

INSTALLATION RECOMMENDATIONS



Prior to Installation:

The Kid Kushion mats and transition pieces intended for this installation have been shipped to you on pallets with the mats shrink wrapped and strapped. Once the packing is removed, please inspect the exposed edges for any damage. Next confirm shipment to packing list and notify supplier of any damage or shipment discrepancies.

Installation surface should be clean and dry prior to installation. Mats must be clean and dry prior to installation. Moisture acts as a catalyst to the **KID KUSHION** Adhesive, so dry mats and surface are essential.

Temperature variations will also affect the tiles. Tiles will contract in cold weather and expand in warm weather. This is a natural effect of the rubber and is to be expected. This will not lessen the impact resilience of the mat in meeting ASTM Standard F1292 as they pass the resilience tests at both low and high temperatures.

Review engineering plans for layout and ensure that the Consumer Product Safety Commission recommendations for a fall zone are met (Handbook for Public Playground Safety) and contact owner/agency with any discrepancies.

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SECTION 1 - Tools and Equipment Necessary for Installation

- ✓ Rubber Gloves
- ✓ Safety Gloves
- ✓ Razor Knife with Extra Blades
- ✓ Chalk Line
- ✓ Carpenters Square
- ✓ Paint Roller Frames, Roller Extensions and Fluffy Rollers
- ✓ Paint Roller Trays
- ✓ Water Spray Bottles (Mist)
- ✓ Rubber Hammer
- ✓ Measuring Tape
- ✓ ½” Electric Drill
- ✓ Hole saws (to cut diameter of equipment supports)
- ✓ Aluminum Clips (if required)

SECTION 2 – Adhesive

SureSTICK Adhesive is available in 1 gallon and 5-gallon containers. The adhesive is used to secure the outside perimeter (mats, corners, and/or ramps) of each installation. It can also be used to secure the interior mats, if required. Approximate coverage is 55 to 60 square feet per gallon of adhesive and will vary depending on the substrate. The adhesive is to be rolled into place (thick film) onto the asphalt or concrete base surface. A misting of water can be added (once adhesive is rolled into place) to act as a catalyst if a faster cure time is required. STORE the adhesive in a dry place. Do not subject Adhesive to freezing temperatures under any conditions.

SECTION 3 - Transition Pieces

For the 2 ½” thick **KID KUSHION**, transition pieces (Ramps) are 48” long x 8” wide, reducing from 2 ½” down to 3/8”. 90 degree inside and outside corners are also available.

For the 3 ½” thick **KID KUSHION**, Ramps are 48” long x 12” wide, reducing from 3 ½” down to 3/8”. Corner Ramp pieces are 48” long x 12” wide with a 45 degree angle cut left to right or right to left. One “Outside Left corner piece” and one “Outside Right corner piece” are required for each 90 degree corner of a 3 ½” **KID KUSHION** Ramp section.

SECTION 4 – SureLOCK Clips

Each 2 ½” and 3 ½” mat is molded with a clip index position in the bottom perimeter. There are two indexing positions on each edge or eight clip positions in each mat. The clips are designed for permanent installation and may damage the area of the mat surrounding the clip attachment point if removed after installation. The clip installation method unitizes all of the interior mats as a single unit. Perimeter mats (or transition pieces) are recommended to be glued in place; as well as mats that have cut-outs to allow for the playground equipment supports. The quantity of clips required for a typical installation is 4 clips per tile to be clipped. Contact your **KID KUSHION** distributor for exact number required for your specific project.

SECTION 5 - Sub Surface Requirements for KID KUSHION

KID KUSHION tiles may be applied to concrete, asphalt, wood, and compacted crushed gravel/geotextile overlay sub surfaces.

All sub surfaces should be properly excavated and installed to insure:

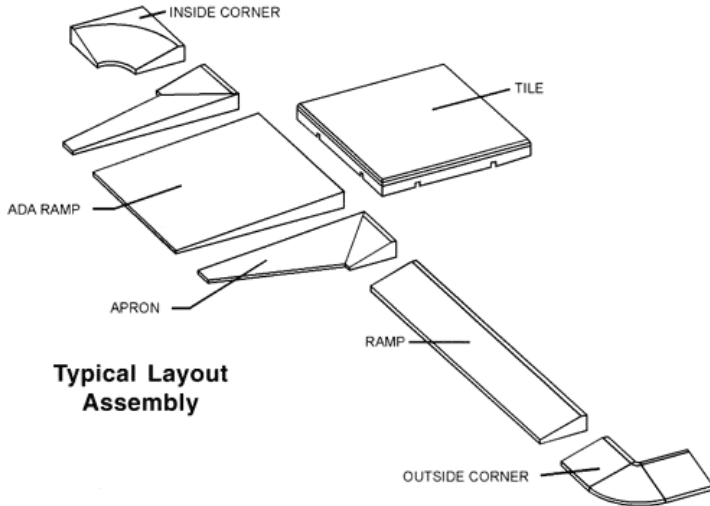
1. Sub surface drainage.
2. Non-Separation of concrete layers.
3. Prevention of Heaving due to freeze/thaw or unstable ground conditions.

The stabilization of the sub surface is the sole responsibility of the installer and/or owner.

Sub surface installation should assure good drainage of the area by either a well-defined gradient of the surface or well-placed drainage pipe in lower spots of the installation.

The **KID KUSHION** tiles shall be adhered to the concrete, asphalt, geotextile or wood surface using **SureSTICK** adhesive and/or clipping system following the installation instructions for adhered installations. Your distributor should be contacted regarding the best application conditions for your installation.

Example of Proper Alignment of Mat Pieces - Before “Flush Application”



Concrete Surfaces

Concrete surfaces must be thoroughly cured and free from hydrostatic pressure before installing **KID KUSHION** tiles (minimum 28 days after pour).

All surfaces should be flat, level, clean, and dry before applying adhesive for installation. The concrete finish should be reasonably smooth to reduce the amount of adhesive required.

Concrete surface should be free from paint, dirt, oil, or other surface contamination before applying **SureSTICK** adhesive.

Any separation of concrete layers, heaving, etc. may result in separation of the installed safety surfacing and is the sole responsibility of the installer and/or owner.

Assure good drainage of the area by either a well defined gradient of the surface or well placed drainage pipe in lower spots of the area.

Asphalt Sub Surface

Asphalt sub surface must be hard, level, and free of grease, oil, and other contaminants. Avoid installation on new asphalt until surface oil has had time to dissipate (minimum 30 days after compacting) and drainage can be evaluated.

Any separation of asphalt or blacktop layers, heaving etc. may result in separation of the installed safety surfacing and is the sole responsibility of the installer and/or owner.

Insure good drainage of the area by either a well-defined gradient of the surface or well-placed drainage pipe in lower spots of the area.

Wood Sub Surfaces

The wooden sub surface should be properly secured to ground to avoid any ground shifting (as by pile or other means) and subsequent sub floor movement. The sub floor should be protected and sealed from moisture prior to installation of **KID KUSHION** tiles. The sealer should be completely dry before installation. The sealer should be compatible with **SureSTICK** adhesive before tiles are applied (avoid use of surface treatments that leave oil residues on surface).

The wood surface should be free from any protruding nails and screws. All damaged wood should be replaced on old surfaces.

The surface should be level, clean and dry before application.

SECTION 6 – Installation

Installation Checklist:

1. Insure that the base surface is clean, level, and dry. Tiles must be dry.
2. Check ambient air temperature. Minimum temperature for installation is 50 degrees and rising. Kid Kushion Tiles are manufactured to 24" X 24" dimension plus or minus 1/8". Tiles should be checked prior to installation to ensure that the tiles are properly conditioned. Tiles with dimensions smaller than 23 7/8" or larger than 24 1/8" must be conditioned prior to installation. Installing tiles that are larger than 24 1/8" (hot weather) will result in "gapping" between tiles when the ambient temperature cools. EMC is not responsible for gapping that occurs due to high temperature conditions at the time of installation.

3. Please note: All play equipment must be permanently installed prior to mat surfacing installation.

Surfacing Layout

Lay tiles (transition pieces if required) from the further corner along base edge in two directions. (90 Degrees) Lay out the rest of the installation, leaving out any tiles that must be “cut to fit”. Keep edges straight and aligned horizontally and vertically.

Installation of Surfacing Product

Once installation layout has been completed; adhere all perimeter pieces. If drainage is a concern, allow a ¼” gap between each Ramp piece for drainage. Install balance of surfacing using generally accepted installation procedures in compliance with engineering detail drawings for installation.

Interior surfacing can be adhered to the substrate; unitized as one continuous piece using installation clips affixed at index points in each mat; or left unattached to the substrate and left to float.

Adhesive

SureSTICK adhesive is a one part “glue” and is ready to use straight out of the container. Do not open container prior to time for use in installation. A misting of water may be applied to the adhesive after it is spread to act as a catalyst to decrease cure time. Adhesive is spread in a thick film coat on the substrate and each gallon will adhere approximately 55 to 60 square feet of surfacing. Coverage will vary depending on the type and porosity of the substrate.

SECTION 7 - Cure Time (Typical Installation)

The cure time of **SureSTICK** Adhesive is dependent on several factors. The moisture levels and temperature levels of the substrate and the ambient air temperature and relative humidity will effect the time required for the adhesive to cure. Generally, the higher the temperature; the shorter the cure time, and the higher the moisture levels, the shorter the cure time.

The following information is provided based on trial installations performed with the **SureSTICK** Adhesive to determine approximate cure times under various temperature and humidity conditions.

<u>Temperature</u>	<u>Relative Humidity</u>	<u>Approximate Cure Time</u>
115° F	> 50%	4 hours +
70° F	> 50%	18 hours
45° F	> 50%	30 hours

The approximated cure time can be decreased with the addition of a catalyst (water).

Once the adhesive is in place and has been allowed to penetrate existing hard surface, (and prior to mat placement) a light fine spray of water (catalyst) on the adhesive will shorten the cure time. The adhesive will react to the spray by forming small bubbles (frothing appearance). Then, place the **KID KUSHION** mats in the normal fashion, as per the installation instructions.

SECTION 8 - Disclaimer

These installation guidelines represent a typical installation and generally accepted installation practices should be followed. Use of trained installation professionals is recommended for best results.

Environmental Molding Concepts does not warrant any installation work and specifically disclaims liability for any direct or indirect personal injury, property damage or other costs or losses resulting from incorrect or inadequate installations.

Aggregate Sub-Surface 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 minimum one inch 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 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 1% 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.

SUB-SURFACE INSTALLATION

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surfacing projects.

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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.

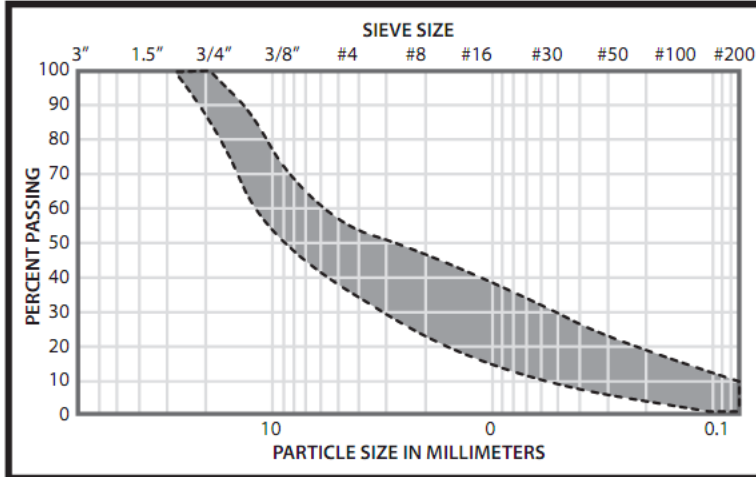
Install the granular aggregate in 2-3 inch lifts. Level and pack each lift separately.

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.

3. Granular Aggregate Gradation

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 1% 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.