



Aggregate Sub-Base Guide

Safety Tiles



The following is presented as a general guideline as specific project site conditions will vary. Always follow local code requirements and standard industry practices.

GENERAL

Proper preparation of the sub-surface is absolutely critical to the success and performance of playground tile safety surfacing projects.

Any variations in the sub-surface will telegraph through the playground tile. While there are several different types of suitable sub-surfaces, the ideal sub-surface for Kid Kushion Playground Safety Tile is properly placed and cured concrete or asphalt.

When site or project conditions prevent the use of properly placed and cured concrete or asphalt, Kid Kushion Playground Tile can alternatively be installed over a properly graded, leveled and compacted sub base of a minimum 4 inches of aggregate of the correct size, type and consistency, covered by a thin layer of properly leveled and compacted "chip dust" or "granite screenings" (1/4 inch minus).

DRAINAGE

Proper drainage is critical to ensure that the Kid Kushion Playground Tile remains level and does not sit in standing water for long periods of time.

Evaluate drainage design and conditions:

- i. **If the play site** is elevated with natural drainage (adjacent grades slope away from the play site at 1 inch in 12 inches or more, and does collect or hold water, additional

drainage control may not be necessary. Any retaining edges must be designed to allow water to drain freely out the edges of the installation.

- ii. **If the play site** area is lower than the adjacent grades and collects water, or if standing water is present in the play site area, then a water management system must be installed.

WATER MANAGEMENT SYSTEMS

Water management systems should be constructed using perforated PVC pipe. Perforated PVC pipe must be installed under and surrounding the sub-base area and tied into the external storm water collection system. The perforated PVC pipe should be placed below the top plane of sub-surface aggregate and encapsulated in 3/4 inch clear crushed stone keeping in mind that packed aggregate constructed with variant sized granules is not very porous and therefore the sub-surface should be sloped towards the water collecting perforated PVC pipe.

- Excavate trenches to contain perforated PVC pipe.
- Install perforated PVC pipe with correct slope and connect ends.
- Back fill trenches with 3/4 inch clear stone wrap to a diameter of approximately 12 inches.
- Tie drainage system into existing storm water management system.

SITE PREPARATION

A properly placed, compacted, sloped and smooth sub-surface is critical to the performance of the Kid Kushion Tile system. A compacted aggregate sub-surface should be

prepared as though it was a concrete surface. Not all contractors understand that the sub-base must be compacted and graded properly with a 2% slope from the center of the site to the outside edge.

Site preparation is normally covered under a separate contract from the resilient surface installation.

Site preparation and sub-surface construction should be completed by a properly licensed contractor with the knowledge and experience as well as the proper tools and equipment to properly grade the site area and construct the sub-surface for the resilient tile system.

SITE PREPARATION GUIDE

- **Excavate Sod and Soil**

Remove topsoil until solid, packed and stable sub-soil is visible and level.

- **Test Sub-soil for Rebound**

If sub-soil is of poor quality, geotextile fabric may be necessary between the sub-soil and the granular sub-surface.

- **Install Water Management System**

When required, the water management system should be installed prior to the installation of the sub-surface.

- **Install Retainer Edge**

A suitable, solid retainer edge for the packed aggregate sub-surface is required. A concrete curb is the preferred retainer. Follow all local code requirements for the design and installation of the retainer edge.

While there are several different types of suitable sub-surfaces, the ideal sub-surface for Kid Kushion Playground Safety Tile is properly placed and cured concrete or asphalt.

When site or project conditions prevent the use of properly placed and cured concrete or asphalt, Kid Kushion Playground Tile can alternatively be installed over a properly graded, leveled and compacted sub base of a minimum 4 inches of aggregate of the correct size, type and consistency, covered by a minimum one inch layer of properly leveled and compacted "chip dust" or "granite screenings" (1/4 inch minus).

1. Sub-soil Geotextile (*When necessary*)

If the sub-soil is unstable the installation of Geotextile fabric between the sub-soil and sub-base may be required. Overlap joints by 12 inches and seal joints using a polyurethane adhesive.

2. Granular Aggregate 4 to 10 inches

If the sub-soil is sandy, stable, drains quickly and is in low frost, low moisture areas, 4 inches of granular aggregate (Granular 'A' - 3/4 inch minus or equal), should provide a sufficient base for a pedestrian use surface.

In high moisture and/or frost areas, 8 inches of granular aggregate but not more than 10 inches of granular aggregate will be necessary to create a stable sub-surface.

Install the granular aggregate in 2-3 inch lifts. Level and pack each lift separately.

3. Granular Aggregate Gradation

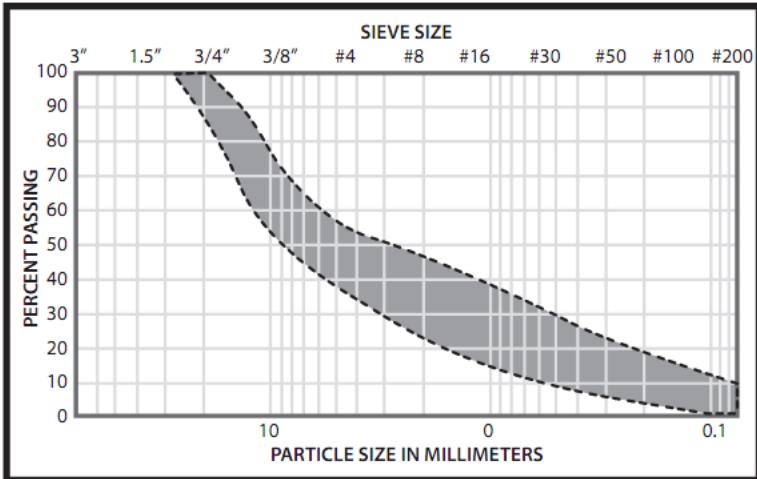
GRANULAR AGGREGATE

Granular 'A' shall be produced by crushing. Granular 'A' or equivalent shall consist of crushed rock composed of hard fractured fragments free of clay coatings. Granular 'A' shall be produced from bedrock or gravel, cobbles or boulder of uniform quality. Contact local soil engineers or aggregate suppliers for detailed specifications for local aggregate performance expectations and availability.

SUB-SURFACE INSTALLATION

Proper preparation of the sub-surface is absolutely critical to the success and performance of playground tile safety surfacing projects.

Granular aggregate (3/4 inch minus) should match the grading curve shown below. Aggregate larger than 3/4 inch can make final surface leveling difficult to achieve.



4. Compaction

Proper sub-surface compaction is critical to ensure a smooth and consistent planarity of the finished surface. A 95% Standard Proctor Density (SPD) should be achieved prior to installing playground equipment and leveling course. Proper compaction can be achieved by:

a) Roller Packing

b) Soaking Aggregates

Soaking the area with water and allowing the water to percolate through the aggregate and partially dry before roller packing can assist in achieving the specified SPD

c) Cement Dusting

If roller packing or roller packing assisted by soaking the aggregate fails to achieve 95% SPD, then compaction can be enhanced by spreading 88 pounds of Portland cement over every 200 square feet of aggregate base. Water the cement to allow percolation into the aggregate. Compact with roller packing and retest to ensure 95% SPD has been achieved.

5. Play Equipment Installation

Use plywood templates during auguring when installing play equipment posts or any other footings to prevent excavated sub-soil from contaminating the base aggregate materials.

Fill all play center post holes from bottom to top with concrete.

6. Level Sub-Surface Aggregate

The sub-surface aggregate should be leveled to achieve a maximum tolerance of 1/4 inch over 10 feet measured in any direction.

The planarity of the aggregate base will telegraph through the installed resilient tiles so a leveling course may be required to achieve desired aesthetics.

The leveling course shall consist of 1/4 inch minus "chip and dust" or "granite screenings" applied up to 1 inch maximum thickness spread to achieve a smooth planarity and compacted to a minimum 90% SPD.

7. Sub-surface Slope

The sub-surface should be constructed with a 2% slope to facilitate adequate drainage.

INSPECTION

The sub-base shall be inspected by the designated person (Architect, GC, Manufacturer) prior to the application of the safety surfacing.

Any deficiencies that are identified during the inspection shall be corrected prior to the application of the safety surfacing.

Under no circumstances shall EMC assume responsibility or liability of any kind for work completed by others.