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ENGINEERED STONE TILE INSTALLATION INSTRUCTIONS

THANK YOU FOR CHOOSING AHF PRODUCTS FLOORING

If properly installed and cared for, your new flooring will be easy to maintain and and will look great for years to come. These directions are based on industry standards and best practices. Failure to follow these installation instructions may result in damage to the flooring and void the floor's warranty.

- For complete warranty information call 1-866-243-2726 or go to www.ahfproducts.com.
- For technical or installation questions, or to request a Safety Data Sheet, please call 1-866-243-2726 or visit www.floorexpert.com our technical website.
- For general questions or comments, please visit us at www.ahfproducts.com or call 1-866-243-2726.

WARNING: EXISTING IN-PLACE RESILIENT FLOOR COVERING AND ASPHALTIC ADHESIVES. DO NOT SAND, DRY SWEEP, DRY SCRAPE, DRILL, SAW, BEADBLAST, OR MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVE, OR OTHER ADHESIVE.

These existing in-place products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the existing in-place product is a non-asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content and may govern removal and disposal of material.

Visit rfci.com to see the current edition of the Resilient Floor Covering Institute (RFCI) publication Recommended Work Practices for Removal of Resilient Floor Coverings for instructions on removing all resilient floor covering structures or contact your retailer.

AHF floor coverings and adhesives do NOT contain asbestos.

Adhesive	Trowel	Set-in-Wet	Dry-to-Touch	Comments
S-295	1/32" deep; 1/16" wide; 1/32" apart U-notch	N/A	Dry to Touch	Foot Traffic: 24 Hours Heavy Rolling Loads: 72 Hours

Installation:

Location: All grade levels
Fitting: All Methods

Tools:

Tape measure, chalk line, utility knife, pencil, straight edge, vacuum or broom, optional tile cutter or cutting shear. Subfloor prep supplies. Recommended adhesives. Recommended grout for grouted applications.

General Information:

Owner/Installer Responsibility

- The owner/installer has final inspection responsibility as to grade, manufacture and factory finish. Inspection of all flooring should be done prior to installation. The flooring should also be carefully examined for color, finish and quality before installing it.
- The installer must use reasonable selectivity and not use or cut off pieces with deficiencies, whatever the cause. Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use that piece. If material is not acceptable, do not install it and contact the seller immediately.
- Prior to installation of any flooring product, the owner/installer must determine that the job-site environment and the sub-surfaces involved meet or exceed all applicable standards. Recommendations of the construction and materials industries, as well as local codes, should be followed. These instructions recommend that the construction and subfloor be clean, dry, stiff, structurally sound and flat. The manufacturer declines any responsibility for job failure resulting from, or associated with, subfloor and substrates or job-site environmental deficiencies.
- Engineered Stone Tile can be installed by two installation methods. It can be installed with a standard butt fit as in traditional resilient tile installations; or, Engineered Stone Tile can be spaced and grouted with Armstrong Flooring S-693 FlexStrong Grout, Premixed Sanded Acrylic Grout. Both methods require the use of Armstrong Flooring S-295 Flooring Adhesive.
- For a grouted installation, the tiles should be laid with a grout joint spacing of 1/16" (1.6 mm) to 1/4" (6.4 mm) utilizing tile spacers designed for this purpose. Because of the rounded edges, the appearance of the finished grout joint will be approximately 1/16" (1.6 mm) wider than the actual tile spacing.
- Due to Engineered Stone Tile's large format and increased thickness, extra care is required in handling and storage to keep the product from becoming damaged or distorted. Always store the product on a flat surface. Temperature control and subfloor flatness are important in the prevention of raised or curled edges, and performance of the grouted joints.
- Maintain the temperature of the room, subfloor, tile and adhesive at a minimum of 65°F (18°C) and a maximum of 85°F (29°C) for 48 hours prior to installation, during installation, and for 48 hours after installation. Maintain a minimum room temperature of 55°F (13°C) thereafter.

Keys to Successful Glue Down Installation

- Most installations will need approximately a 10% cutting allowance added to the square footage of the room.
- Proper conditioning of the job site is necessary. Engineered Stone tile should not be exposed to sudden changes in temperature.
- Store, transport and handle the Engineered Stone Tile in a manner to prevent any distortions. Distortions will not disappear over time. Store cartons flat, never on edge. Ensure that the Engineered Stone Tiles are lying flat during installation.
- Installations of carpet, metal strips and other transition moldings should not pinch the flooring against the subfloor and should allow for some slight movement wherever practical.
- Protect the floor from heavy-rolling loads, other trades, and movement of appliances by using sheets of plywood or similar.

Suitable Substrates

All substrates listed below must be properly prepared and meet certain requirements. There may be other exceptions and special conditions (as noted below) for these substrates to be suitable for the glue down installation system.

- Concrete – dry and smooth on all grade levels
 - Suspended wood subfloors with approved wood underlayments – must have minimum of 18" well-ventilated crawl space underneath including:
 - Properly prepared OSB
 - Luan Plywood: Use only Type 1 luan exterior grade "BB" or "CC" for underlayment. The use of lesser grades of luan plywood is unacceptable and may cause severe problems when used as an underlayment, including discoloration, indentation, loss of bond and delamination.
- NOTE: The use of luan plywood and other extremely porous wood underlayments will reduce the flash and working time of adhesives. It is best to apply an acrylic-based primer-sealer to any porous substrate prior to installing sheet vinyl. A manufacturer's certification of luan grade must accompany any claim involving the use of a luan underlayment.

- Single-layer, fully-adhered, existing resilient floors – must not be foam-backed or cushion-backed
- Ceramic tile, Terrazzo, Marble
- Polymeric Poured (seamless) Floors
- S-1840 Quiet Comfort Underlayment (double glue application)

DO NOT INSTALL OVER

- Existing resilient tile floors that are below grade
- Existing cushion-backed vinyl flooring
- Carpet
- Hardwood flooring installed directly over concrete
- Existing floating floors
- Particleboard 40lb. density or waferboard

Job Conditions/Preparations

- Resilient flooring should only be installed in temperature-controlled environments. It is necessary to maintain a constant temperature before, during and after the installation. Therefore, the permanent or temporary HVAC system must be in operation before the installation of resilient flooring. Portable heaters are not recommended as they may not heat the room and subfloor sufficiently. Kerosene heaters should never be used.
- All substrates must be structurally sound, dry, clean, flat, and smooth with minimal deflection. Substrates must be free from excessive moisture or alkali. Remove dirt, paint, varnish, wax, oils, solvents and other foreign matter, and contaminants.
 - Subfloors must be flat within 3/16" in 10' or 1/8" in 6'
 - For concrete substrates moisture testing should be conducted and moisture vapor emissions. Acceptable levels are determined by the adhesive being used. Check adhesive label for limitations.
- High spots on the substrate should be leveled and low areas filled with appropriate underlayments.
- Do not use products containing petroleum, solvents or citrus oils to prepare substrates as they can cause staining and expansion of the new flooring.
- For renovation or remodel work, remove any existing adhesive residue so that 100% of the overall area of the original substrate is exposed.
- Ceramic tile floors, ceramic and marble grout joints, and irregularities in concrete should be filled and leveled using a cementitious patch to fill and smooth any embossing in the old floor.
- The area to receive resilient flooring materials and adhesives should be maintained at a minimum 65°F (18.3°C) for 48 hours before, during, and 48 hours after installation. Maintain minimum temperatures of 55°F (12.8°C) thereafter.
- Radiant heated substrates must not exceed a maximum surface temperature of 85°F (29°C).
- The subfloor panels must have a smooth, sanded face and show no swelling of edges or surface due to exposure to weather conditions or construction traffic.
- There are numerous products available for use as floor fills, patches, self-leveling underlayments, and trowelable underlayments. They include proprietary blends of compounds such as portland cement, calcium aluminates, and gypsum-based products. These are recommended by their manufacturers for smoothing rough or uneven subfloors, enhancing acoustical and fire characteristics of structures or as substrates to receive floor covering for otherwise unsuitable subfloor conditions. If the subfloor surface appears to be dusty then apply a primer to the surface.
- Because of engineered stone tiles' size and stiffness, when using the grouted installation method, suspended wood subfloors and underlayments must have a total thickness of 1" (2.5 cm) and a minimum 18" (45.7 cm) wellventilated air space below. Joist spacing should be on 16" (40.6 cm) centers to minimize subfloor deflection.

Installation Preparation/Layout

Remove baseboard, quarter-round moldings, wall base, appliances and furniture from room. After preparation work, sweep and vacuum the entire work area to remove all dust and debris.

Whenever possible, plan the layout so that the joints in the Engineered stone tiles do not fall on top of joints or seams in the existing substrate. The end joints of the Engineered stone tiles should be staggered a minimum of 6" apart. Do not install over expansion joints.

Determine which direction the Engineered stone tile will run. Find the center of each of the end walls (the walls perpendicular to the long dimension of the Engineered stone tile and place a pencil mark on the floor. Connect these points by striking a chalk line down the center of the room. Do a dry layout of Engineered stone tiles from the center line to the wall running parallel to the long direction of the Engineered stone tile to determine the width of the last row of Engineered stone tile (refer to Figure 1).

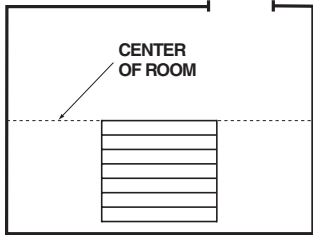


Figure 1. Dry layout to determine width of border Engineered Stone Tile.

Avoid having border pieces less than half with width of the Engineered Stone tile. If you find the border tiles will be less than 1/2 the width of the tile, the center starting line should be shifted a distance equal to 1/2 the tile width. This will "balance" the room and provide for a larger cut piece at the wall.

NOTE: The subfloor must be thoroughly free from dust and debris. If the subfloor is dusty this may affect the product performance.

NOTE: Stagger end joints by 6". Cut pieces at the ends of rows should be 8" long or longer.

LAYOUT

- Before installing the Engineered Stone Tile Installation System, plan the layout so the tile joints fall at least 6" (15.2 cm) away from subfloor/underlayment joints. Do not install over expansion joints. When installing over an existing resilient floor, plan the layout so the new tile joints are a minimum of 6" (15.2 cm) away from the original seams. When installing over tile floors, avoid having the tile joints in the same area as the joints in the existing flooring. Taking the most prominent walls in the room into consideration, find the center point in the room. Divide the room into equal quadrants by making two perpendicular lines on the subfloor intersecting at the center point. Starting from the center point, and either by measurements, or by doing a dry layout of the tiles (with proper grout joint spacing), determine the distance between the last full tile and the perimeter walls and cabinets. A balanced layout will result in border tiles being 8" (20.3 cm) or greater for the 16" x 16" (40.6 cm x 40.6 cm) tiles.
- If the border pieces are less than 8" (20.3 cm) wide, particularly at the prominent walls, you will need to shift the starting point in the middle of the room 1/2 the dimension of the tile [8" (20.3 cm) for a 16" x 16" (40.6 cm x 40.6 cm) tile] to balance the layout. After you have balanced the room to achieve larger pieces at the borders, make two new perpendicular lines on the subfloor intersecting at the new starting point near the center of the room.
- Normally you will apply adhesive to 1/4 or 1/2 of the room area at a time so that you can start the installation where the guidelines intersect.

PROCEDURE – S-295 Flooring Adhesive

1. Apply S-295 Flooring Adhesive at the starting area, ensuring the area can be covered within the working time of the adhesive. Be sure not to apply adhesive too far ahead of your work area. It is important to use the correct trowel notching. Inspect and replace worn trowels frequently. Follow adhesive open time and working time recommendations on the adhesive label.
 2. Allow enough time for the adhesive to dry until tacky with no transfer to the finger (dry-to-touch) before placing the material into it. This normally takes 30 minutes or more, depending on temperature and humidity. After the adhesive has reached this condition, there is at least one hour working time in which to install and roll the flooring.
- NOTE:** Allowing proper open time will help to minimize knee marks, roller marks and trapped blisters. The amount of open time will vary according to job conditions – temperature, humidity, air flow and type of substrate.
3. **Roll Thoroughly.** Starting at the center and working toward the edges, roll in two directions using 100 lb. roller. Use a hand roller in confined areas where the large floor roller will not reach, such as under toe kicks. Give special attention to cleaning adhesive residue from the joint areas. Clean excess adhesive from the surface of the flooring using a clean, white cloth dampened with detergent and water. Mineral spirits will remove dried adhesive residue.
 4. The Engineered Stone tiles may be walked on immediately; however, the floor should not be exposed to heavy rolling load traffic for 72 hours after the installation. Use pieces of hardboard or underlayment panels to protect the floor when moving heavy furniture and appliances back into the room.
 5. Begin at the starting point and install the tile along the chalk lines, laying the field area first in step fashion. Complete installation of full tile in all quadrants of the room. Do not slide the tile into place. Press tile firmly into the adhesive.

NOTE: Tile spacers do a very good job of maintaining tile alignment; however, the installer must also re-check for proper alignment by using measurements or creating additional lines on the subfloor about every 4' (every 3 rows of tile) to ensure straight lines and rows of tile. This is very important on larger installations.

6. Next, cut and fit the border tile at the perimeter. Mechanical tile cutters are available for cutting larger format tile. Then score and snap method of using a utility knife to score through the wear surface also works well. Be sure to allow for the grout joint and a 1/8" (3.2 mm) gap at perimeter walls when cutting the border pieces.
7. For irregular cuts, make a pattern out of Kraft paper or cardboard and transfer it to the tile. Score along the markings and snap off small pieces. Ceramic tile nippers or a coping saw are useful in making more intricate cutouts for complicated fittings.
8. After the engineered stone tile is installed, remove all tile spacers and immediately roll the entire floor with a 100-lb. roller. Roll the floor diagonally across the tile joints in both directions. Use a hand roller in confined areas where the large floor roller will not reach, such as under toe kicks.

GROUTING

- Grouting may be done immediately or the following day.
- Use only Armstrong Flooring FlexStrong Premixed Sanded Acrylic Grout. Traditional cement Grouts can NOT be used with Armstrong Premium Tile or Plank Flooring, Engineered Stone Tile and Planks.
- Be sure that all tile edges are firmly seated in the adhesive before starting the grouting process.
- Follow the application instructions as specified on the grout container, working small sections of the floor at a time.
- Use a soft rubber grout float to apply the grout.
- Do NOT spread grout over the entire surface of the tile. Apply the grout and pack it down in the immediate area of the open joints.
- Hold float in almost vertical position and strike off excess grout, pulling the float diagonally across the joints.
- You will need two five gallon buckets and sponge to loosen the grout on the face of the tile or planks. But the preferred method is to have three buckets of water available. Having clean water will reduce the haze on the face of the tile or plank.
- Use one bucket of water to wipe excess grout off the tiles as you install. This prevents the grout from drying to the tile this can be a tile sponge.
- Hold sponge flat and wipe diagonally across the joints
- Do not allow rinse water to accumulate in ungrouted joints, be careful not to wipe grout out of the joints.
- The other bucket is for the final removal of residue and for smoothing the joints. The second sponge should be damp with no excess water. Use a square-edged cellulose sponge that is just damp move the sponge slowly over the surface to pick up the excess water.
- A dry terry cloth towel may be pulled across the surface of the Tile as a final cleaning step.
- If sponges are not sufficient to clean the face of the tile use a white 3M pad with light pressure or a terry cloth towel.
- It is normal to have a grout haze remaining after the initial clean up. This will be removed in the final clean up once the grouted joints have completely dried.
- Traffic should be kept off the installation until the grout has completely dried minimum of 24 hrs.
- Joints that are wider than 1/16" to 1/8" may take longer to dry.
- Replace wall base and trim moldings.

CLEAN-UP ONCE GROUT DRIES

- Use one bucket of properly diluted Armstrong Flooring Once 'n Done® Resilient & Ceramic Floor Cleaner.
- For small areas use Once 'n Done spray bottle.
- Use 3M pad to remove grout haze that remains.
- Have a second bucket of clear clean water for the final rinse and clean up.
- Buff dry with a soft cloth.

WARNING

- Do NOT wash or scrub the new flooring for at least 5 days after installation.
- Do NOT use solvents or grout haze removers.
- Do NOT use Armstrong Flooring New Beginning® Floor Stripper or other floor strippers to clean the grout or maintain Engineered Stone tile.
- Only use Armstrong Flooring Premixed Sanded Acrylic Grout S-693.
- Tile maybe walked on immediately however, NO heavy rolling traffic for an additional 72 hours after installation.
- Use pieces of hardboard or underlayment panels to protect the floor when moving heavy furniture and appliances back into the room.
- Do NOT use mats with latex or rubber backing as they can cause permanent discoloration of your floor.
- Do NOT use vacuums that use a beater bar or turn beater bar off.
- Do NOT use electric brooms with hard plastic bottoms with no padding.
- Do NOT use abrasive scrubbing tools.
- Do NOT use detergents abrasive, cleaners or "mop and shine" products.

HELPFUL MAINTENANCE/CARE TIPS

- Use floor protectors under furniture.
- Wipe up spills immediately.
- Wash your floor regularly with Armstrong Flooring Once 'n Done Resilient & Ceramic Floor Cleaner

CAUTION: Engineered Stone Tile Flooring, like other types of smooth floors, may become slippery when wet. Allow time for floor to dry after washing. Immediately wipe up wet areas from spills, foreign substances or wet feet.

ROUNDING OF CUT EDGES

NOTE: Engineered Stone tiles have rounded edges formed during the manufacturing process. If a custom installation is designed so that full tiles are cut to smaller sizes and the cut edges are exposed in the field of the installation, it will be necessary to round those cut edges. This technique should only be used in grouted installations.

- After the tile has been cut, a flooring heat gun should be used to focus heat directly at the cut edge (rather than the face of the tile). It is best to have the tile extended over the edge of a work bench by an inch or two so the heat can be direct right on the edge and slightly toward the backing.
- Move the heat gun slowly, back and forth a few times on the edge to be rounded. This edge will become too hot to touch but should not show any scorching.
- Remove heat and slide the tile back on the work bench so that the cut edge is lined up with the edge of the work bench. Immediately roll the edge lengthwise with a steel hand roller, holding the roller at about 45° angle to the horizontal plane. This will slightly round the tile edge so that it simulates the factory edges. There are a variety of heat guns and the installer should practice to find the right settings and technique to achieve the best results.

WALL INSTALLATIONS

Create decorative backsplashes, accent walls, or other focal points with any size Engineered Stone tile 16" x 16", 8" x 16", or 12" x 24".

Substrates

Can be installed over the following. All substrates should be sound, clean, dry and smooth.

- Concrete
- Wood
- Dry wall (painted or un-painted)
- Ceramic
- Formica

DO NOT INSTALL OVER

- Debris
- Grease
- Loose paint
- Cracked or broken ceramic
- Loose formica

Installation Procedure

- Spread the adhesive with the recommended trowel and allow the adhesive enough time to become dry and tacky with no transfer to your finger.
- All substrates must be flat. Variations in flatness must not exceed 1/16" (1.6 mm) in 1' (30.5 cm).
- After installation is complete, roll the entire wall area in both directions with a hand roller or rolling pin. The tiles must be thoroughly rolled before grouting.
- Do not pinch the tiles, leave a small gap at any adjoining surfaces.
- Allow 10% cutting allowance for most installations.

GROUTING

- Use S-693 Premixed Sanded Acrylic Grout, and space 1/16" (1.6 mm), 1/8" (3.2 mm), 3/16" (4.8 mm) or 1/4" (6.4 mm) apart. The tighter the spacing, the less visible the grout lines will be.
- Grout is ready to use, requires no sealing and resists stains and cracking.
- Use hard epoxy float and keep grout isolated to the joint area.
- Work small areas and do not let grout dry on surface. Light water mist ok prior to cleanup step.
- Square cellulose sponges work best and are better than ceramic grout sponges. White pad can be used if needed.
- Do not over-work joints or use too much water.
- Any light haze that remains can be removed after grout hardens (at least 24 hours) using white pad and water. If necessary, properly diluted Armstrong Flooring Once 'n Done floor cleaner can be used. Rinse thoroughly.

PRECAUTIONS

- Do not wash or scrub the new Engineered Stone tile flooring for at least 5 days after the installation. This will prevent excess moisture and cleaning agents from interfering with the adhesive bond and hardening of the grout.
- Do not use Armstrong Flooring New Beginning Extra-Strength Floor Stripper or other floor strippers for cleaning the grout or maintaining the Engineered Stone tile installation as they are too harsh and will degrade grout.