engineered wood fiber)**

Pros: This material is inexpensive, easy to find, and easy to move from place to place. It is also a good fall attenuating surface material.

Cons: This material requires constant maintenance. It must be turned over occasionally to prevent decomposing, and wood chips do not have good drainage qualities. Moreover, about 25% of the material must be replaced annually.

Wood Chips can be used for play structures with a fall height up to 10 feet.

### **Shredded Rubber and Engineered Wood Fiber**

Pros: Both of these products are ADA-approved for both mobility and impact attenuation. That is not to say that they are extremely functional as a solid surface material, but they do meet the minimum requirements of ASTM F 1292. And other surfacing materials are not required to create circulation paths. They are also cost efficient.

Cons: These materials have the potential to off-gas in high temperatures. They are also difficult to keep in the play areas, out of the grass, and out of children's clothes.

Shredded Rubber and Engineered Wood Fiber can be used for play structures with a fall height up to 10 feet.

### **Fully Accessible Surfaces**

#### **Pour-in-Place, Rubber Mats/Tiles**

Pros: These artificial surfacing materials exceed ADA standards and are deemed universally accessible for children with disabilities. The most significant benefit of these surfaces, other than accessibility, is that daily maintenance is usually not required to ensure that safety is maintained. Generally, relatively little effort is required to keep the surfacing materials safe and usable, in normal use zones. If the materials are installed on a grade with no place for water to puddle, the surface of the mats and tiles will not freeze causing the outer layer to break away. This can cause for expensive and time consuming repairs.

Cons: Over time tile edges turn up, creating a trip hazard. Expansion between tiles also allows materials to accumulate, and the surface of the pour-in-place materials can freeze and separate. Consequently, it is difficult to patch the surface for an extended period of time. The biggest problem with these surfaces is the cost, which is significantly more than loose-filled surfacing. Lastly, the average life expectancy for the pour-in-place materials is usually much less than advertised, as weather conditions are a significant factor in the life of this type of surfacing material.

While products differ in quality and density, the average pour in place product can provide an ASTM safety rating for fall heights up to 12 feet.

#### **Artificial Grass with Rubber in-fill**

- Pros: A properly certified turf should also have a soft, consistent surface that is ADA accessible for easy wheelchair access. Since the grass won't displace like loose fill, such as sand, rubber chips, or wood chips, the safety rating is easy to maintain, even under play equipment. Moreover, a synthetic grass playground surface that is certified by IPEMA provides independent verification that the product has met a rigorous set of industry standards.
- Cons: The greater issue with these surfaces is the cost, which is significantly more than the costs of loose filled surfacing; however, they are an excellent choice if the accessibility of the surface is as important as the functionality. Lastly, artificial Grass with a rubber infill is significantly more expensive than loose fill materials, but is usually less expensive than pour-in-place surfaces.
- Artificial grass installed over a proper base can provide an ASTM safety rating for fall heights up to 12 feet.

All surfacing materials have advantages and disadvantages. The purchaser and the installer must ultimately assess the safety factors that will influence the type or types of playground surfaces to be used. Among those factors are the location of the playground; drainage potential; average grade of the surrounding area; cost of installation and maintenance; life expectancy of the surface and infill materials; accessible routes to the playground; ambient temperature of the environment; security for the playground; amount of use; ages of the users; height of equipment; and amount and dispersion of accessible elements.

To provide a safe and accessible playground that is consistent with the new 2010 Standards for Accessible Playgrounds, all of these factors should be reviewed. While expense is a primary concern for the school, park or city that is investing in a new playground, it cannot be the only limiting factor according to the ADA. Remember, safety, accessibility, and user integration are equally as important.

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