

Heterogeneous Sheet Flooring Installation Guidelines

GENERAL INFORMATION

All recommendations are based on the most recent available information. The information in this sheet provides general guidelines. For complete details, consult the Mannington Commercial General Installation Guide or visit our website manningtoncommercial.com. All instructions and recommendations must be followed for satisfactory installation. These installation specifications are for fully adhered installations of Mannington Commercial heterogeneous products: Bloom®, City Hub®, Color Anchor (Arc), The Discovery Collection®, Entwined®, Paradigm® II, Realities® III and Vivendi® II.

Good preparation is essential for a trouble-free installation. Do NOT install Mannington Commercial flooring until job site 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 Commercial flooring is recommended for use over properly prepared concrete, suspended wood, metal and other suitable substrates.
- Never install Mannington Commercial flooring over residual asphalt type (cut back) adhesive as "Bleed Through" may occur.
- Mannington Commercial flooring is not suitable for external installation or unheated locations.
- Cut order pieces should be rolled face out on a core to take to the job-site. Otherwise, the roll will flatten out or "oval," making it difficult to get the floor covering to lay flat when unrolled.
- Never install Mannington products over padding or crumb rubber. These are not acceptable and are unsuitable as a substrate for installation.
- Mannington Commercial flooring, adhesive, job site 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 utilize minimal wet cleaning for 5 days.
- Mannington Commercial flooring should remain at a temperature between 65°-85°F (18°-29°C) during its service life.
- Mannington Commercial flooring must be fully adhered using the appropriate Mannington Commercial adhesive.
- All seams must be sealed by either using Mannington Commercial chemical seam sealers or heat welded with Mannington solid color weld rods.
- Mannington Commercial requires the flooring product to be inspected prior to installation for proper style, color, order quantity and potential defects. Installation of flooring acknowledges acceptance of material.
- Mannington Commercial does not recommend mixing dye lots. Predetermined and approve natural breaking points such as doorways or in areas where dye lot changes would be less noticeable and out of the main focus areas. Always get prior approval and sign off from the owner before proceeding. Mannington does not warranty the visual aesthetics where mixed dye lots are merged.

MATERIAL RECEIVING, HANDLING & STORAGE

- All floor covering products require care during storage and handling. It is important to store flooring products in a dry, temperature-controlled interior area..
- Material must be conditioned for at least 48 hours before beginning the installation.
- The temperature range should be between 55°-100°F, and the relative humidity should be controlled and maintained between 30-70%.
- 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.
- Report discrepancies immediately to Mannington Commercial at 800.241.2262 ext. 2 (Claims), as installation of products installed with visual defects, mixed production runs or incorrect styling will not be honored.

JOB SITE TESTING

1. Before job-site 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 maximum of 85°F (29.4°C) for 48 hours before, during and 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' (3050 mm) and 1/32" (0.8 mm) in 1' (305 mm). To check flatness, place a 10' straight edge, string, laser level or another suitable method on the surface and measure the gap.
5. Concrete Subfloors:
 - 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.
 - Randomly check concrete subfloor for porosity using the drop water test. Place a 1" diameter drop of water directly onto the concrete subfloor. If the water droplet does not dissipate within 60-90 seconds, the subfloor is considered non-porous.
 - Concrete subfloors must have a minimum compressive strength of 3,000 psi. Concrete subfloors shall not consist of light weight concrete or gypsum.
 - 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) as needed. For acceptable moisture limits, please refer to the specifications of the adhesive choice.
 - All tests should be documented and results saved.
 - Alkalinity: Must test surface alkalinity (pH) as per ASTM F710. Refer to adhesive information for pH limits
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 warranty 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.

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Mannington Commercial suggests that you reference the current ASTM F710, "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring" and ASTM F3010 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 (800) 505-4810 www.us.uzin.com
- Schönox (855) 391-2649 www.hpsubfloors.com

SUBFLOOR PREPARATION

Careful subfloor preparation is vital for an excellent floor appearance and good sheet adhesion. The subfloor must be smooth, firm, flat, clean, dry, 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. For a porous subfloor (concrete or wood) that has high pH and/or needs a primer, use Mannington Commercial Universal Primer.

Mannington Commercial Universal Floor Primer / pH Blocker is an acrylic latex solution made to neutralize excess alkali and is also recommended as a primer to prevent over absorption of adhesive to ensure a better bond. Gypsum topped or patched areas must receive a full application of Mannington Commercial Universal Floor Primer, as well as any subfloor that is porous, gritty, chalky, or dusty. Porous subfloors with chemical pH above 9 may require a second application. Mannington Commercial Universal Floor Primer can be applied by pouring directly on the subfloor and spreading evenly with a broom or paint roller. Primer can also be applied with a garden sprayer, airless rig, or similar spray equipment. Allow the primer to dry completely prior to second application or before applying adhesive. Primer is dry if there is no transfer when touched. Coverage is approximately 350-400 square feet per gallon.

Concrete Subfloors:

Below and on-grade concrete subfloors must have a suitable vapor retarder properly installed directly beneath the slab. Always follow manufacturer's 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. All marking paint, permanent markers, crayon and any other potential stainants must be removed by grinding from the concrete surface before installing the flooring, nor should the back of the flooring ever be marked to prevent "bleed through."
4. Slick surfaces such as power troweled concrete shall be abraded or profiled to allow for a mechanical bond between the adhesive and subfloor.
5. Remove existing resilient sheet 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.

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6. Perform corrective actions necessary for elevated moisture or high alkalinity conditions.
7. Surface Flatness for All Subfloors: The surface shall be flat to 3/16" (3.9 mm) in 10' (3050 mm) and 1/32" (0.8 mm) in 1' (305 mm). 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.
8. Leveling and Patching: For concrete subfloors, use only high-quality Portland cement based materials (minimum 3,000 psi compressive strength according to ASTM C109). Holes, grooves and other depressions must be filled. 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 Subfloors:

1. General: Wood subfloors require an underlayment (double layer construction) with a minimum total thickness of 1" (25mm). Use minimum 1/4" (6 mm) thick APA rated "underlayment grade" plywood with a fully sanded face or other underlayment that is appropriate for the intended usage. Install and prepare panels and seams according to the manufacturer's instructions. Also refer to ASTM F1482 Standard Practice for Installation and Preparation of Panel Underlayments to Receive Resilient Flooring.
2. Underlayment: 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. Particleboard, chipboard, construction grade plywood, OSB, flake-board, and wafer board are not recommended as underlayments. All have inadequate uniformity, poor dimensional stability, and variable surface porosity. Mannington Commercial 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" (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

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.

Existing Floor Coverings

To achieve maximum product performance, it is always best to remove existing floor covering and prepare the substrate before installing new products in commercial settings. In the case where removal of the existing floor covering is not an option, the existing flooring must be covered with Portland Based Embossing leveler or other appropriate porous underlayment. Existing flooring can adversely affect the performance properties of the new flooring, such as indentation or adhesive bond. If you choose to install over an existing floor, please refer to the existing floor covering section of our Mannington Commercial General Installation guide for a list of things to consider.

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.

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.

INSTALLATION

Before starting the flooring 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, and continue to maintain the flooring at a temperature between 55°F - 85°F during its service life. 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 that the 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 to Mannington Commercial at 800.241.2262 ext. 2 (Claims), as 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 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, other non-moving joints, and other irregularities** shall be filled or smoothed with high quality Portland cement based patching or underlayment compound for filling or smoothing, or both. Patching or underlayment compound shall be moisture, mildew, and alkali-resistant, and shall provide a minimum of 3,000 psi compressive strength after 28 days, when tested in accordance with ASTM C109 or ASTM C472, whichever is appropriate.
- **Crumb rubber underlayments** are not acceptable and are unsuitable as a substrate for installation.
- **Subfloor Preparation:** Ensure 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 finish surfaces from damage during product installation.
- **Flooring Protection:** Mannington Commercial flooring should be the last material installed to prevent other trades from disrupting the installation and adhesive set-up or damaging the floor.

Cutting and Fitting

Mannington Commercial sheet products are flexible and will handle easily when cutting and fitting.

- When cutting and storing the flooring pieces, remember that each piece must be installed in sequential order. If you need more than one roll of floor covering, make sure the roll numbers are in consecutive order.
- It is imperative that the material, adhesive and job site be maintained at a minimum temperature of 65°F or a maximum of 85°F 48 hours before, during and 48 hours after installation.
- If the material has been stored at colder temperatures, it will be necessary to unroll the material and allow it to relax over night before proceeding with the installation.
- If the job site is complex and requires a precise fit, traditional pattern scribing techniques should be used.
- The material may also be fit using direct scribing techniques. Once the material has been fit, it will be necessary to tube or lap half of the sheet back to expose the underfloor for adhesive application.
- Care should be taken 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.

Installation Guidelines

Adhesive - See adhesive specification and/or label for additional details

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

- 1. Mannington Commercial M-Guard V-88 / Amtico PSA Adhesive:** Moisture resistant transitional pressure sensitive adhesive. The maximum moisture level for renovations or older slabs must not exceed moisture tolerances of 8 lbs maximum MVER, 90% relative humidity and a pH of 10. The maximum moisture level for new construction concrete is 10 lbs MVER, 95% RH and 12 pH. M-Guard V-88 adhesive will not correct pre-existing moisture problems in older concrete subfloors. V-88 should be applied with 1/16" wide x 1/32" deep and spaced 1/32" apart U notched trowel for porous substrates and a 1/16" wide x 1/32" deep and spaced 5/64" apart U notched trowel for non-porous substrates. Porous spread rate approximately 250 sq ft per gallon. Non-porous spread rate 350 sq ft per gallon. For non-porous substrates adhesive must dry completely. See adhesive label for details. **NOTE: When installing sheet flooring using V-88, trowel the adhesive then back roll with a short-nap paint roller to minimize the possibility of trowel ridge telegraphing.**
- 2. MoistureLoc / RP-18 Adhesive:** One component, 100% solids, cross-linking modified silane polymer-based adhesive. No Moisture Testing is Required for Homogeneous & Heterogeneous Resilient Sheet when installed with MoistureLoc Adhesive provided the slab meets ASTM F710 including the presence of an intact moisture vapor retarder per ASTM E1745 (Class B Minimum), is in direct contact with the concrete slab, no standing water, no free liquids present, no evidence of moisture staining, and no hydrostatic pressure, for porous installations only. The pH limit is 12. For Homogeneous & Heterogeneous Resilient Sheet in all other conditions or for non-porous installations, installed with MoistureLoc the maximum moisture level of concrete must be no greater than 10 lbs /1000 sq ft /24 hours (2.27 kg /92.9 sq m /24 hours) as determined by a calcium chloride test according to ASTM F1869 test method and/or 95% RH as determined by ASTM F2170 in situ relative humidity test. If both tests are performed the RH test is the qualifying standard. The pH limit is 12.
- 3. Mannington Commercial V-95 Adhesive:** Solvent-free two-component, epoxy for high-performance indoor installations. V-95 has good resistance to humidity, water, weather, and heat as well as outstanding adhesion and elasticity at low temperatures. You may use V-95 on all approved wood underlayments and on, above, or below-grade fully cured concrete substrates. V-95 must also be used when installing over nonporous substrates, or in areas subject to excessive heat or cold, areas where direct sunlight, surface (topical) moisture, high point loads, rollings loads or dragging force would be a concern. Examples include but are not limited to entryways, around drains, spas, shower rooms, saunas, ramps, OR's, plate glass windows exposed to sunlight, under hospital beds. Moisture limits are per ASTM F-1869 5 lbs maximum MVER or ASTM F-2170 85% maximum relative humidity. Maximum pH of 9. V-95 should be applied with a 1/16" wide x 1/32" deep and spaced 1/32" apart. Spread rate approximately 185–245 sq ft per gallon.
- 4. XpressStep Spray Adhesive for Sheet Vinyl:** Water based spray adhesive recommended for the installation over porous and nonporous substrates. May be used under rolling loads. These areas require double coverage application. XpressStep is not approved for abusive conditions such as heavy point loads, areas subject to dragging force, direct sunlight or where topical moisture would be a concern. Moisture limits are 8 lbs MVER or 95% relative humidity. Maximum pH of 11. Spread rate approximately 150 – 185 sq ft per can.

IMPORTANT NOTE: Mannington Commercial adhesives are specifically formulated to be fully compatible with our product chemistry and to maximize the performance of Mannington Commercial flooring. Using substitutes or failing to use Mannington Commercial adhesives as recommended can cut-short product life, cause installation failure, and/or lead to a chemical reaction, such as hydrolysis, which will permanently damage the product and will void all applicable warranty coverage. Mannington Commercial adhesives are not designed to be used over floors with moisture vapor emissions from water or intrusion or hydrostatic pressure.

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Adhesive Application

After the material has been trimmed to fit the room, it should be tubed or lapped back to expose the underfloor.

1. M-Guard V-88 / Amtico PSA can be used on both porous and non-porous substrates. When installing heterogeneous sheet vinyl, trowel the adhesive then back roll with a short-nap paint roller to minimize the possibility of trowel ridge telegraphing.
2. V-95 two-component epoxy adhesive must be used on all non-porous substrates and in areas demanding high performance.
3. V-95 must be used over non-porous substrates, under hospital beds, operating room tables, heavy rolling loads, areas subject to standing water, topical moisture or where high performance is needed.
4. V-95 has low initial tack, it may be necessary to apply weights, particularly in the seam area, until adhesive set.
5. When using V-95, the flooring should be rolled with a 100 lb. floor roller within one hour after the flooring is installed.
6. The adhesive must be spread over 100% of the exposed subfloor, leaving no gaps or puddles. Uniform coverage can be maintained by keeping the trowel clean and properly notched.
7. After the adhesive has been applied, roll the sheet forward into the adhesive to eliminate trapping air.
8. When using XpressStep Spray Adhesive proper floor prep and correct spray pattern rekey for best performance. See detailed instructions on the can.
9. Do not drop or flop the material into the adhesive.
10. Roll the floor covering with a three-section 100 lb. or heavier floor roller in both directions.
11. After the first half of the sheet has been adhered and rolled, fold back the second half and repeat the procedure.
12. Wait 1–2 hours then re-roll again to insure full contact and to remove any trapped air.

Seaming

Heterogeneous products are available in multiple widths. Choose the product width to eliminate unnecessary seams and minimize waste.

12' & 9' width • When seaming 12' and 9' heterogeneous products the seam method required is Do Not Reverse.

6' width • When seaming 6' (split rolls) heterogeneous products, match center to center or side to side. Rolls will be labeled on the back to show edge side. This may require sheets to be reversed for 6' heterogeneous products.

The construction of heterogeneous flooring requires that the seams be cut using the trace cutting technique.

1. The selvage edge of one sheet should be straight-edged approximately 3/8" from the edge.
2. Position the sheets in such a manner that the straight-edged top sheet will overlap the untrimmed bottom sheet and maintain the pattern match.
3. Carefully trace along the edge of the top sheet with a utility knife with a sharp blade or a cutting tool designed for this purpose.
4. Remove the trimmed selvage edge of the bottom sheet.
5. Once the seams are cut, weigh the sheets and tube or lap back the sheets to expose the underfloor.
6. Apply the appropriate Mannington adhesive using the correctly notched trowel over 100% of the exposed underfloor.
7. After providing sufficient open time for the adhesive, lay the straight-edged sheet into the adhesive first and then lay in the second sheet.
8. If needed, pull side seams tight with blue painters or masking tape.
9. Remove tape immediately after the adhesive sets or the next day. Do not use aggressive tapes such as duct tape or extreme hold tapes.
10. Roll the adhered areas to within about 6" of the seam line with a 100 lb. three-section floor roller.
11. Roll the seam area with a hand seam roller to bring the seam edges level. Re-roll the entire adhered area with the 100 lb. floor roller.
12. Thoroughly clean the seam area and wipe dry.

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Chemical Seam Sealing Heterogeneous Flooring

If the seams are to be chemically welded, use Mannington Commercial MLG-33 Seam Sealer.

1. Thoroughly clean the seam of all adhesives, dirt, etc., before sealing it.
2. Fill the applicator bottle at least 2/3 full of sealer. Tightly screw on the applicator tip.
3. Before using, check the flow through the applicator on a scrap piece of flooring.
4. 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 a proper chemical bond.
5. Do not wipe the sealer from the surface of the flooring.

Heat Welding Heterogeneous Flooring

Heat welding is the preferred method for sealing seams. Heat welding is the act of fusing resilient sheets together with a heated thermal vinyl weld rod. Mannington's weld rod is available on spools and is designed to fit the most popular heat welding guns. Mannington offers a broad range of solid rod colors to coordinate with all our heat-weldable flooring.

To achieve good sealing results, knowledge of proper heat welding procedures is important. A repeated stop/start method will produce rough uneven seams, creating an unpleasant appearance.

Temperature and speed are critical to the success of any heat welding application. If the welding gun is set too hot or applied too slowly, the flooring is likely to burn, char, or craze the surface next to the weld rod. If the welding gun is not hot enough or applied too quickly, the weld may have poor fusion.

1. After waiting 24 hours for the adhesive to dry, use a power-grooving machine or hand groover to cut a groove the entire length of the seam. Adjust the machine so the depth of the groove is about two thirds of the product's thickness. Never go all the way through material. Maintain a 3-sided weld (2 sides and bottom). Stop machine grooving several inches away from the wall.
2. Extend the groove to the wall using a hand-grooving tool.
3. Prior to heat welding, allow the flooring adhesive 24 hours to completely dry. Preheat the welding gun and determine proper temperature setting and router depth by practicing on scrap pieces of flooring. Make certain the speed nozzle is clean and free of obstructions.
4. A 4mm round narrow heat sensitive tip designed for welding urethane finish flooring is required.
5. Insert the welding rod into the tip allowing approximately 3" to extend out. Arrange welding rod in such a manner that it will not interfere with the application. Be careful when inserting the welding rod because the nozzle is extremely hot.
6. Allow the welded rod to cool, and then groove the installed rod with a hand-grooving tool. Grooving the rod makes it possible to achieve complete seam coverage when you start seaming from the opposite direction to finish the job.
7. Reposition yourself and your tools at the back wall and continue welding into the grooved rod just made so there are no missed spots in the seam. It is important to achieve a smooth, continuous coverage of the rod into the seam.
8. After the welded rod shrinks and cools for approximately 30 minutes, trim down the excess by proceeding with the following steps:
 - a. Remove approximately two thirds of the exposed welded rod. Use a skive knife and trim plate to trim off the top layer. There should be about 1/32" excess weld rod projected above the surface of the resilient.
 - b. Trim the welded rod level until it is flush with the surface of the resilient sheet. Use a properly sharpened skive knife without the trim plate; place at a 5° to 10° angle to the floor surface. Keep the sharpened side down against the welded rod. Be careful not to cut or dig into the resilient sheet surface. Inspect the finished seam carefully and remove any missed high spots with a spatula knife. If there are low spots, the seam weld may require re-application of the weld rod.

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9. Once the entire area has been trimmed and inspected, smooth out the completed seam by applying heat from the welding tool. Remove the speed nozzle and use the same heat setting to direct the flow of heat from the gun along the length of the seam.
10. For optimal performance, apply a uniform coating of the Quantum Guard Elite® Seam Coater Pen to the weld rod. This protective coating will keep the seam area clean and provide optimal performance. See details below.

Seam Coater Pen

The Quantum Guard Elite® Pen is a quick and easy way to provide topical protection to heat welded and chemically welded seams in Mannington Commercial resilient sheet products that have the patented high performance urethane Quantum Guard® HP or Elite wear layer. Before use shake vigorously to blend the ingredients, remove the cap, dab 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 even three coats of finish from the Quantum Guard Elite® pen. Just 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 Elite® 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.

Flash Coving

All Mannington Commercial resilient sheet flooring 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 sheet flooring up the wall to create wall base. Normally, the floor covering is extended up the wall to a height of 4" to 6". Coving is specified with end users because it eliminates the need for a floor/wall juncture and is easy to maintain. Coving is required in most health care applications.

As with all resilient installations, proper preparation of the work area is critical to the success of the installation. Clean the underfloor 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).

1. Measure desired height for the cove caps at each corner and strike a chalk line.
2. Attach aluminum or vinyl cove caps at this height using flathead nails with a hammer or brad pusher or use contact cement.
3. 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.
4. Firmly secure plastic or wood cove sticks where the floor meets the wall with adhesive or nails. Cove sticks support the resilient flooring as it is flashed up the wall, eliminating the chance of puncturing the resilient flooring.
 - a. The stick should have a minimum radius of 1 1/8" and be precisely mitered at all inside and outside corners.
 - b. Use non-staining nails and set flush with the stick.
5. Provide a smooth transition in the door casings and other areas where the coving ends by cutting back to the cove stick.
6. 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.
 - a. 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.
 - b. Scribe and cut the outside corners of the felt using a utility knife and the inside corners of the felt using dividers.

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7. 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.
8. 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.
9. Gently pull the material away from the wall. Apply the appropriate adhesive to the floor, wall, cove cap, and cove tick.
10. 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.
11. 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 under scriber, scribe the back of the plug at the corner. This will mark the pattern of the corner on the plug.

1. 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.
2. Check the fill piece for accurate fit. Make any minor adjustments to the plug as necessary to fill the space correctly.
3. Remove the fitted fill piece and apply the appropriate adhesive. Reposition the fill piece and apply seam sealer.

FINISHING THE JOB

- Protect all exposed edges of the floor covering with trim or moldings, wood or vinyl cove base along all walls, cabinet toe kicks, etc.
- Use metal strips in doorways or where new flooring joins another floor covering.
- Caulk along tubs, toilet bowls, etc.
- Remove all adhesive smears or residue from the surface of the floor covering with a clean cloth dampened with mineral spirits.
- 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 heterogeneous flooring products.

CAUTIONS AND MISCELLANEOUS

- Do not place heavy items on newly installed floor covering for at least 48 hours after completion of the installation. Heavy furniture should be equipped with suitable non-staining, wide-bearing casters.
- Furniture should be moved onto the newly installed floor using an appliance hand truck over hardboard runways.
- Floor covering subjected to excessive heat and light exposure is subject to thermal degradation. Use appropriate precautions to minimize potential affects 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.
- Use non-staining walk-off mats at building entrances to remove excess dirt and grit from foot traffic-rubber can discolor vinyl floor covering.
- Radiant Heat: Mannington Commercial resilient sheet flooring can be installed over radiant heating (hydroponic) systems. The maximum temperature of the subfloor surface must not exceed 85°. Before installing flooring products over newly constructed radiant-heating system, set the thermostat to a comfortable room temperature for the installation. For existing systems, the system must be switched off for a minimum of 48 hours before, during and 48 hours after flooring installation.

Installation Guidelines

- **Direct Sunlight:** Installations in areas where there is heavy direct sunlight exposure for long periods of times should utilize window treatments and/or Mannington Commercial's V-95 two-part urethane adhesive in these areas.
- **Protecting New Installations:** New installations must be protected while the adhesive cures. Early foot traffic, point, or rolling loads can cause adhesive displacement or breaking of the bond between the adhesive and the sheet or substrate. For moving heavy loads over installed flooring, use runner boards e.g. Masonite or plywood to reduce the risk of indentation, gouging, shifting or movement of flooring.
- **Protective Coverings** should be breathable, non slippery, capable of preventing debris and abuse from damaging the surface of the flooring installation. Any protective covering that has an adhesive or tacky back applied is not suitable.
- Do not tape protective covering to the installed floor. In any instance where tape is applied to the flooring any claims regarding residue or removal will not be honored.

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 for attic stock.

1. Tape the repair piece over the damaged area and double-cut using a steel square as a guide.
2. Remove the damaged area and scrape the subfloor clean. Apply adhesive on the back of the repair piece and insert into the flooring.
3. Roll the repair piece with a hand seam roller.
4. Use the appropriate Mannington Commercial seam sealer to seal all cuts.

For more information, please contact Mannington Commercial Technical Services at 800.241.2262 ext. 3 or visit manningtoncommercial.com.