

ADURA® Flex Installation Guidelines

GENERAL INFORMATION

These installation specifications are for fully adhered ADURA® Flex. All recommendations are based on the most recent available information. All instructions and recommendations must be followed for a satisfactory installation.

- Acclimate flooring and the room at a constant temperature between 65°F and 85°F for 48 hrs. prior to and during installation. Temperature of the room should not go below 55°F after 48 hours after installation and anytime thereafter.
- Install only after the jobsite has been cleaned and cleared of other trade apparatus that may damage a finished installation.
- Mix and install product from several different cartons to achieve maximum variation.
- All subfloor/underlayment patching must be done with a non-shrinking, water-resistant, high-quality Portland cement patching and leveler compound.
- Never install ADURA® Flex products over residual asphalt-type (cut back) adhesive. It can bleed through the new flooring. Residual asphalt-type adhesive must be completely removed and covered with underlayment plywood or high quality latex underlayment.
- ADURA® Flex are adhered with Mannington MT-711. MT-711 is a solvent-free, acrylic based, pressure-sensitive adhesive.

SUBFLOOR INFORMATION

Careful and correct preparation of the subfloor is a major part of a satisfactory installation. Roughness or unevenness of the subfloor may telegraph through the new floor covering, resulting in an unsightly surface and excessive wear on high spots. Subfloor should be flat within 3/16" in 10'.

CAUTION: Some types of nails, such as common steel nails, cement coated or resin- or rosin-coated nails, may cause a discoloration of the vinyl floor covering. Use only non-staining fasteners with underlayment panels. The procedure of gluing and screwing underlayment panels is not recommended. Solvent-based construction adhesives are known to stain vinyl floor coverings. All responsibility for discoloration problems caused by fastener staining

or the use of construction adhesive rests with the underlayment installer.

Wood Subfloors

- All wood floors must be suspended at least 18" above the ground. Adequate cross-ventilation must be provided, and the ground surface of a crawl space must be covered with a suitable vapor barrier. Wood subfloors directly on concrete or installed over sleeper construction are not satisfactory for installation. Wood subfloors must be covered with a minimum 1/4" or heavier underlayment rated panel to assure successful finished flooring installation. All wood substrate should be smooth, flat, structurally sound and free of deflection (meaning no up and down movement).
- Underlayment:
Many times, wood panel subfloors are damaged during the construction process or are not of underlayment grade. These panels must be covered with an approved underlayment. Underlayment panels are intended to provide a smooth surface on which to adhere the finished floor covering. It must be understood that underlayment panels cannot correct structural deficiencies. Particleboard, chipboard, construction-grade plywood, any hardboard or flakeboard are not recommended for underlayment. All have inadequate uniformity, poor dimensional stability, and variable surface porosity. Mannington will not accept responsibility for adhered installation over these subfloors. In all cases, the underlayment manufacturer or underlayment installer is responsible for all underlayment warranties. If the surface of the wood subfloor is not smooth, a 1/4" underlayment panel should be installed over the subfloor. Any panels selected as an underlayment must meet the following criteria:
 - Be dimensionally stable
 - Have a smooth, fully sanded face so the graining or texturing will not show through
 - Be resistant to both static and impact indentation
 - Be free of any surface components that may cause staining such as plastic fillers, marking inks, sealers, etc.
 - Be of uniform density, porosity and thickness
 - Have a written warranty for suitability and performance from the panel manufacturer or have a history of proven performance

Concrete Subfloors

- Concrete subfloors should meet requirements prescribed in ASTM F710 "Standard Practice for preparing concrete floors to receive Resilient Flooring."
- Concrete subfloors must have a minimum compressive strength of 3000 psi and dry density of at least 100 pounds per cubic foot.
- Concrete subfloors must be dry, smooth, and free from dust, solvent, paint, wax, grease, oil, asphalt sealing compounds and other extraneous materials. The surface must be hard and dense, and free from powder or flaking. Surface of the subfloor should be flat within 3/16" in 10'.
- New concrete slabs must be thoroughly dry (at least six weeks) and completely cured. Curing agents, surface hardeners and other additives may cause adhesive bonding failure. These should be removed by sanding or grinding.
- All concrete slabs must be checked for moisture before installing material. Details for moisture testing can be found on our website. The final responsibility for determining if the concrete is dry enough for installation of the flooring lies with the floor covering installer. ADURA®Flex must never be installed where excessive moisture emissions may exist. Moisture emission from subfloor cannot exceed 5 lbs. per 1,000 sq. ft. per 24 hours as measured with the calcium chloride test in accordance with ASTM F1869-04 or ASTM F2170 In Situ Relative Humidity not to exceed 80%. Mannington will not assume responsibility for floor covering failure due to hydrostatic pressure or moisture vapor emission. New concrete slabs must be thoroughly dry (at least six weeks) and completely cured. Although the material is not susceptible to damage from moisture, excessive subfloor moisture is an ideal breeding ground for mold, mildew and fungus. All of which can contribute to an unhealthy indoor environment. The Limited Warranties do not cover discoloration from mold or from flooding, leaking plumbing or appliances, water entering through sliding glass doors or similar conditions.
- Holes, grooves, expansion joints and other depressions must be filled with high-quality Portland based Patching & Leveling Compound, troweled smooth, and feathered even with the surrounding surface. Slab should be flat within 3/16" in 10'.

- Concrete floors with a hydroponic radiant heating system are satisfactory, provided the temperature of the floor does not exceed 85°F at any point. Before installing the flooring, the heating system should be turned on to eliminate residual moisture. Mannington does not recommend heated floor mats for LVT products.

Recommended Work Practices for Removal of Resilient Floor Coverings

WARNING: Do not sand, dry scrape, bead blast or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive or other adhesive. These 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 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. RFCI's Recommended Work Practices for Removal of Resilient Floor Coverings are a defined set of instructions addressed to the task of removing all resilient floor covering structures. These instructions should be consulted with each installation. The link can be found on our website. See mannington.com or go to rfci.com.

Existing Floor Coverings

To achieve maximum product performance, ADURA®Flex should not be installed over existing resilient floor coverings.

- Ceramic tile should be made smooth by applying a cementitious overlay such as patching or leveling compound.
- In the rare cases that the removal of the existing resilient floor covering is not an option, the existing flooring must be covered with a high quality cement based Embossing Leveler. Existing sheet vinyl floors should not be heavily cushioned and consist of only one layer.

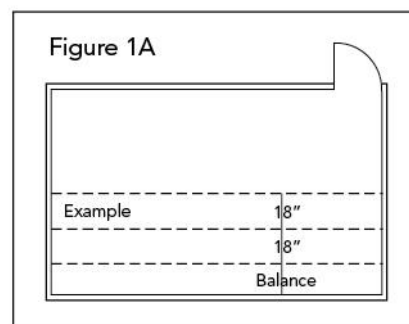
INSTALLATION

Tile Layout (including Rectangle)

As with all tile formats, ADURA®Flex should be “balanced” in the work area. Tiles may be laid squarely or laid out diagonally in the work area. Tiles may also be installed in a normal point to point layout or in an ashlar (staggered, brick) layout. In either case, the room must be accurately measured to square off the area and to determine the center point. Accurately measure the room to determine the center line, adjust this established line to accommodate a balanced layout and then transpose this line to the determined layout width away from the starting wall (approximately 2' to 3' wide - see Figure 1A). Apply the adhesive in this area and begin installing tiles. Careful and precise measurements must be taken during tile layout. Lay all tiles in the same direction, with all directional arrows imprinted on the back of tiles pointing in the same direction (except Tempo). For the pattern Tempo it is recommended that you quarter turn (90°) every other tile to achieve a checker board pattern. Please note that the “checker board” visual will create a variable gloss effect. This is intentional. From an installation perspective, it is important to notice that the tiles will be packaged together and that to achieve the realistic visual, it is important to install this collection by blending cartons and paying attention to the pattern details. DO NOT CLUSTER THE SAME TILES TOGETHER.

Tile Layout (including Rectangle)

It is also important to balance the layout of the plank format. Proper planning and layout will prevent narrow plank widths at wall junctures. Determine layout to prevent having less than 1/2 of plank width or very short pieces. As with all plank products, lay the long dimension of the plank parallel to the long dimension of the work area. Accurately measure the room to determine the center line, adjust this established line to accommodate a balanced layout and then transpose this line to the determined layout width away from the starting wall (approximately 2' to 3' wide - see Figure 1A). Apply the adhesive in this area and begin installing planks. From an installation perspective, it is important to notice that the planks will be packaged together and that to achieve the realistic visual, it is important to install this collection by blending cartons and paying attention to the pattern details. DO NOT CLUSTER THE SAME PLANKS TOGETHER.



Combinations –Tile & Plank Layout

The modularity of ADURA®Flex allows for interesting and decorative combinations of tiles and planks. When determining proper layout for this custom installation, it is important to consider the dimensions of the modular “design unit” and then balance the design unit in the work area. Careful and precise measurements must be taken to ensure success with a combination design. Note: Due to thickness variations, you cannot mix ADURA®Flex products together.

Adhesive Application

Mannington MT-711 adhesive is required for adhering ADURA®Flex to all approved substrates. Apply the adhesive with a 1/16” wide, 1/16” deep, and 1/16” apart-notched trowel. Begin applying adhesive at the intersection of the chalk lines; spread the adhesive in the pre-determined area. The MT-711 adhesive should be given sufficient open time so that the trowel ridges appear “cloudy” or “hazy” and the trowel “valleys” are clear. The adhesive must be sufficiently tacky to prevent tile slippage during placement. DO NOT ALLOW ADHESIVE TO GO TOTALLY CLEAR.

Tile Installation

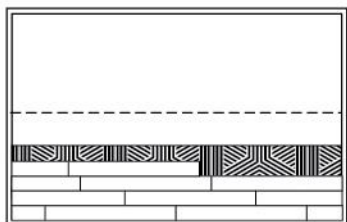
After the MT-711 has had sufficient open time, begin laying the tile at the intersection of the working lines. Be certain this tile is installed squarely on the lines. After the first tile is in place, begin laying tiles outward along both guide lines. Press tiles firmly against adjoining tiles and press into the adhesive. Begin stair-stepping the tiles into the field area.

Maintain the squareness of the installation by keeping tiles along guide lines. Lay all tiles in the same direction, all directional arrows pointing in the same direction. Insure that the tiles are firmly bonded to the subfloor by rolling the entire installation with a minimum of 100-pound three-section floor roller.

Plank Installation

After the MT-711 adhesive has had sufficient open time, begin laying planks along the designated starting line. Note: If planks have directional arrows on the back they should be installed with arrows facing in one direction. Working back to the starting wall, plank ends should be staggered in a random manner in order to avoid clustering the end joints. Varying the length of the starting plank can assure sufficient stagger of end joints. End joints should be staggered by at least 6". Always use factory-cut ends for end joints. Pay particular attention to the randomness of the plank layout; avoid establishing a repeating pattern. Continue installing the planks in a random fashion and complete each area before beginning the next – see Figure 2A. If required, use a kneeling board to avoid walking on freshly installed planks. Insure that the planks are firmly bonded to the subfloor by rolling the entire installation with a minimum of 100-pound three-section floor roller.

Figure 2A



Cutting or Fitting Border Tiles and Planks

ADURA®Flex can be cut with a large tile cutter or by using the score and snap technique. Direct or pattern scribe the flooring to fit into complicated, irregular walls or pipes, etc.

Grouting ADURA®Flex Tile

Certain ADURA®Flex tile patterns lend themselves to the design option of applying a specially produced acrylic grout between the tiles. Specific installation procedures must be followed when installing and grouting ADURA®Flex.

- Required tools:
 - Good quality rubber grouting float
 - Plastic spacers
 - Grouting sponge
 - Water buckets
 - >Spacers
- Procedure

The desired grout width must be determined before tile layout begins. It's critical to include grout width measurement to tile size to insure a balanced layout. Grout width should be at least 1/16" wide and no more than 1/4" wide. Commercially available hard-plastic, ceramic tile spacers may be used to maintain equal grout joint width. Tiles may be grouted immediately after installation. Insure that the tiles are firmly bonded to the subfloor by re-rolling the entire installation with a minimum of 100-pound three-section floor roller just prior to grouting. Be certain to remove spacers and clean any debris from grout joints. Only ADURA Grout may be used with ADURA tiles. This pre-mixed grout has been developed to bond to tiles and is flexible and durable. Never use cement-based, epoxy or furan grout. Lightly wipe joints with a dampened sponge. Apply the grout into the tile joints with the narrow edge of the rubber float. Firmly pack each tile joint in each direction as to leave no voids or skips. As each tile joint is grouted, remove excess grout from tile edges with the stiff edge of the float pulled in a 45° angle across each joint. Grout only in small increments and clean each section as you go. Never apply grout in an area greater than 12 square feet before cleaning. Do not wait more than 8 min before starting clean up. To clean, soak sponge in cold clean water. Wring out excess water completely. Use small circular motions to break up grout on the tile and smooth out joint. Soak and wring out sponge clean again. Wipe tiles clean by drawing the sponge diagonally across the tile, flip sponge over and repeat. Avoid excess water in the grout joint. Repeat procedure as necessary. When cleaned properly the grout haze will be minimal and can be removed easily with neutral household cleaner. Once again, do not use excessive water during clean up. Be certain to wipe diagonally across tile joints to avoid dragging grout from the joint. Rinse this sponge frequently and change the

cleanup water frequently. Thoroughly remove all residual grout and grout haze before leaving the job. Dried grout haze is difficult to remove. If a slight grout haze is noticed after 24 hours, it can be removed by scrubbing with a nylon pad and a solution of 1/4 cup of ammonia in a gallon of clean water. Thoroughly rinse the area with clean water. Do not use chemical grout cleaners. If skips or voids in the grout joint are discovered after final clean-up, they can be filled by applying new grout directly over the fresh grout.

- **Finishing the Job**

ADURA®Flex must be rolled with a minimum 100-pound, three-section floor roller immediately after installation. Roll the flooring in both directions to firmly seat the tile into the adhesive. Protect all exposed edges of ADURA by installing wall molding and/or transition strips. Use caution to prevent the fasteners from securing the planks to the subfloor. Caulk along tubs, toilet bowls, etc. Do not wash the floor for 48 hours after installation. After 48 hours, damp mop to remove residual surface dirt. Follow appropriate maintenance schedule for ADURA®Flex using Mannington Ultra Clean.

REPAIRING ADURA®Flex

Although the wear surface of ADURA®Flex is durable, it is not bulletproof. Should an accident occur that damages the surface of the product, a simple repair procedure exists. The key to this process is having ample material available to replace the damaged area(s). This should be considered when placing the original order. Extra tiles and planks should be wrapped in their packaging and stored in an interior, climate-controlled location. To remove a tile or plank, gently heat with a hot air blower to allow the material to become more flexible. Insert a thin 2" wide putty knife in the seam and gently lift up. Be careful not to damage the surrounding flooring. Remove the damaged tile or plank from the floor. When removing a tile, pay attention to the orientation of the embossed arrow on the back of the damaged piece so that the new tile can be installed in the same direction. Inspect the subfloor for lumps of residual adhesive, remove and smooth out as necessary. Using a 1/32" notched trowel, apply a thin coating of MT-711 to the back of the replacement piece. You must consider the thickness of the residual adhesive layer when determining the appropriate adhesive application to the replacement piece. Too much adhesive will cause the replacement flooring to be higher than the surrounding tile or plank. Provide sufficient open time (typically 15 minutes) and then position the tile or plank into the repair area.

Roll evenly with a hand roller and, if necessary, weight the tile or plank for several hours until the adhesive sets. If the tile was grouted, the grout must be removed and replaced during tile replacement.

Regrouting ADURA®Flex Tile: Carefully remove old grout at least 1/8 deep. We have found that the use of an electric regROUT tool is very helpful. Clean grout area and apply new grout. ADURA grout can be applied over existing grout providing you follow the steps provided.

CAUTIONS AND MISCELLANEOUS

- Furniture should be moved onto the newly installed floor using an appliance hand truck over hardboard runways.
- Do not place heavy items on newly installed floor covering for at least 24 hours after completion of the installation. Heavy furniture should be equipped with suitable non-staining, wide-bearing caster or protectors. Non-staining felt protectors are recommended for table and chair legs to help prevent scratching.
- Floor covering subjected to excessive heat and light is subject to thermal degradation. Use appropriate precautions to minimize potential effects on the floor covering.
- Oil or petroleum-based products can result in surface staining. Do not track asphalt-driveway sealer or automobile-oil drips onto the vinyl floor covering.
- Mats used for ADURA are to be labeled "non-staining". Rubber, cocoa-backed or latex backed mats may discolor ADURA®Flex.

U.S. Patent 6,291,078; U.S. Patent 6,218,001; U.S. Patent 7,384,697 and other patents pending.