INSTALLATION RECOMMENDATIONS

MANNINGTON®

Adura® Luxury Floors

I. GENERAL INFORMATION

These installation specifications are for all fully adhered installations of Adura® Luxury Floors and Homestead. All recommendations are based on the most recent information available. The information on this sheet provides general guidelines. For complete details, consult Mannington's Professional Installation Handbook. All instructions and recommendations must be followed for a satisfactory installation.

1. Adura® Luxury Floors and Homestead should be stored and installed in climate-controlled indoor locations between 65° - 85°F.
2. Install Adura® Luxury Floors and Homestead only after the jobsite has been cleaned and cleared of other trade apparatus that may damage a finished tile installation.
3. Always check the cartons to assure the pattern number is correct. To minimize variation, mix and install tiles and planks from several different cartons.
4. All subfloor/underlayment patching must be done with a non-shrinking, water-resistant Portland cement patching compound such as Mannington MVP-2023.
5. Never install Adura® Luxury Floors and Homestead products over residual asphalt-type (cut back) adhesive. It can bleed through the new floor covering. Residual asphalt-type adhesive must be completely removed and covered with underlayment plywood or Mannington latex underlayment.
6. Adura® Luxury Floors and Homestead are to be adhered with Mannington MT-711. MT-711 is a solvent-free, acrylic-based, pressure-sensitive adhesive that is appropriate with Adura® Luxury Floors and Homestead and carpet modular flooring products.

II. SUBFLOOR INFORMATION

Careful and correct preparation of the subfloor is a major part of a satisfactory Adura® Luxury Floors and Homestead covering installation. Roughness or unevenness of the subfloor will telegraph through the new floor covering, resulting in an unsightly surface and excessive wear on high spots. Proper subfloor preparation and suitable underlayment installation are essential for a trouble-free job.

CAUTION:

Some types of nails, such as common steel nails, cement coated or some 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.

A. Wood Subfloors

1. GENERAL
   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 the installation of Adura® Luxury Floors and Homestead products. Wood subfloors must be covered with a minimum 1/4" or heavier underlayment rated panel to assure successful finished flooring installation.
2. 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 and flakeboard are not recommended as 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.
3. UNDERLAYMENT REQUIREMENTS
   Panels intended to be used as underlayment should be specifically designed for this purpose. These panels should have a minimum thickness of 1/4".
   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

B. Concrete Subfloors

1. 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.
2. 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.
3. All concrete slabs must be checked for moisture before installing material. Details for moisture testing can be found in the Mannington Professional Installation Handbook. The final responsibility for determining if the concrete is dry enough for installation of the flooring lies with the floor covering installer. Adura® Luxury Floors and Homestead must never be installed where excessive moisture emissions may exist. Moisture emission from subfloor cannot exceed 3 lbs. per 1,000 sq. ft. per 24 hours as measured with the calcium chloride test. Mannington will not assume responsibility for floor covering failure due to hydrostatic pressure or moisture vapor emission.
4. Holes, grooves, expansion joints and other depressions must be filled with Mannington MVP-2023 Latex Underlayment (or equivalent), and troweled smooth and feathered even with the surrounding surface.
5. Concrete floors with a radiant heating system are satisfactory, provided the temperature of the floor does not exceed 90°F at any point. The heating system should be turned on to eliminate residual moisture.

Recommended Work Practices for Removal of Resilient Floor Coverings.

WARNING: Do not sand, dry scrape, beadblast 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.

C. Existing Resilient Floor Coverings

To achieve maximum product performance, Adura® Luxury Floors and Homestead should not be installed over existing resilient floor coverings. In the rare cases where removal of the existing resilient floor covering is not an option, the existing flooring must be covered with Mannington MVP-2023 used as an Embossing Leveler or other appropriate porous underlayment.

Note: Consult Mannington's Professional Installation Handbook or the Recommended Work Practices brochure from the Resilient Floor Covering Institute for specific instructions on removal of old resilient floor covering.

D. MUL UNDERLAYMENT

Mannington MUL is a six-foot wide vinyl-coated sheet designed to be used as an underlayment with Adura® Luxury Floors, Adura® ELEMENTS and Homestead when the subfloor is not suitable for a fully adhered resilient product or when removal of the existing flooring system is not being considered. These two options are possible because the Mannington MUL is not adhered directly to the subfloor but rather is permitted to "float" over the questionable subfloor. Follow all installation instructions regarding Mannington MUL UNDERLAYMENT. Instructions can be found at Mannington.com.

III. INSTALLATION

A. Tile Layout

As with all tile formats, Adura® Luxury Tiles should be "balanced" in the work area. Tiles may be laid squarely or laid out diagonally in the work area. 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 planks. 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. With the Dynasty and Corsica patterns of Adura® Luxury Tiles, and now incorporated in the Adura® Plank Distinctive Collection with the Zebra Wood pattern, a new dimension of realism is added through V2 Technology. This new technology creates two distinctive, hand-cut visuals with variation in color and patterns, that when combined produce eight distinctively different tiles. The Zebra Wood in the Adura® Plank Distinctive Collection is a representation

of exotic wood species with variation in color and graining. 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 TILE PATTERNS TOGETHER.

B. Plank Layout
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 (2") 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.

C. Combinations – Tile & Plank Layout
The modularity of Adura® Luxury Flooring 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 may not mix Adura® Luxury Flooring and Homestead.

D. Adhesive Application
Mannington MT-711 adhesive is required for adhering Adura® Luxury Flooring and Homestead to all approved substrates. Apply the adhesive with a 1/16" wide, 1/16" deep, 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.

E. 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.

F. Plank Installation
After the MT-711 adhesive has had sufficient open time, begin laying planks along the designated starting line, working back to the starting wall. Plank ends should be staggered in a random manner so as 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 4". 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.

G. Cutting and Fitting Border Tiles and Planks
Adura® Luxury Floors and Homestead 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.

H. Grouting Adura® Luxury Tile
Certain Adura® Luxury Floor tile and Homestead patterns lend themselves to the design option of applying a specially produced acrylic grout between the tiles. Only Mannington offers three realistic Edge Treatments:
> Rectified Edge: Mimics the look of real cut stone
> Contoured Edge: Rounded edges that provide a softer, attractive visual
> Tumbled Edge: a Natural, irregular edge found in many types of stone.

Specific installation procedures must be followed when grouting Adura® Luxury Tiles.

1. Required tools:
   > Hard-edge rubber grouting float
   > Dense, square-edge sponge
   > Nylon scrubbing pad
   > Plastic spacers
   > Water buckets
   > Tile spacers
2. 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. When installing Adura® ELEMENTS in a modular pattern, the grout line must be exactly 1/8" 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 clean any debris from grout joints. Only Adura® Luxury Grout may be used with Adura® Luxury Tiles. This pre-mixed grout has been developed to bond to Luxury tiles and is flexible and durable. Never use cement-based, epoxy or furan grout. Apply the grout into the tile joints with the narrow edge of the rigid rubber float. Firmly pack each tile joint so 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 20 square feet before cleaning. Use a dampened nylon-scrubbing pad to loosen remaining grout from the tile surface. Wipe alongside of the joint with the nylon pad to avoid removing grout from the joint. Do not use excessive water during clean up. Use the special square edge sponge to remove the excess water and grout haze. Be certain to wipe diagonally across tile joints to avoid dragging grout from the joint. Rinse this sponge frequently and change the clean-up water frequently. Pay particular attention when cleaning Homestead and Adura® tile with tumbled edge, these products require additional care to clean completely. 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 the 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 old.

Figure 1A

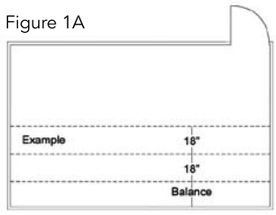
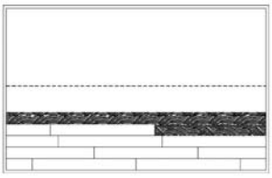


Figure 2A



I. Finishing the Job
Adura® Luxury Floors and Homestead 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. Cover all exposed edges. Use wood molding or vinyl cove base along all walls, cabinet toe kicks, etc. Use transition strips in doorways or where new flooring joins another floor covering. 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® Luxury Floors.

IV. REPAIRING ADURA® LUXURY FLOORS

Although the wear surface of Adura® Luxury Flooring 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 thick 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.

V. CAUTIONS AND MISCELLANEOUS

A. Furniture should be moved onto the newly installed floor using an appliance hand truck over hardboard runways.
B. 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. Non-staining felt protectors are recommended for table and chair legs to help prevent scratching.
C. Floor covering subjected to excessive heat and light is subject to thermal degradation. Use appropriate precautions to minimize potential affects on the floor covering.
D. 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.
E. Use non-staining mats. Rubber may discolor Adura® Luxury Floors and Homestead Coverings.