



Before proceeding, check [www.shannonspecialtyfloors.com](http://www.shannonspecialtyfloors.com) website to obtain and review the current installation guide, maintenance guide and other relevant documentation. This material handling & subfloor preparation guide covers Shannon Specialty Floors Tuf Stuff™ and Teknoflor® branded products.

**\*FAILURE TO FOLLOW INSTRUCTIONS MAY VOID WARRANTY\***

**MATERIAL RECEIVING, STORAGE & HANDLING**

- Upon receipt, immediately remove all shrink wrap and confirm materials are the correct color, style and quantity for each dye lot with consecutive roll numbers for sheet goods. Carefully check all materials for shipping damage. Note any damage on bill of lading when signing for delivery. Visible damage not reported on bill of lading to trucking company is your responsibility.
- Report discrepancies immediately to Shannon Specialty Floors Customer Service at (414) 771-9166
- Store all flooring products and accessories in a dry interior area maintained between 55°F and 85°F (13°C and 29°C). Using outside temporary storage and other uncontrolled storage locations may result in unintended installation issues including bond failure, gapping or buckling and is not covered under the product warranty.
- Handle materials with care to prevent unintended damage.
- SHEET FLOORING - Once received, unstrap all rolls from pallet and store upright with capped end down. This helps prevent distortion, and compression.
- TILE & PLANK FLOORING - Keep all tile and plank flooring stored on pallet with cartons squarely stacked one on top of another. Do not stack more than 12 cartons high and do not double stack pallets.

**JOBSITE EVALUATION & PREPARATION**

Proper jobsite evaluation and subfloor preparation are key to a successful and trouble free installation. Do not install Shannon Specialty Floors flooring products without performing a thorough jobsite evaluation and until all non-conforming conditions are rectified. Refer to the current ASTM F710 "How to Prepare Concrete Substrates to Receive Resilient Flooring" as well as current relevant American Concrete Institute (ACI) specifications and relevant building codes. All subfloors must be tested for moisture and surface pH and confirmed within specification before proceeding. It is strongly advised to have moisture and pH testing conducted by an independent ICRI (International Concrete Restoration Institute) certified contractor.

JOBSITE CONDITIONS AND TESTING MUST BE PROPERLY PERFORMED AND DOCUMENTED BEFORE INSTALLATION. CONFIRM PROJECT MEETS ALL PRODUCT AND ADHESIVE REQUIREMENTS AND SPECIFICATIONS PRIOR TO PROCEEDING. IN ORDER TO FILE A CLAIM, COMPLETE PROJECT DOCUMENTATION, CLEAR DIGITAL PHOTOGRAPHS OF ISSUE AND SAMPLES OF DEFECT ARE REQUIRED. FAILURE TO PROVIDE ALL REQUIRED DOCUMENTATION MAY VOID WARRANTY.

ALL WARRANTIES AND GUARANTEES PERTAINING TO THE SUITABILITY, PERFORMANCE AND USE OF ALL PREPARATION AND ANCILIARY MATERIALS RESTS SOLY WITH EACH PRODUCT MANUFACTURER AND OR FLOORING AND GENERAL CONTRACTOR AND NOT WITH SHANNON SPECIALTY FLOORS, INC.

ALL PERFORMANCE RELATED ISSUES ARISING FROM OR ATTRIBUTALBE IN ANY WAY TO THE USE OF NON-RECOMMENDED PREPARATION MATERIALS, MOISTURE MITIGATION SYSTEMS, ADHESIVES AND ANY OTHER ANCILLIARY PRODUCTS OR METHODS ARE THE SOLE AND EXCLUSIVE RESPONSIBILITY OF EACH PRDUCTS MANUFACTURER AND OR THE FLOORING AND GENERAL CONTRACTOR OR PARTY WHO APPROVED ITS USE OR PRACTICE.

- Attend jobsite construction meeting with the General Contractor (GC), Architect and Owner to review all requirements and expectations and to inspect site conditions. This provides the best opportunity to fully understand the scope of work, coordinate moisture testing and address subfloor level and flatness concerns, request necessary lighting and coordination with other trades to vacate the space during subfloor preparation and installation. Confirm with all parties present if FC is expected to provide a "Level" surface in addition to a "Flat and Smooth" surface and determine what concrete additives, curing method and fly ash or other additional components are specified and raise awareness to potential issues before construction.
- Determining jobsite suitability rests solely with the General Contractor and Flooring Contractor.
- Shannon Specialty Floors floor covering materials are intended for interior use only.
- The building envelope must be enclosed (under roof with walls, windows and doors etc., installed) with operational HVAC for a minimum of 1 week and preferably 2-3 weeks before starting installation. This is critical to remove excess moisture from the subfloor and to stabilize the interior environment.
- Subfloor must be suitable for intended use and rigid, smooth, flat, level & permanently dry, clean & free of all foreign materials, including, but not limited to, dust, paint, marker, grease, oils, solvents, cutting/parting compounds, sealers and residue from old adhesive or any other deleterious contaminants that may act as a bond breaker or staining agent.

**WARNING!** Do not sand, dry sweep, dry scrape, drill, saw, 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 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 Workplace



Practices for Removal of Resilient Floor Coverings are a defined set of instructions addressed to the task of removing all resilient floor covering structures.

**CAUTION:** All ink, markers and paint on substrate must be removed by sanding to prevent bleed through and staining of the sheet flooring. Sealing and/or skim coating is not a substitution for sanding.

- New floor covering is not intended to correct an uneven or unsmooth subfloor. Level high spots and fill and smooth surface cracks, grooves, depressions, stationary control joints or other non-moving joints and other surface defects. Use high quality Portland cement and or calcium aluminate based patching and leveling compounds recommended by their manufacturer for use conditions. The underlayment shall be mold, mildew and alkali resistant, non-shrinking and water-resistant with a minimum 3,500 psi cured compressive strength.
- The appearance of your new floor is only as good as your subfloor preparation and any remaining surface irregularities can “telegraph” or show through the new floor surface. Follow the patch manufacturer’s current instructions paying attention to proper mix water ratio, working time, drying time and moisture testing. Gypsum patching compounds shall not be used unless recommended and warranted by product manufacturer as project compliant.
- Wood subfloors shall be suspended double layer construction with 18 inches of cross ventilated space beneath having 1 inch minimum total thickness and incorporating a ¼ inch or thicker underlayment grade panel on the surface that is designed for the intended use. Underlayment panels shall be stored, acclimated, prepared and installed in accordance with the current manufacturer’s published instructions. Follow instructions paying close attention to proper acclimation, subfloor flatness, panel spacing, nailing or staple schedule and seam treatment.
- The surface shall be smooth and flat to 3/16” in 10 ft. (3.9 mm in 3 m) and 1/32” in 1 ft. (1 mm in 300 cm).
- Moisture and pH testing shall be performed on ALL new and existing concrete slabs and wood subfloors. Moisture testing shall be performed in accordance with applicable test methods:
  - ❖ Concrete Slabs
    - PREFERRED - ASTM F2170 “In-situ Relative Humidity and/or
    - ACCEPTABLE - ASTM F1869 Anhydrous Calcium Chloride
    - PH testing in accordance with ASTM F710
  - ❖ Suspended Wood Subfloors
    - Calibrated Wood Pin Meter
- Allow other finishing trades, especially the overhead and wall trades, to complete their work before beginning the installation.
- During spackling, painting or pipe cutting, cover the substrate to prevent contamination. Spackling, permanent marker, paint, paint thinner or machine oil and other construction trade items that contaminate the substrate can cause bond failure or product discoloration.
- Close working spaces to all non-essential traffic before installation and as specified after installation. After installation, GC shall protect flooring surface from damage from other trades.
- Provide good overhead lighting for proper subfloor preparation and installation.
- Porous and/or dusty structurally sound substrates shall be primed by applying one or more coats of acrylic based primer-sealer with a short nap paint roller and allowed to dry before proceeding.
- After patching, sand the surface to remove all ridges and rework any remaining low spots or surface defects. Vacuum the entire surface paying close attention to the perimeter to remove all dust and debris.
- Expansion, Isolation and other moving joints are designed and incorporated in concrete slabs to permit movement without causing random cracks. Moving joints shall not be filled or covered with any floor covering. Moving joints must be honored through the flooring and should be treated with an expansion joint covering system as determined though consultation with the product manufacturer.

MANUFACTURER	WEB ADDRESS	PHONE NUMBER
Balco USA	<a href="http://www.balcousa.com">www.balcousa.com</a>	(800) 767-0082
C-S Group	<a href="http://www.c-sgroup.com">www.c-sgroup.com</a>	(800) 233-8493
EM Seal Joint Systems	<a href="http://www.emseal.com">www.emseal.com</a>	(800) 526-8365
InPro Corp	<a href="http://www.inprocorp.com">www.inprocorp.com</a>	(800) 222-5556
MM Systems	<a href="http://www.mmsystemscorp.com">www.mmsystemscorp.com</a>	(800) 241-3460
Nystrom	<a href="http://www.nystrom.com">www.nystrom.com</a>	(800) 547-2635
Watson Bowman Acme	<a href="http://www.wbacorp.com">www.wbacorp.com</a>	(800) 677-4922

- Once all substrate testing and surface preparations are complete and comply with installation and product specifications, continue with the flooring installation.

**ACCLIMATION**

- Acclimate the flooring, adhesive and subfloor at the jobsite in the area to be installed to a stable and consistent temperature between 65°F and 85°F (18°C and 29°C) and a minimum of 68°F (20°C) for spray adhesives with ambient relative humidity between 35% and 65% RH. The key is to condition the flooring materials, adhesive and jobsite environment to closely match the facilities operational environmental conditions. Maintain the stable and consistent temperature for a minimum of 48 hours before, during, and for a minimum of 48 hours after installation. Check the subfloor surface, flooring materials and sundries with a temperature gauge and confirm all are at the same temperature (no more than 2°F difference) before and during the entire installation.



- Stack plank and tile flooring no more than 5 cartons high and store rolls standing upright. Space all flooring at least 6 inches apart for acclimation. Sheet goods require further conditioning and relaxing by making room cuts and allowing the flooring to lay flat on the floor for 24 hours before installation.
- Radiant heated subfloors must be turned off 2 days or longer before installation until 2 days after installation and temperature maintained with supplemental heat. Gradually bring the temperature up 2°F (1°C) per day until reaching normal operating temperature.
- Stable acclimation of materials and substrate usually takes a minimum of 24 hours to accomplish and may take up to 72 hours or longer depending on storage and jobsite environmental conditions. Check for consistent and stable temperature of the flooring materials and subfloor surface before and throughout the installation process.
- After installation maintain a consistent operational temperature and RH for optimal flooring performance. The minimum floor surface temperature should not go below 55°F (13°C).

## **SUITABLE SUBFLOORS**

- Shannon Specialty Floors flooring products may be installed over properly prepared concrete, suspended wood and metal (aluminum, bronze, brass, copper, steel and stainless steel) subfloors. Proper subfloor testing and preparation is critical to achieve a beautiful and lasting installation.
- Shannon Specialty Floors recommends the removal of all existing flooring and adhesives and starting any new installation directly to the base subfloor as a best practice. Realizing there are situations where this is not possible, Shannon flooring products may be installed over fully bonded and intact existing flooring including ceramic and quarry tile, stone and cementitious terrazzo and existing single layer non-cushion resilient (sheet or tile).
- Polymeric, resinous or seamless poured floors may be installed over, but great care must be taken in determining substrate suitability. It is difficult to confirm if they are well bonded to the substrate and they are prone to moisture related issues especially when covered with an impervious surface.
- Existing flooring must have all loose or damaged areas removed and all finish or polish stripped off. Once the damaged areas are removed and the surface is thoroughly clean, prepare the surface by leveling and smoothing with an appropriate patching compound. Glazed, polished, smooth or dense surfaces must have the surface mechanically abraded. In addition, surface preparation materials may require the use of a primer or bonding agent to mechanically key to the surface prior to application.
- Metal Substrates must be completely clean, dry and free of dust dirt wax, marker, paint, grease or any other deleterious contaminants that may act as a bond breaker or staining agent. Prior to mechanically abrading the surface, degrease using an appropriate heavy duty degreasing cleaner. Mineral Spirits may be necessary to remove grease and or oil contaminants. Always perform a bond test prior to installation. Metal substrates are non-porous and shall be installed using the appropriate adhesive installation method. Lead is very soft and will easily dent and deform. Lead on all soft metal substrates are recommended to be coated over with a 1/8 inch or thicker layer of patch to stabilize the surface. Follow patch manufacturers recommendations for proper application.
- Existing non-cushioned single layer resilient flooring may be installed over on suspended or on-grade installations (not below grade). Do not install over existing cushioned resilient flooring, rubber or safety (slip resistant) flooring. Repair all loose and damaged areas, remove all coatings or finish and smooth surface using an appropriate floor patching and smoothing product.
- Thick pour Gypsum-based Underlayments must be manufactured and installed in compliance with ASTM F2419 "Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring." Test and evaluate thick pour underlayment moisture in accordance with underlayment manufacturer's recommendations. All thick pour gypsum underlayments require an acrylic primer be applied to the surface before adhesive application.
- DO NOT install over subfloors where solvent adhesive removers have been used or that have been chemically abated.
- Radiant heated subfloors must not exceed 85°F (29°C) under any condition of use.

## **CONCRETE SLABS & UNDERLAYMENTS**

- New and existing concrete slabs shall be in compliance with current:
  - ❖ ASTM International
    - ASTM F 710 "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring"
  - ❖ American Concrete Institute (ACI)
    - ACI 302.1 Guide to Concrete Floor and Slab Construction
    - ACI 302.2 Guide for Concrete Slabs to Receive Moisture Sensitive Flooring Materials
  - ❖ Local and National building codes
- Concrete surfaces to receive resilient flooring shall be suitable for intended use, permanently dry, clean, smooth, and structurally sound. They shall be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation or laticence, mold, mildew, and other foreign or deleterious contaminants that may act as a bond breaker or staining agent (ASTM F 710).
- Concrete slabs shall have a minimum 3,500 psi cured compressive strength and be designed and placed with water-cement ratio of 0.45 to 0.5 which is recommended by the concrete construction industry and appropriate for slabs to receive moisture sensitive finishes. Higher water-cement ratios lead to longer dry times and issues associated with elevated moisture conditions that cause floor failures (ACI 302.1 & ACI 302.2).
- Coal Fly Ash is used as recycled content replacing Portland cement in concrete slabs. It is becoming more prevalent with the popularity in sustainable LEED construction practices. Fly ash contains silicon dioxide and calcium oxide. Silicon dioxide are spherical particles with an extremely smooth surface that is difficult for adhesives to bond to. Calcium oxide is a caustic, highly alkaline component which also acts as a bond breaker. As a result concrete slabs containing fly ash in higher concentrations are difficult to bond to. Always perform a bond test prior to installation. If poor bond performance is identified, skim coat the surface and perform additional bond tests to determine if non-conformity has been corrected. Document your testing and evaluation.



- Concrete slabs on or below grade must be installed directly over properly installed and intact vapor retarder that complies with ASTM E1745 “Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.” On or below grade concrete slabs shall be free from hydrostatic pressure, excessive moisture or alkalinity or any other deleterious condition.
- Concrete Slabs should be wet cured using plastic sheeting or other suitable moisture retaining cover. Do not use curing compounds as these slow the slab dry time and can act as a bond breaker if not removed.
- Perform moisture testing in accordance with applicable test methods:
  - ❖ PREFERRED - ASTM F2170 “Standard Test method for Determining Relative Humidity (RH) in Concrete Floor Slabs Using in situ Probes.” Confirm results are within RH moisture limits for adhesive.
  - ❖ ACCEPTABLE - ASTM F1869 “Standard Test method for Measuring Moisture Vapor Emission Rate (MVER) if Concrete Subfloor Using Anhydrous Calcium Chloride.” Confirm results are within MVER moisture limits for adhesive.
- Test the concrete surface pH level according to the method described in ASTM F710. Confirm pH levels are within limits for adhesive.
- Determine surface porosity. Place dime to quarter size drops of water on the surface of the concrete and time how long they take to fully absorb into the concrete surface. If the water drops take longer than 90 seconds to be fully absorbed, the surface is considered non-porous. Slab absorbency testing should be performed in at least 3 areas on each installation. For large projects, test every 50 feet in both directions and document on floor plan along with moisture and pH test results. Slab absorbency and surface texture affect adhesive coverage needed to achieve full coverage on the floor backing without having excess adhesive applied. Absorbent (porous) and more textured surfaces require an increase in adhesive application and non-absorbent (non-porous) and smooth surfaces require less adhesive application to achieve proper adhesive coverage.
- Power troweled concrete surfaces can be very smooth, non-absorbent and develop surface laitance. These surface conditions may adversely affect bond of floor preparation materials and adhesive and should be mechanically prepared by grinding or shot blasting to improve bond.
- Remove all curing compounds or sealers that might prevent proper bonding or proper moisture testing. Mechanically abrade surface to ensure 100% removal of any curing compounds or incompatible sealers.
- Bond testing shall be performed to determine the best trowel size based on substrate surface texture and surface absorbency to achieve optimal adhesion and full coverage on the back of the flooring without excess adhesive. Use the specified flooring and recommended adhesive, install 3 ft. x 3 ft. test areas. Seal the edge of the flooring with duct tape to prevent adhesive from drying prematurely. Wait a minimum of 48 hours and preferably 72 hours to evaluate bond strength.
- Use high quality Portland cement and or calcium aluminate based patching and leveling compounds recommended by their manufacturer for use conditions. The underlayment shall be mold, mildew and alkali resistant, non-shrinking and water-resistant with a minimum 3,500 psi cured compressive strength.
- There are many options for moisture mitigation systems that may be beneficial to resolve elevated moisture conditions. Shannon Specialty Floors recommends the use of products that are in compliance with ASTM F 3010 “Standard Practice for Two-Component Resin Based Membrane Forming Moisture Mitigation Systems for Use Beneath Resilient Floor Coverings” that provides full product and adhesive bond warranty coverage when installed over a properly applied system. There are several companies that offer compliant mitigation systems that can also provide expertise to effectively deal with moisture issues:

MANUFACTURER	WEB ADDRESS	PHONE NUMBER
Aquafin	<a href="http://www.aquafin.net">www.aquafin.net</a>	(866) 278-2346
Ardex	<a href="http://www.ardexamericas.com">www.ardexamericas.com</a>	(888) 512-7339
Koster	<a href="http://www.kosterusa.com">www.kosterusa.com</a>	(757) 425-1206
Mapei	<a href="http://www.mapei.com/US-EN">http://www.mapei.com/US-EN</a>	(800) 992-6273
Schonox	<a href="http://www.schonox.us">http://www.schonox.us</a>	(855) 391-2649
UFLOOR Systems	<a href="http://www.uzin.us">www.uzin.us</a>	(720) 374-4810

## WOOD SUBFLOORS & UNDERLAYMENTS

- Wood subfloors shall be of double layer construction with at least one (1) inch total thickness and comply with current local and national building code requirements.
- The structural wood panels shall be APA rated and or recommended and warranted by panel manufacturer for intended use.
- Wood subfloors shall have at least 18 inches of well vented air space beneath and the entire crawl space shall be insulated with ground surface smooth to prevent any pooling of water.
- Cover ground completely with a 6 mil plastic ground cover running up walls 6 inches.
- Do not install over wood floors in direct contact with the earth, concrete slab, over a sleeper floor assembly.
- Wood subfloors shall have calibrated moisture content of less than 14% and be within 2% of underlayment and wood structural members.
- The double layer wood subfloor shall incorporate an APA Underlayment Grade top layer such as Multi-Ply® or TEKPLY® that is designed for the intended use meeting the following requirements:
  - ❖ Minimum ¼ inch (5.5 mm) thickness
  - ❖ Sanded face free of knots or roughness to prevent any surface telegraphing
  - ❖ Solid core free of voids to resist indentations and punctures from concentrated loads
  - ❖ Designed for resilient flooring use and free of any substance that may stain vinyl
  - ❖ Minimum ¼ inch thick
  - ❖ Moisture content less than 14.0% and panel layers within 2.0% of each other
  - ❖ Confirm panel moisture level by checking in several areas using a calibrated pin moisture meter



**SHANNON** SPECIALTY FLOORS

- ❖ Compliant with APA or manufacturer recommended as “Underlayment Grade” for resilient flooring
- Do not install directly over Lauan, pine or other soft woods, particle board, hardboard, hardwood flooring, treated wood or underlayment panels with core voids, face knots or rough surface or any underlayment that is not recommended by its manufacturer for the intended use and for use beneath resilient flooring. Cover these and other unacceptable wood based surfaces with ½ inch thick underlayment grade panel in compliance with all underlayment requirements listed in this guide.
- Do not install with coated fasteners.
- Underlayment panels shall be stored, acclimated, prepared and installed in accordance with the current manufacturer’s published instructions and or current APA Underlayment Installation Guidelines and or ASTM F1482 “Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring”. Follow instructions paying close attention to proper acclimation, subfloor flatness, panel spacing, nailing or staple schedule and seam treatment.
- After underlayment panel installation, sand uneven edges and areas where patch was used to provide a smooth level surface.
- Just before installation thoroughly vacuum the surface paying close attention to the perimeter and under drywall to remove all dust and debris.
- Damp mop the surface immediately before installation with spray adhesive.
- Once the underlayment is properly installed, dry, smooth, and flat, clean and in compliance with all specifications, proceed with installation.

## **PRE-INSTALLATION**

- Perform a bond test before starting installation to confirm compatibility of adhesive and prepared substrate. Perform multiple bond tests on the prepared surface with 3’ x 3’ section of flooring. Allow a minimum of 48 hours and preferably 72 hours or longer before determining compatibility and bond strength. Always check for complete adhesive transfer on the back of the flooring in case more adhesive is needed for porous or rough concrete surface, or if too much adhesive is being used over a nonporous or burnished smooth surface. Adjust trowel size used to increase or decrease the amount of adhesive applied to suit substrate and environmental conditions making sure full adhesive coverage to back of flooring and no more.
- Ensure your tools, grooving machine, hot air welder, spatula blade, trowels, 100 lb. roller and all necessary tools and equipment needed and on hand and are in good working order. Bring sufficient spare blades, replacement trowels blades and any other consumable items or supplies to complete project. Only use replaceable blades for your trowel. Never hand-sharpen trowel blades. It is critical that all blades are sharp and smooth. For trimming weld rod, a *Winkelman WDD645 Slim Trim Knife* (800-929-4362) may be used.
- Confirm all adhesives, sundry items and floor covering materials are on-site and confirm the flooring materials are the correct color, style and quantity for each dye lot with consecutive roll numbers for sheet goods.
- Check flooring for any visible issues or defects BEFORE installation. Installation of flooring covering implies acceptance of substrate and materials. Any flooring materials found with visible defects or any visible issues are warranted for materials only. No labor costs are covered for flooring materials installed with visible defects or other issues. Immediately contact your local representative should an issue be discovered.
- Shannon Specialty Floors does not recommend the use of alternate adhesives, but recognizes there are circumstances when an alternate adhesive may be beneficial. Extensive adhesive testing has been conducted and the recommended adhesives provide excellent performance under diverse installation conditions. The use of an alternate adhesive requires submission of a signed adhesive waiver acknowledging that Shannon Specialty Floors will not be responsible for any issues arising from or associated with its use.



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