



INSTALLATION GUIDE

FOR

LL300 MODULAR RESILIENT FLOORING

As changes occur in our installation systems, TOLI International will publish a new edition.
To ensure the most up-to-date information, please visit our website at

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Table of Contents

Section

1. LL300 Modular Flooring
2. Substrates
3. Installing LL300 Modular Flooring
4. After Installation
5. Finishing and Maintenance
6. General Precautions

1. LL300 MODULAR FLOORING

Installing TOLI LL300 Tile

- TOLI LL300 Tile requires unique installation methods. This guide must be followed carefully. Contact TOLI Technical Support at (888) 879-8654 if you have any questions.

Material Handling and Storage

- Deliver all the materials to the jobsite a minimum 48 hours in advance of the installation to acclimate the materials to jobsite conditions
- Maintain temperature for 48 hours before, during and 48 hours after installation
- When storing TOLI LL300, lay cartons flat and squarely on top of one another. Do not lie on edge. Protect flooring, adhesives, and maintenance products from temperature extremes. Temperature at the jobsite should be 65-80°F.
- During the service life of the floor the temperature should never fall below 55°F

Job Site Conditions

- Visit the job site to confirm conditions and floor measurements. Always check the flooring material to ensure that they are the correct TOLI product, color, and quantity.
- Allow the other finishing trades, especially the overhead trades, to complete their work before beginning the installation. During spackling and/or painting, cover the substrate to prevent contamination or staining. Such stains can cause adhesion failures or product discoloration.
- A well-lit interior is necessary for the installer to properly prepare the substrate and install the new flooring.
- Close working spaces to traffic once the area is cleaned and prepared for installation.
- The areas to receive TOLI flooring should be clean, fully enclosed and weather tight. The building's heating and air conditioning system needs to be in full operation for at least 7 days prior to the floor installation.
- Portable heaters are not acceptable. Kerosene heaters should never be used where floor-covering products will be installed. They heat the air, not the substrate. Kerosene heaters ('salamanders') leave an oily residue on the subfloor.
- Flatness – The surface of the concrete must be flat to within 3/16 inch in 10 feet and within the equivalent of 1/32 inch in 12 inches.

All substrates to receive resilient flooring shall be 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 materials that might prevent adhesive bond.¹

2. SUBSTRATES

Concrete Substrates

Specifiers are advised to consult the current version of ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Floor Coverings. This document contains guidelines regarding concrete testing and preparation, slab construction, and specific information regarding lightweight concrete, water-cement mix ratio, curing procedures, alkalinity, moisture retarders, flatness and levelness, and additional reference documents.

To ensure a successful TOLI installation, concrete substrates must be structurally sound to receive resilient flooring material and must meet these minimum requirements:

- A minimum compressive strength of 3500 PSI
- A concrete mix water/cement ratio of less than 0.5
- A minimum density of 115 lb. /cubic foot
- A maximum slump of 4 inches

For all on- or below-grade concrete subfloors, a permanent, effective moisture vapor retarder (often incorrectly called a moisture barrier) with a minimum thickness of 0.010 inch and a permeance of 0.1 y must be installed directly below the slab. The use of such a moisture vapor retarder, provided its integrity has not been compromised, reduces potential severity of water vapor penetration.¹

Concrete floors to receive resilient flooring shall be free of sealers, coatings, finishes, dirt, curing compounds and other substances which may affect the rate of moisture dissipation from the concrete or the adhesion of resilient flooring to the concrete. Non-chemical methods for removal, such as abrasive cleaning or bead blasting may be used on existing slabs and shall take place 48 hours before testing.¹

NOTE: Mechanical scarification can raise the surface pH of concrete when the carbonation layer is damaged. Be sure to check the pH once it is complete.

Lightweight concrete, less than 115 lb/cubic foot, may have such low strength that it is unsuitable for covering with resilient flooring unless 1 inch of standard weight concrete (generally 140 lb/cubic foot) is used as a topping.¹ In addition, floors containing lightweight aggregate or excess water, and those that are allowed to dry from only one side, such as concrete on metal deck construction, may need a much longer drying time.¹

NOTE: Only the ASTM F 2170 Relative Humidity test method can provide accurate moisture test results on lightweight concrete.

Exceptionally porous, soft, or dusty concrete surfaces (such as gypsum) have low strength and are not suitable for the installation of resilient floor coverings such as TOLI LL300 Tile. We strongly suggest that you consult with a patching/underlayment compound manufacturer or someone with expertise in concrete problems to repair this surface.

Expansion joints: Expansion joints, isolation joints or other moving joints in concrete shall not be filled with patching compound or covered with resilient flooring.¹ Use an expansion joint covering system.

Testing Documentation - Be sure to document all your test results as results only indicate the conditions present at the time of the testing. Moisture conditions that occur subsequent to the floor's installation are not the responsibility of the installer or TOLI.

Moisture testing must be done on all concrete slabs regardless of age or grade level. New concrete slabs shall be properly cured and dried before installation of resilient flooring. Drying time before slabs are ready for moisture testing will vary depending on atmospheric conditions and mix design.¹

Conduct testing according to ASTM F 2170 (Relative Humidity Test Method) and/or ASTM F 2420 (Relative Humidity Test using Relative Humidity Probe and Insulated Hood Method). For raised access panel systems use test method F 2420. Use three test locations for areas up to 1000 square feet and one additional test for each 1000 square feet or fraction thereof.²



When testing using **ASTM F 2170** and **ASTM F 2420**, the relative humidity in a concrete floor slab shall not exceed 75%.³

pH Testing – To test for pH at the surface of a concrete slab, use wide range pH paper, its associated pH chart, and distilled or de-ionized water. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 in. (25 mm) in diameter. Allow the puddle to set for 60 ± 5 s, and then dip the pH paper into the water. Remove immediately, and compare to chart to determine pH reading. Other pH testing methods such as pH pencils or pH meters, or both, are available and may be used to measure pH. Readings below 7.0 and in excess of 10.0 have been known to affect resilient flooring or adhesives, or both.¹ pH readings must not exceed 9.0.

NOTE: Do the moisture and pH testing only after the building is enclosed and the HVAC system is fully operational for at least one week. Your test results only indicate the conditions present at the time of the testing.

Selection of Patching or Underlayment Compounds

*Surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities in all substrates shall be filled or smoothed with latex patching or underlayment compound [which] shall be moisture-, mildew-, and alkali-resistant, and shall provide a minimum of 3500 PSI compressive strength.*¹ These requirements are most consistently met by using Portland-based compounds.

Obtain the patching or underlayment compound manufacturer's written warranty and recommendations. Be certain the compound is recommended for the intended application (i.e. some products are not recommended for commercial use). *Follow the instructions for mixing the correct ratio of powder-to-liquid & the proper drying time.* Unless the manufacturer's instructions state otherwise, allow the patch to dry completely, not just 'to the touch'. TOLI does not recommend the use of heat guns or fans to force dry the patch. When dry, sand and scrape all uneven spots and smooth any trowel ridges. Sweep & vacuum the surface to remove all dust from sanding and scraping. Once the underlayment is thoroughly dry and the smoothness of the floor is acceptable, begin installation of the new LL300 Tile.

NOTE: Inadequate thickness of the applied patching/underlayment compound combined with over watering will lead to installation failure. Follow the patching/underlayment compound manufacturer's recommendations.

Raised Access Panel Subfloors

TOLI LL300 can be installed over raised access paneling substrates.

Radiant heated floors

TOLI LL300 Tile may be installed over a radiant heated floor providing the maximum slab surface temperature does not exceed 85°F under any condition of use.

Wood substrates

Wood floors must be double layer construction, minimum one-inch total thickness, with at least 18 inches of well-ventilated air space beneath. Crawl spaces need to be insulated and protected by a vapor retarder. Do not install over sleeper floors or plywood floors that have been installed directly over a concrete slab. Top layer of a wood substrate must be completely free of any knot holes or other voids in the surface. Unacceptable surfaces include, but are not limited to: Luan, plywood with knotholes, underlayments made of pine or other soft woods, particleboard, Masonite™ or other hardboard underlayment, hardwood flooring, textured or cushioned flooring, or other uneven or unstable substrates. Some of these unacceptable surfaces may be covered using a ¼-inch or thicker panel underlayment such as MULTI-PLY™ or TECPLY™ Brand underlayment system. Obtain and follow the underlayment manufacturer's warranty and written instructions for spacing, nailing, moisture content, and seam treatment for underlayment panels.

Existing Resilient Floor Coverings as a Substrate

TOLI LL300 Tile should not be installed directly over an existing resilient floor. If the substrate is concrete, the existing floor covering and all residual adhesive must be removed and the substrate properly prepared per ASTM F 710. If the substrate is wood, the existing resilient flooring may be covered with an approved wood underlayment panel.

Removal of Existing Resilient Floor Coverings

If you decide to remove an existing floor, please be aware that many existing floors and/or adhesives may contain asbestos fibers that can only be identified by laboratory testing. Improper removal of asbestos containing materials (including but not limited to vinyl asbestos tile, asphalt tile, felt backed sheet goods, asphalt 'cutback' adhesives and other flooring materials) can create asbestos dust, a known health hazard. If you are not certain that an existing floor contains asbestos, assume that it does and treat it accordingly.

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 adhesives. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.*¹ *Recommended Work Practices for Removal of Resilient Floor Coverings* are a defined set of instructions addressed to the task of removing all resilient floor covering structures.⁴

NOTICE: Various federal, state and local government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains, or is presumed to contain asbestos, you must review and comply with all applicable regulations.

Installing Over Adhesive Residue

- Do not install TOLI LL300 Tile directly over old adhesive residue or paint.
- Where adhesive residue is present, scrape all the adhesive residue from the subfloor so that *it 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 latience, mold, mildew, and other foreign materials that might prevent adhesive bond.*¹

Adhesive Removers

TOLI International does not recommend the use of commercial adhesive removal products. These products can adversely affect the new adhesive and the new floor covering. The solvent residue remaining within the subfloor is the concern. If chemical adhesive removers are used, any damage (including but not limited to adhesive failure, curling, indentation, bubbling, delaminating, etc.) is the responsibility of the company using the adhesive remover, and is not covered by the TOLI warranty.

3. INSTALLING TOLI LL300 TILE

Substrate Preparation – Follow all procedures and requirements as documented in Section 2 of this guide. When using a pressure sensitive adhesive to adhere LL300, care must be taken to remove all dirt, dust, and debris from the substrate. To accomplish this:

- Broom sweep the subfloor
- Vacuum the subfloor – check the vacuum’s filter before proceeding
- Damp mop (not wet mop) the subfloor to remove all dust and debris
- Do a final vacuum on the subfloor once it is dry

Tile Layout

Proper planning is important, so dry lay some tiles to be sure of the layout (See Fig. 1). Avoid cutting border tiles less than one-half tile. Allow ¼” expansion space at the perimeter of the room and around all stationary objects. These spaces can be covered with base molding.

The preferred method is standard point-to-point installation method (See Fig. 2, bottom). It can also be installed in the Ashlar pattern, also known as ‘staggered’, ‘brick block’, ‘running bond’, etc. (See Fig. 2, top). The tiles have arrows on the back that define print film direction. Depending on the print design, the tiles can be installed following the arrows or quarter-turned.

Note: When installing on raised access paneling, make sure to offset the tile seams so they will not fall directly on top of the seams in the paneling.

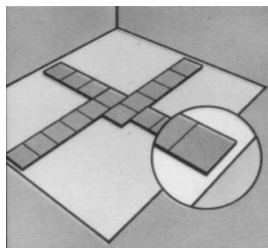


Fig. 1

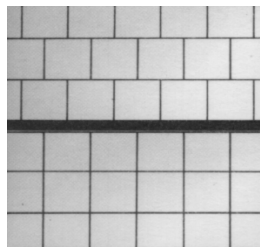


Fig 2.

Recommended Adhesive

CBC #6060 - Pressure sensitive acrylic vinyl-backed tile adhesive.
Adhesive spread rate: Approximately 400 SF per gallon.

Instructions for the use of CBC #6060 Adhesive

- Adhesive is applied with a medium nap paint roller.
- CBC #6060 adhesive is ready for flooring installation when there is no adhesive transfer when touched with a fingertip.
- CBC #6060 has 60 minutes of working time once the adhesive is ready for flooring installation.
- Once set in the desired position, roll the floor in both directions using a 100 lb, 3-section roller.

NOTE: Temperature and humidity will change the adhesive set up time.

Alternate Adhesive

Interlock #6500 Spray Adhesive - Information on the Interlock Spray Adhesive can be found on our Alternate Adhesive Technical Bulletin available at www.toli.com. Contact Interlock for specific application procedures at (706) 517-8989.

- Always follow label instructions when using the adhesive.
- Once set in the desired position, roll the floor in both directions using a 100 lb, 3-section roller.
- Pay close attention to the corners and edges of the tiles.
- Follow the adhesive manufacturer's recommendations for foot traffic and heavy rolling loads.

NOTE: Failure to roll the entire floor in both directions will likely lead to installation failure.

4. AFTER INSTALLATION

- Construction debris can damage the floor surface. Cover the floor with protective paper and plywood/hardboard for its protection.

Releasability/Retackability—CBC #6060 is a releasable adhesive. This allows the LL300 tile to be removed to gain access to systems installed under raised access floor panels. #6060 can provide *retackability* as long as three criteria are met:

- The original application of #6060 was allowed to completely dry to the touch before tile was set.
- Dust and debris are kept off the adhesive bed once the tile is removed.
- Dust and debris are kept off the back(s) of the removed tiles before they are reinstalled.

5. FINISHING AND MAINTENANCE

- Keep all floor traffic off the floor for 6 hours.
- Keep furniture, fixtures and rolling traffic off the floor for 48 hours.
- Remove any adhesive residue with a clean white cloth dampened with mineral spirits. AFTA is not recommended.
- Lightly damp mop the floor as needed.
- Thorough cleaning can begin after 3 days.

6. GENERAL PRECAUTIONS

- Window Coverings - Use window coverings *to protect from fading under direct sunlight*.
- Non-staining Walk Off mats - helps keep water, dirt and grit off the floor.
- Floor Protectors must be used on all furniture legs. The surface area that contacts the floor surface should be a minimum 1 square inch.

For complete current maintenance instructions and product recommendations visit the TOLI website at www.toli.com.

Referenced documents

This publication includes direct copyrighted quotes from accepted industry practices as follows:

American Society of Testing and Materials (ASTM) Standards:

¹**ASTM F 710**, Standard Practice for Preparing Concrete Floors to Receive Resilient Floor Coverings, copyright American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428. Complete copies of these standards may be purchased from ASTM, phone (610) 832-9585, fax (610) 832-9555, e-mail service@astm.org.

²**ASTM F 2420**, Standard Test Method for Determining Relative Humidity on the Surface of Concrete Floor Slabs Using Relative Humidity Probe Measurement and Insulated Hood, copyright American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428. Complete copies of these standards may be purchased from ASTM, phone (610) 832-9585, fax (610) 832-9555, e-mail service@astm.org.

³**ASTM F 2170**, Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in situ* Probes, copyright American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428. Complete copies may be purchased from ASTM, phone (610) 832-9585, fax (610) 832-9555, e-mail service@astm.org.

⁴***Recommended Work Practices for Removal of Resilient Floor Coverings***, The Resilient Floor Covering Institute (RFCI), 401 East Jefferson Street, Suite 102, Rockville, MD 20850. Phone (301) 340-8580.



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