

G-Force Installation Instructions

Recommended Tools

- Measuring Tape or Ruler
- Metal Straight Edge
- Langhorn Knife or Non-Retractable Utility Knife with Extra Blades
- Jig Saw with fine tooth saw blades
- White Marker or Chalk
- Chalk Line
- Mallet
- 2" x 4" Wood Block
- "V"-Notch Trowel



3/32" x 3/32" x 3/32"

- Cordless Drive
- Hole Saw
- Rubber Gloves
- Commercial Grade Caulking Gun

Upon Delivery of Product

1. VERIFY packing slip matches with product and order.
2. INSPECT delivered product thoroughly. Report any discrepancies of original order, product defects, etc. Report any discrepancies of original order, product defects, etc. No reimbursement/warranty claim will be given for labor on material installed with visual defects. Any defects- size, color, or otherwise- must be reported to the place of purchase prior to installation.
3. STORE product and adhesives in clean, dry environment with temperatures between 70° and 95° F.
4. READ product and sub surface floor preparation, instructions, warranty and other disclaimers carefully and completely before beginning any installation.

Warning:

DO NOT use recycled rubber products in conjunction with any petroleum based products. This includes solvents, adhesives or sealants. All substrates (especially new concrete) must be fully cured for a minimum of 10 days prior to installing rubber tiles.

Introductory Note:

This installation guide is intended to provide the necessary information for the proper installation of Langhorn G-Force® rubber tiles. These instructions are believed to be based on accepted industry standards and are provided for informational use only.

LANGHORN DOES NOT WARRANT ANY INSTALLATION PERFORMED PURSUANT TO THESE INSTRUCTIONS OR OTHERWISE AND SPECIFICALLY DISCLAIMS LIABILITY FOR ANY DIRECT OR INDIRECT PERSONAL INJURY, PROPERTY DAMAGE OR OTHER COSTS OR LOSSES RESULTING FROM INSTALLATION.

Langhorn G-Force® rubber tiles should be installed by qualified and experienced personnel.



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Adhesive

Protect unopened containers from heat and direct sunlight. In cool weather, store containers at temperatures of 70° to 95° for at least 24 hours before using. CX-941 has a shelf life of one year when stored properly. Apply in temperatures above 40°.

- Wear gloves during application. CX-941 is difficult to remove from skin and clothing. If adhesive gets on skin, immediately wipe it off with a dry cloth.
- Do not apply on frozen surfaces or standing water.
- Avoid contact with water or alcohol before use and before complete cure.
- Do not use in areas subject to hydrostatic head pressure.
- Do not use on wet, contaminated, or friable substrates.
- It is the user's responsibility to check adhesion of the cured adhesive on typical test areas at the project BEFORE application.

Curing Times

CX-941 Adhesive Standard Set

Firm Set	1- 2 Hour
Light Traffic	8- 10 Hours
Normal Traffic	24 Hours

CX-948 Tile-to-Tile Adhesive

Foot Traffic	48 Hours
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DO NOT USE Petroleum based products to clean Langhorn G-Force playground tiles.

Rubber Tile Cleaning

Indoors: Sweep, sponge mop or vacuum rubber flooring for everyday maintenance.

Outdoors: Use of water hose, leaf blower or broom is usually sufficient.

Use Langhorn Cleaner/Deodorizer, disinfectant or a mild detergent with a sponge mop and water for more extensive cleaning.



Preparation

Product

Langhorn G-Force® playground tiles should be protected from weather and physical damage prior to and during installation as well as during adhesive curing period. Precipitation should be avoided during and for 12 hours after installation.

Sub-Surface

Requirements for all Sub-Surface are as follows:

1. All play structures should be in place prior to Langhorn G-Force® playground tile installation.
2. Structurally sound and fully cured for a minimum of 10 days (concrete or asphalt).
3. Have good drainage with a gradient (2% is suggested) that prevents the pooling of water.
4. Be reasonably flat and free of variances of more than 1/8" in 10 feet.

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Preparation

Concrete & Asphalt

1. New concrete must be allowed to fully cure thoroughly prior to installation (10 days). If sealants are used, DO NOT use one with a petroleum base.
2. Old concrete must be repaired and have joint sealants and fillers installed as necessary. All cracks or flaws should be filled in or repaired prior to covering with rubber products. Use patching materials as appropriate. *Mechanical surface profiling is the preferred floor preparation method. It is the only acceptable preparation method. It is the only acceptable preparation method where warranties are issued (with CX-941 adhesive). Acid etching is not recommended. Mechanically profile the floor to medium-grit sandpaper texture. Remove curling and parting compounds and other surface hardeners and floor coatings in accordance with the manufacturer's instructions.*
3. Surface must be thoroughly cleaned of dirt, dust, grease, or other foreign matter by shot blasting or other mechanical means with a commercial degreaser. Any bumps or debris will cause excess wear and/or cushion damage.
4. Allow the surface to completely dry before beginning installation.
5. Asphalt may require a re-surface coating for best results. Due to variations in asphalt substrates, it is the user's responsibility to check the adhesion of the cured adhesive on typical test areas at the project BEFORE application. Due to asphalt porosity adhesive spread rate may be up to 50% less than posted rate.

Compacted Surfaces

1. Subsoil (existing dirt) layers must be free from large rocks and any organic material such as leaves, peat, wood or other materials which could decompose over time, potentially causing settling of the matting surface.
2. Subsoil should be flat and level. Compaction of the subsoil with a compactor or roller may be required where subsoil is unusually soft or loose.
3. Install the first layer of 5/8" minus or 3/4" minus crushed rock, approximately 2" thick, and compact the material using a plate compactor to a 95% compacted rate, sprinkling water as necessary to get the crushed rock material to compact tightly. Surface should be hard and flat after compaction. A slope of up to 2% may be desired for drainage.
4. Repeat the rock installation and compaction with 1/4" minus so that the crushed rock base is 3"-4" thick after compaction. Additional layers may be required over unusually soft or unstable subsoil materials. Be sure that the final layer produces a smooth surface without bumps or depressions more than 3/16" in size. (Any imperfections will telegraph through your Langhorn G-Force® rubber tiles, and will become noticeable in the final installation.)
5. Roll out a layer of woven geo-textile fabric (GEOTEX 200ST), and overlap seams by 3" or more. Glue the layers together with the adhesive provided or tape with duct tape. Keep the fabric flat by temporarily staking the fabric at both ends.
6. Install the Langhorn® playground tiles to the fabric, as you would install to a hard surface and tile to tile. Be careful not to bunch up or wrinkle the fabric during the installation process.

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Installation

1. Assume that any fences, walls or curbs that the tiles will butt up against are not perfectly straight or square. Start by measuring the dimensions of your project. Divide the dimensions (in feet) by two to determine number of whole tiles and fraction of a tile required for each dimension. If you are filling a defined space, you will generally have a border on at least two sides that is less than a full tile. Generally plan to make the border that consists of less than a whole tile to be the back or at least accessed side of the playground. Additionally, plan for this border to be a half a tile or more. This may require starting with less than a full tile on the front or most accessed border.
2. Start by setting a chalk line on the front or most accessed side of the playground that is the desired border width from either end of the play area, similar chalk line on the perpendicular side (Figure 1).
 - a. **Using Full Floor Adhesive CX-941** Apply CX-941 adhesive¹ prior to laying each tile and apply only within the area of the tile (or tiles) to be laid down. The adhesive should be applied thinly and evenly over the substrate with 3/16" x 1/4" x 1/4" "V"-notched trowel. After placing each tile, press firmly throughout the tile to remove bubbles and establish bond. CX-941 adhesive will cover 50 to 60 square feet per gallon on smooth surfaces. *Do not apply more adhesive than can be utilized within a 30 minute window. In ideal temperatures there is approximately 30 minutes of open time to apply the adhesive and maneuver the rubber tile onto the adhesive and position prior to curing onset.* Wipe off excess adhesive on hands with mineral spirits. **DO NOT** allow mineral spirits to come in contact with the rubber tiles.
 - b. **Using Tile-to-Tile Adhesive CX-948** Apply a 1/4" wide bead of CX-948 adhesive 9" in each direction from the corners, just below the radius edge. This will provide 6" of unattached edge for greater water permeability. (Figure 3) NOTE: It is strongly recommended to use both methods of adhesion when installing product or Geotextile fabric sub-surface. Using both of the above mentioned adhesive procedures will ensure the most long-term, trouble-free installation of your Langhorn G-Force® rubber tile product.
3. Start by laying full tiles along the insides of the two perpendicular chalk lines. Continue laying full tiles until play area is covered except for a border. Be careful to keep the seams straight. (Figure 2)
4. Once the center of the play area is covered measure and fit each tile of the border.

Figure 1

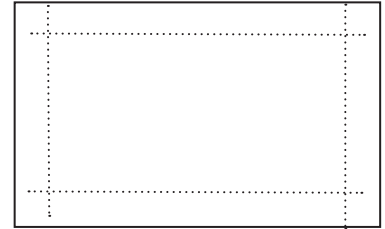


Figure 2

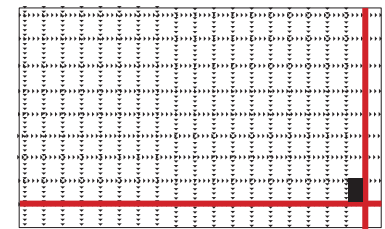
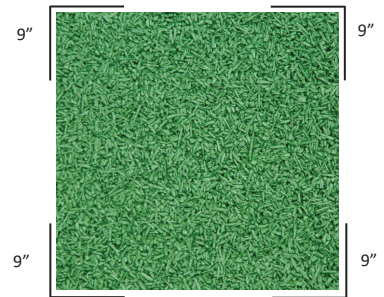


Figure 3



Tile to Tile CX-948 Placement
1/4" wide bead 9" from all 4 corners

The instructions provided are based on using CX-941 and CX-948 Polyurethane Adhesives.

If another adhesive product is used, be cautious as to the manufacturer's instruction, curing times, and bonding window.

G-Force Installation Instructions

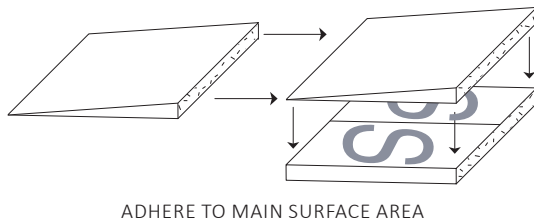
Installation Cont.

Adhesive Cleanup Tips

Before troweling with CX-941, cover the unused portion of the trowel with duct tape. After troweling, tear off the tape before the material cures. Clean all tools of excess CX-941 immediately after use with mineral spirits. Use proper precautions when handling solvents. Cured adhesive can be removed by cutting with a mechanical tool. DO NOT allow mineral spirits to come in contact with the rubber tiles.

ADA RAM Kit Instructions (for 7' - 8' and 9' - 10' Fall Heights)

1. Ensuring that you have a level, sound surface, lay two tiles down side by side so they combine to make a 48" wide surface. Glue the meeting edge with a 1/4" wide bead of CX-948.
2. The ramp included in your kit that covers the two tiles will be installed next using a wavy or "S" pattern. With the CX-948, place a 1/4" wide bead on the two tiles and around the perimeter approximately 1/4" in from the outside edge (adhesive is depicted in the diagram below by dotted lines). Then place the matching ramp on top of the tiles.
3. The remaining ramp should have a 1/4" wide bead of adhesive across the face of the thick side and butted against the face of the tile/ramp assembly.



Kit includes: 2- 24" x 24" Tiles
2- Tapered Ramps

Cutting Tips

Tips on cutting rubber tiles: This procedure works best when using the recommended Langhorn Knife, but will also work with a non-retractable utility knife. When using a utility knife, be sure to keep the blades sharp to aid in the cut, and help reduce the possibility of injury due to dull blades.

1. Mark the tiles you will need to cut with chalk or a chalk line.
2. Put your straight edge on the corresponding marks you have placed on the tiles.
3. Holding the straight edge firmly in place, score the tiles two or three times.**
4. Grab the tile close to the score line, lift and bend the tiles toward you. The score line will "break open".
5. Make several more passes with the knife, working down the established cut, until the cut is complete.

**This process may be made easier by cutting the tile upside down on a raised surface such as the 2x4 wood block used during installation. Gravity will depress the cut edge down and away from the cut will be less likely to catch the knife blade.

A holesaw or sawzall with a fine tooth blade is also an effective tool to make circular cuts around poles, posts, etc.

1. Draw a circle on the tile using chalk for the desired diameter. (If there are several cuts of the same nature, create a pattern out of cardboard)
2. Begin the cut at the edge of the tile closest to the drawn circle, cut straight line to circle. Cut around drawn pattern. Push out unwanted piece(s).

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Product Warranty

1.0 Langhorn's G-Force® rubber tiles are guaranteed to be free of manufacturing defects in material and workmanship for 10 years ("Warranty Period"). If there are defects in material and workmanship during the Warranty Period, Langhorn will replace or repair the tiles, as described herein, at no cost to the owner/end-user. Should defects in material or workmanship be found, it is the owner's responsibility to contact Langhorn through the point of purchase or directly, as described below. This warranty does not cover dissatisfaction or problems or other damage to the materials due to or as a result of:

- a. Improper installations and/or improper maintenance;
- b. Fading due to sunlight (Outdoor exposure, abrasions, and ultra-violet rays may cause normal change in the surface color and is not considered a defect under this warranty);
- c. Shading (color variation) of individual pieces due to natural rubber variations;
- d. Use of harsh and acidic chemicals, acidic foods and abrasive chemicals;
- e. Water spotting, petroleum adhesives or floor sealants or abuse;
- f. Color variation between samples and/or printed illustrations and actual product;
- g. Wear or product degradation expected from the use or environmental of installation;
- h. Chewing, clawing or other animal destruction;
- i. Exposure to chlorine, solvents, acids, or other harmful chemicals; or
- j. Acts of negligence, misuse, or willful or accidental external influences including, but not limited to, vandalism, riot, or acts of war.

*** Proof of Purchase is Required***

1.1 The warranty is limited to the repair or replacement of products of Langhorn which are shown to be defective. The owner/end-user agrees not to advance any claim for any other measure of damage or loss. Langhorn shall not be liable for installation, disassembly, removal, disposal, return shipping, or other similar costs.

1.2 Langhorn shall not be liable for any damage, loss or claim whatsoever unless:

- 1.2.1. The manufacturer is notified in writing within fifteen (15) days of any occurrence which might give rise to a claim;
- 1.2.2. The owner/end-user has obtained written authorization from Langhorn prior to making any repairs or alterations on or through the surface which may affect the integrity of the materials;
- 1.2.3. Langhorn is first permitted to inspect the allegedly defective product or cause of the alleged loss, damage or claim;
- 1.2.4. The material is installed according to the written instructions provided by Langhorn and used only as intended by Langhorn

1.3 If, after inspection, Langhorn determines that there has been a material defect in the product within the Warranty Period described in Paragraph 1.0, the liability of Langhorn and the remedy of the owner/end-user shall be limited, at the sole option of Langhorn to either: (a) delivery of repair or replacement material for the impacted area, or (b) credit to be applied towards the purchase of new material. The value of either remedy shall be pro-rated upon the remaining months of unexpired warranty as determined by the manufacturer. The maximum pro-rated value of either remedy shall in no case exceed the original purchase price.

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Product Warranty Cont.

Limitation of Warranty:

1. There is no warranty of merchantability or fitness for a particular purpose, nor any other warranties which extend beyond the description on the face hereof.
2. Langhorn shall not be liable for any incidental, consequential or other damages.
3. The remedies stated herein are the sole and exclusive remedies for any claim or damages.
4. No agent or representative of Langhorn has any express or implied authority to make any representation, promise or guarantee not stated herein.

Disclaimer:

- Recycled rubber, as with any recycled product, can vary. Tolerances in thickness and width have been made as stringent as is possible, but some variance is to be expected. Rubber's nature is to expand and contract with changes in temperature and humidity
- Langhorn G-Force® rubber tiles are not to be used in any manner or for any purpose not expressly identified by Langhorn.

