



## GroundSmart™ Rubber Mulch Playground/Play Area Installation Instructions

For 10', 12' and 16' of Critical Fall Height Protection as measured by ASTM F1292-13

### BACKGROUND

GroundSmart™ Rubber Mulch is IPEMA certified to provide up to 16' of critical fall height protection per ASTM F1292-13. The critical fall height protection offered by GroundSmart™ Rubber Mulch is dependent upon its installed, compacted depth. GroundSmart™ Rubber Mulch is currently IPEMA certified per ASTM F1292-13 at the following critical fall heights for compacted depths of 4", 5" and 6":

IPEMA Fall Height Protection Per ASTM F1292-13	GroundSmart™ Rubber Mulch Depth	
	Un-compacted	Final Compacted Depth
10'	5"	4"
12'	6"	5"
16'	7"	6"

### PLAYGROUND DESIGN AND FALL ZONES

A landscape architect or certified engineer involved in the playground design and planning process should be consulted regarding the topography of the installation area.

Proper drainage, preventing water from accumulating in the play area, must be maintained. In order to ensure proper drainage factors such as climate, soil conditions, and the overall topography of the installation site need to be considered.

Proper fall zone guidelines need to be followed in the design and installation process to ensure that all fall zones are adequately addressed with the recommended installed depth for the height of the structures being installed. The fall zone is the area under and around the equipment where protective surfacing is required and should extend a minimum of six feet in all directions from the perimeter of the equipment per the Consumer Product Safety Commission Playground Safety Guidelines. The following ASTM standards also contain information on fall zone locations and designs:

- ASTM 1292-13 Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment
- ASTM F1487-11 Standard Consumer Safety Performance Specification for Playground Equipment for Public Use.

### GROUND PREPERATION

Installation area must be properly prepared prior to installation of GroundSmart™ Rubber Mulch.

The area where GroundSmart™ Rubber Mulch will be installed must be graded for proper drainage with a substrate that is compacted to provide a firm, even base.

Installation of a commercial grade geotextile landscape fabric is recommended under GroundSmart™ Rubber Mulch. Seam overlap needs to be a minimum of three inches and all seams need to be properly secured to prevent dirt or other substrate material from mixing with the safety surfacing. Additionally the landscape fabric needs to be properly secured at the perimeter and around all installed equipment posts or polls. If stone or other material is used as part of a drainage system then the use of landscape fabric is also recommended in order to ensure that the materials do not mix.



## RUBBER MULCH

If GroundSmart™ Rubber Mulch will be installed above grade, use of a retaining system is highly recommended to reduce migration of GroundSmart™ Rubber Mulch outside of the designated area and to help maintain a level, compacted play area.

When installing over hard surfaces such as asphalt or concrete, follow the November 2010 Consumer Product Safety Commission Publication 325 Public Playground Safety Handbook section 2.4.2.3 Installing loose-fill over hard surface. This guideline recommends that immediately over the hard surface there should be a 3- to 6-inch base layer of loose-fill (e.g., gravel for drainage). The next layer should be a Geotextile cloth. GroundSmart™ Rubber Mulch should be installed directly over this layer. Embedded in the GroundSmart™ Rubber Mulch should be impact attenuating mats under high traffic areas, such as under swings, at slide exits, and other places where displacement is likely.

Prior to installing GroundSmart™ Rubber Mulch the area must be cleared of all grass, wood chips, rocks, stumps, gravel, or any other type of debris.

### DELIVER, RECEIPT & UNLOADING OF GROUNDSMART™ RUBBER MULCH

GroundSmart™ Rubber Mulch is packaged in 1,000 lb or 2,000 lb super sacks strapped to a pallet or 98 0.8 cu ft poly bags packaged and shrink wrapped with 98 bags per pallet.

Delivery can be either via a lift gate truck, van trailer or flatbed trailer. The choice is delivery type must be pre-arranged. Van trailer delivery is the standard service. With both van trailer and flatbed delivery, unloading equipment must be provided at the project site. Unloading equipment must have the capacity to lift up to 2,000 lbs either lifting by the pallet with forks (for super sacks and poly bags) or hoisting from the super sack straps. The trucking company will not move pallets to the rear of the trailer, as such it is recommended to have a pallet jack available at the project site. The lift gate delivery service is limited to deliveries of 8 tons or less and the truck driver will unload the product “curbside” from the truck. Curbside is defined as delivery to a receiving area/dock for a business and to the curb at the end of your driveway for a residential delivery.

### INSTALLATION OF MATERIAL

Install GroundSmart™ Rubber Mulch at a uniform level throughout the playground. Any variety of method can be used for spreading the mulch including blowing, shoveling and raking. Care should be taken to not disturb the substrate material and/or landscape fabric if used.

The amount of GroundSmart™ Rubber Mulch used per square foot is dependent upon on the required fall height rating of the playground equipment. GroundSmart™ Rubber Mulch is IPEMA certified to provide up to 16’ of critical fall height protection per ASTM F1292-13. To achieve a maximum fall heights when installed in fall zones of a playground, the following depths and ratios must be followed:

Fall Height Protection Per ASTM F1292-13	GroundSmart™ Rubber Mulch Depth		Weight per Sq Ft Compacted
	Un-compacted	Final Compacted Depth	
10'	5"	4"	10.9 lbs
12'	6"	5"	13.1 lbs
16'	7"	6"	15.3 lbs

Proper compaction can be achieved by using a lawn roller. Once the GroundSmart™ Rubber Mulch is raked and leveled into place, the lawn roller can be pulled directly over the surface. It is recommended to roll the



roller across the surface in multiple directions. If low or high spots develop while compacting the surface, material can be added into the low areas and/or raked away from the high areas and compacted again.

To reduce maintenance in high use areas where critical fall height protection is not required, rubber mats may be used. Mats can be placed under or on top of GroundSmart™ Rubber Mulch.

#### **REGULAR MAINTENANCE**

In order to provide maximum head impact protection and accessibility of the playground, maintenance is required. A level, compacted depth of GroundSmart™ Rubber Mulch must be maintained.

Upon discovery of a thin, un-compacted or non-level condition, the surface of the playground area must be raked and compacted to ensure consistent and proper installed depths.

Periodic replenishment may be required if GroundSmart™ Rubber Mulch has migrated outside of the play area, cannot be reclaimed and a level compact depth for the required fall height protection cannot be achieved.