

GENERAL INFORMATION

All recommendations are based on the most recent available information. The information on this sheet provides general guidelines. For complete details consult Mannington's General Installation Guide or visit our website at www.mannington.com. All instructions and recommendations must be followed for a satisfactory installation.

Good preparation is essential for a trouble-free installation. Do not install Mannington flooring until jobsite testing and subfloor preparations are finished and the work of all other trades is complete. Site conditions must comply with relevant building codes and local, state and national regulations.

Mannington flooring is recommended to use over properly prepared concrete, suspended wood, metal and other suitable substrates. Never install Mannington flooring products over residual asphalt type (Cutback) adhesive as "Bleed Through" may occur.

- Mannington flooring is not suitable for external installation or unheated locations.
- Mannington flooring, adhesive, jobsite and subfloor must be acclimated to a stable condition before installation
- Following installation, foot traffic should be minimized for 24 hours; point loads and rolling traffic for 48 hours and should utilize minimal wet cleaning for 5 days.
- Mannington flooring should remain at a temperature between 55° - 85° F (13° - 29°C) during its service life.
- Insight Plus must be fully adhered using Mannington V-81 adhesive.
- All seams must be sealed by using Mannington Commercial MLG 33 chemical seam sealer.

MATERIAL RECEIVING, HANDLING & STORAGE

1. All floor covering products require care during storage and handling. It is important to store flooring products in a dry, temperature-controlled interior area.
2. Material must be conditioned for at least 48 hours before beginning the installation.
3. The temperature range should be between 65° F and 100° F, and the relative humidity should be controlled and maintained between 30% to 70%.
4. If the material has been stored at colder temperatures, it will need to be unrolled and allowed to relax overnight before proceeding with the installation.
5. Report discrepancies immediately to Mannington at 1 800 241 2262 EXT 2 (Claims) for installation of products installed with visual defects, mixed production runs, or incorrect style claims will not be honored.

JOB SITE TESTING

1. Before jobsite testing, the building envelope must be sealed (walls, roofing, windows, doorways etc., installed).
2. The installation area and materials to be installed shall be maintained at a minimum of 65°F (18.3°C) and a maximum of 85°F (29.4°C) for 48 hours before, during and for 48 hours after completion of the installation. Relative humidity level extremes should also be avoided. General recommended humidity control level is between 35 – 55 %. If a system other than the permanent HVAC source is utilized, it must provide proper control of both temperature and humidity to recommended or specific levels for the appropriate time duration.
3. Test sites must be properly prepared and protected for the duration of testing to achieve valid results.
4. **Surface Flatness for all Subfloors: The surface shall be flat to 3/16 (3.9mm) in 10 ft. (3050 mm) and 1/32" (0.8 mm) in 1 ft (305 mm)**
To check flatness, place a 10 ft straight edge, string, laser level or use another suitable method on the surface and measure the gap.
5. Concrete Subfloors:
 - a) **Concrete subfloors must be finished and cured, free of all sealers, coatings, finishes, dirt, film forming curing compounds, or other substances that may prevent proper bonding of the flooring materials (ACI 302.1 and ASTM F710).**
 - b) Randomly check concrete subfloor for porosity using the drop water test. Place a 1 inch diameter drop of water directly onto the concrete subfloor. If the water droplet does not dissipate within 60 to 90 seconds the subfloor is considered non-porous.
 - c) Concrete subfloors must have a minimum compressive strength of 3000 psi. Concrete subfloors shall not consist of lightweight concrete or gypsum.
 - d) Moisture Testing: Perform either the preferred In-situ Relative Humidity (RH) Test (ASTM F2170) or the acceptable Moisture Vapor Emission Rate (MVER) Test (ASTM F1869). For acceptable moisture limits please refer to the specifications of the adhesive of choice.
 - e) Alkalinity: Must test surface alkalinity (ASTM F710). A 7.0 to 9.0 pH is acceptable.
6. Wood Subfloors and underlayment panels shall have the moisture content tested using a suitable wood pin meter. Readings between the wood subfloor and underlayment should be within 3% and have a maximum moisture content of 14% or less.

MOISTURE SUPPRESSANT SYSTEM

Concrete subfloors that exceed adhesive specifications will require a Moisture Suppressant System. Due to complexities associated with moisture vapor transmission, emissions and movement of soluble salts (alkalinity) in concrete subfloors, we do not offer, recommend, or warrant a specific solution for excess moisture in concrete slabs. However, there are many companies that offer solutions with warranties for excess moisture in concrete slabs.

Mannington Commercial suggests that you reference the current ASTM F710, "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring" and ASTM F301 Standard Practice for Two Component Resin Based Membrane Forming Moisture Mitigation Systems for Use under Resilient Flooring Systems. Contact one or more of the following or other moisture suppressant system suppliers for assistance:

Ardex (724) 203-5000 www.ardex.com

Koester American Corp. (757) 425-1206 www.koesterusa.com

Mapei (800) 426-2734 www.mapei.com

Uzin Ltd. (800) 505-4810 www.ufloorsystems.com

SUBFLOOR PREPARATION

Careful subfloor preparation is vital for an excellent floor appearance and good adhesion. The subfloor must be smooth, firm, flat, clean, dry, and free from defects, and fit for purpose. A suitable smoothing compound should be used to ensure that no irregularities show through to the surface of the finished floor. In all cases, the subfloor must meet the moisture and pH requirements before installation.

Concrete

Below and On-grade concrete subfloors must have a suitable vapor retarder properly installed directly beneath the slab. Always follow manufacturers' written recommendations for the use and installation of their appropriate surface preparation materials.

1. Record and file site conditions, test results and any corrective action(s) taken. It is important to maintain this documentation throughout the warranty period.
2. Subfloor must be clean (free of dirt, sealers, curing, hardening or parting compounds or any substance that may stain or prevent adhesion), smooth, flat, sound, fit for purpose, free of movement, excessive moisture and high alkalinity.
3. Slick surfaces such as power troweled concrete shall be abraded or profiled to allow for a mechanical bond between the adhesive and subfloor.
4. Remove existing resilient floor covering; remove all residual adhesive, paint or other contaminants following RFCI recommended work practice. The use of adhesive removers or solvents in the abatement or removal of existing or old adhesives is prohibited and may void any warranty. **WARNING: ASBESTOS & SILICA** - Refer to the current Resilient Floor Covering Institute (RFCI) document "Recommended Work Practices for Removal of Existing Resilient Floor Coverings" for guidance (www.RFCI.com).

Note: If the flooring contractor elects to install new floor covering over an existing floor covering, the flooring contractor assumes all responsibility as to the suitability and continued performance of the existing floor covering.

1. Perform corrective actions necessary for elevated moisture or high alkalinity conditions.
2. Surface Flatness for all Subfloors: The surface shall be flat to 3/16" (3.9mm) in 10 ft. (3050mm) and 1/32" (0.8mm) in 1 ft (305mm) Bring high spots level by sanding, grinding etc. and fill low spots. Smooth surface to prevent any irregularities or roughness from telegraphing through the new flooring.
3. Leveling and Patching:
 - a. For concrete subfloors, use only high quality Portland cement based materials (minimum 3000 psi compressive strength according to ASTM C109). Mix with water only, do not use latex. Caution: Do not lightly skim coat highly polished or slick power troweled concrete surfaces. A thin film of floor patch will not bond to a slick subfloor and may become a bond breaker causing flooring to release at the interface of the subfloor and patching material. If in doubt, perform a bond test prior to commencing with the installation.

Wood

- b. Wood subfloors require an underlayment (double layer construction) with a minimum total thickness of 1" (25 mm). Use minimum 1/4" (6 mm) thick APA rated "underlayment grade" plywood with a fully sanded face or other underlayment panel that is appropriate for the intended usage. Install and prepare panels and seams according to the manufacturers' instructions. Also refer to ASTM F 1482 Standard Practice for Installation and Preparation of Panel Underlayment's to receive Resilient Flooring.
 - c. Many times wood panel subfloors are damaged during the construction process or are not underlayment grade. These panels must be covered with an appropriate underlayment. Underlayment panels are intended to be used to provide a smooth surface on which to adhere the finished floor covering. It should be understood that underlayment panels cannot correct structural deficiencies.
 - d. Panels intended to be used as underlayment should be specifically designed for this purpose. These panels should have a minimum thickness of 1/4" (6mm). Any panels selected as an underlayment must meet the following criteria:
 - Be dimensionally stable
 - Have a smooth, fully sanded face so graining or texture will not telegraph 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
 - e. Any unevenness at the joints between panels must be sanded to a level surface. Gaps between panels, hammer indentations, and all other surface irregularities must be filled and sanded.
8. Particleboard, chipboard, construction grade plywood, any hardboard and flake-board are not recommended as underlayments for fully adhered installations; all have inadequate uniformity, poor dimensional stability, and variable surface porosity. Mannington Commercial will not accept responsibility for adhered installation over these subfloors. Mannington flooring can be installed over all wood and wood composition panels provided that they are smooth, flat, structurally sound, and free of deflection. This includes plywood, particleboard, oriented strand board (OSB), flake-board, and wafer board. If the surface of the subfloor is not smooth, a 1/4" underlayment should be installed over the subfloor. **In all cases, the underlayment manufacturer or underlayment installer is responsible for any / all underlayment warranties.**

INSTALLATION PROCEDURES

Before starting installation, ensure the following are satisfactorily completed.

- Acclimation: The installation area and materials to be installed shall be maintained at a minimum of 65°F (18.3°C) and a maximum of 85°F (29.4°C) for 48 hours before, during and for 48 hours after completion of the installation. Relative humidity level extremes should also be avoided. General recommended humidity control level is between 35 – 55 %. If a system other than the permanent HVAC source is utilized, it must provide proper control of both temperature and humidity to recommended or specific levels for the appropriate time duration.

- Flooring Materials: Check quantity of flooring and adhesive are sufficient for area to be installed. Check for visual defects before installation. Installation of flooring acknowledges acceptance of materials. Report discrepancies immediately to Mannington at 1 800 241 2262 EXT 2 (Claims) for installation of products installed with visual defects or incorrect style will not be honored.
- Expansion joints, isolation joints, or other moving joints are incorporated into concrete floor slabs in order to permit movement without causing random cracks in the concrete. These joints must be honored and not be filled with underlayment products or other materials, and floor coverings must not be laid over them. Expansion joint covering systems should be detailed by the architect or engineer based upon intended usage and aesthetic considerations.
- Surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities shall be filled or smoothed with high quality Portland cement based patching or underlayment compound. Patching or underlayment compound shall be moisture, mildew, and alkali-resistant, and shall provide a minimum of 3000 psi compressive strength after 28 days, when tested in accordance with ASTM C109 or ASTM C472, whichever is appropriate.
- Subfloor Preparation: Make sure all surfaces to be covered are completely clean, dry and smooth and that all necessary subfloor preparation has been properly completed and documented.
- Inspect Substrate: Perform final acceptance inspection of substrate.
- Adjacent Surfaces Protection: Protect adjacent work areas and finished surfaces from damage during product installation.
- Flooring Protection: Mannington flooring should be the last material installed to prevent other trades from disrupting the installation and adhesive set-up or damaging the floor.

Start of flooring installation indicates acceptance of current subfloor conditions and full responsibility for completed work.

CUTTING & FITTING

Mannington Commercial sheet products are flexible and will handle easily when cutting and fitting. This product characteristic enables the installer to fit the material using freehand knifing techniques.

- If the job site is complex and requires a precise fit, use pattern-scribing techniques.
- The material may also be fit using direct scribing techniques.
- Once the material has been fit, it is necessary to tube or lap back half of the sheet to expose the under floor for adhesive application.
- Take care when folding the material back. Always fold the material in a wide radius to avoid sharp kinks and creases which may cause breaks in the product.

ADHESIVES: Mannington Commercial recommends the following adhesive for the installation of Insight Plus. Only these adhesives should be used. Other adhesive may not provide adequate performance and could result in a failure.

V-81 Premium Latex Adhesive: Premium latex adhesive for Mannington Commercial-grade resilient sheet products having a felt back. Moisture limits are 5 lbs MVER or 80% Rh. Spread rate for porous substrates approximately 135 sq ft per gallon; Non-porous substrates approximately 180 sq ft per gallon. See adhesive label and/or specification sheet for details.

APPLYING ADHESIVE

- Fully adhere Mannington Commercial resilient sheet flooring to an approved under floor.
- After you have trimmed the material to fit the room, tube or lap it back to expose the under floor. Apply adhesive with the recommended notched trowels found in the adhesive label.
- Spread adhesive over 100% of the exposed subfloor, leaving no gaps or puddles.
- Maintain uniform coverage by keeping the trowel clean and properly notched.
- In most cases it is advisable to give the adhesive sufficient open time. Open time allows the moisture to flash off the adhesive, permitting the adhesive to develop more body and immediate tack. Open time is always determined by subfloor porosity and atmospheric conditions. Be certain to provide ample open time on non-porous subfloors and at seam lines.
- After the adhesive has begun to tack-up, roll the sheet forward into the adhesive to avoid trapping air. Do not drop or flop the material into the adhesive. Roll the floor covering with a three-section, 100 lb (or heavier) floor roller in both directions.
- After the first half of the sheet has been adhered and rolled, fold back the second half and repeat the procedure.

Important note: Mannington adhesives are specifically formulated to be fully compatible with our product chemistry and to maximize the performance of Mannington flooring. Using substitutes or failing to use Mannington adhesives as recommended can shorten product life, cause installation failure, and/or lead to a chemical reaction such as hydrolysis, which will permanently damage the product and void **all applicable warranty coverage**.

DOUBLE-CUTTING SEAMS

1. If required to seam Insight Plus products, provide additional length on the second and succeeding sheets to allow for proper pattern alignment.
2. Position Insight Plus floors using the "Reverse" or "Do not Reverse" method.
3. To minimize pattern run-out, the floor covering should always be laid out minimizing the length of the seams.
4. Cut material to the appropriate sizes the day before the actual installation.
5. Store the material at recommended temperatures.
6. Roll these cuts tightly, face-out around a core, maintaining as equal a diameter as possible.
7. Cut and install the pieces in sequential order. If the job requires more than one roll of floor covering, make sure all rolls are marked with the same shade letter and that the roll serial numbers are in consecutive order.
8. After aligning the pattern and providing adequate overlap, adhere the sheets of material up to the predestinated dry zone.
9. Cut the seam using a utility knife with a new, sharp blade. Using a steel straightedge, cut through both sheets of flooring at a 90° angle to the floor covering.
10. Once you have cut the seam, remove the selvage and fold back the sheets to expose the dry zone.
11. Apply adhesive with a properly notched trowel across the dry zone.

12. Allow the adhesive to develop tack, and lay the sheet that was on the bottom during the cutting process into the adhesive first.
13. Then place the top sheet into the adhesive; avoid scraping adhesive into the cut. Roll the area with the three-section floor roller.
14. Bring seam edges level with the use of a hand seam roller.
15. Thoroughly clean the seam area and wipe dry with a damp cloth.

SEAM SEALING

- Before sealing Insight Plus, make certain all seams are clean, dry, and free of adhesive contamination.
- Use Mannington's MLG 33 seam sealer
- Part B, which contains the de-glossing agent, must be shaken vigorously before blending with Part A.
- Empty entire contents of Part A and B into the supplied applicator bottle after securing the VST Tip to the application bottle; gently shake the bottle to mix the ingredients.
- After mixing, the bottle should stand until all trapped air bubbles have dispersed which is typically 15 minutes.
- Before using, check the flow through the applicator on a scrap piece of flooring.
- Insert the fin into the seam cut and lightly squeeze the bottle to apply a uniform bead of sealer, approximately 1/8" wide, centered on the seam cut. It is crucial that the seam sealer penetrates the full thickness of the seam cut to ensure proper chemical bond.
- Do not wipe the sealer from the surface of the flooring.

NOTE: Never use heat welding on Mannington resilient product Insight Plus.

SEAM COATER PEN

The Quantum Guard HP Pen is a quick and easy way to provide topical protection to chemically welded seams in Mannington Commercial sheet vinyl products that have the patented high performance urethane Quantum Guard HP wearlayer. Before use, shake vigorously to blend the ingredients, remove the cap, daub the felt tip marker a few times to begin the flow of the floor finish and then coat over the seam area with a thin, even application in high traffic areas. It is a good practice to apply two or three coats of finish from the Quantum Guard pen. Be certain that the finish is thoroughly dry before applying additional coats. Each Pen will cover approximately 300 lineal feet of seam. The Quantum Guard HP Pen coating is not intended to provide additional seam strength or integrity. It is a "coating" that helps retain seam appearance initially, and when in service.

FINISHING & MAINTENANCE

- Protect all exposed edges of floor covering with trim or restrictive moldings.
- Remove all scraps and trash from the jobsite.
- Remove all adhesive smears or residue from the surface of the floor covering with a clean cloth dampened with mineral spirits.
- After 24 hours of the completed installation, thoroughly clean the floor.

REPAIRS

Replacing Damaged Areas

- If possible, the floor covering repair piece should come from the original installation. Typically, consumers retain leftover pieces from the original installation or attic stock.
- Tape the repair piece over the damaged area, and double-cut using a steel square as a guide.
- Remove the damaged area, and scrape the subfloor clean. Apply adhesive on the back of the repair piece and insert into the flooring.
- Roll the repair piece with a hand seam roller.
- Use the appropriate Mannington seam sealer to seal all cuts.

FLASH COVING RESILIENT SHEET PRODUCTS

All Mannington resilient sheet goods can be installed using the flash coving method. This edging technique, often preferred by hospitals and other health care facilities, is a process of extending the resilient flooring up the wall to create a wall base. Normally, the floor covering is extended up the wall to a height of 4" to 6". Coving is popular with end users because it eliminates the need for a floor/wall juncture, and it is also easy to maintain.

As with all resilient installations, proper preparation of the work area is critical to the success of the installation. Clean the under floor carefully, and make certain it is structurally sound. The juncture of the floor and wall also needs special preparation before beginning a coved installation.

Follow the instructions below to install the cove cap and the cove stick (cove fillet strip).

- Measure desired height for the cove caps at each corner and strike a chalk line.
- Attach aluminum or vinyl cove caps at this height using flathead nails with a hammer or brad pusher, or use contact cement.
- Always miter inside and outside corners in the cap. When mitering the outside corners, file the ends of the cap smooth. Use a specially designed miter tool with interchangeable die sets to make corners on the cove cap. This tool eliminates sharp edges at the outside corners.
- Cove sticks support the resilient flooring as it is flashed up the wall eliminating the chance of puncturing the resilient flooring. Firmly secure plastic or wood cove sticks where the floor meets the wall with adhesive or nails.
- Use nonstaining nails and set the flush with the stick. The stick should have a minimum radius of 1 1/8" and be precisely mitered at all inside and outside corners.
- Provide a smooth transition in the door casings and other areas where the coving ends by cutting back to the cove stick.

- Tack the scribing felt to the wall with brad type nails before beginning to scribe it. Use a combination square, a small metal ruler, or a 1" piece of resilient to pattern scribe the felt.
- Fit the scribing tool up inside the cove cap, and scribe the felt by sliding the tool along the cap as you mark the felt with a pencil.
- Scribe and cut the outside corners of the felt using a utility knife and the inside corners of the felt using dividers.
- After scribing the entire work area, position the pattern squarely on the resilient sheet flooring and transcribe the pattern with pencil dividers. Be careful when cutting the material on the inside and outside corners.
- Dry fit the material. Inside corners should fit snug but not be forced into position. Make sure to always position the shorter side first and then the longer side.
- Gently pull material away from the wall. Apply the appropriate adhesive to the floor, wall, cove cap, and cove stick.
- Allow the appropriate amount of open time, determined by what adhesive is used. Fit the material back into place. Remember to always position the shorter side first.
- Roll the flooring with the appropriate size roller (use a hand roller on coved areas). Apply the appropriate seam sealer at all seams, following the recommended directions for the resilient floor being installed.
- The most demanding aspect of a coved installation is forming the outside corners. Fill outside corners with a "boot" type plug, rather than a V-type plug, on the least visible wall. The plugged corner fill piece should extend back at least several inches from the corner. The seam of the floor should be below the cove stick. Using an underscriber, scribe the back of the plug at the corner. This will mark the pattern of the corner on the plug.
- Cut along the scribed line at a 45° angle with a curved trim knife or a utility blade while holding the plug steady with a metal ruler and your other hand. When cutting, leave the face of the plug longer than the back.
- Check the fill piece for an accurate fit. Make any minor adjustments to the plug as necessary to fill the space correctly. Remove the fitted fill piece and apply the appropriate adhesive. Reposition the fill piece and apply seam sealer.