

## INSTALLATION, SUBFLOOR AND UNDERLAYMENT REQUIREMENTS

### Approved Subfloors:

- 1. Concrete:** The concrete must be free of any curing compounds or adhesives. Even after old glued down carpet has been removed, and the subfloor has been scraped, it should NOT be assumed that the concrete is porous. Often the old adhesive has sealed the floor. A porosity test, using water, should be taken. Be aware that porous subfloors may take a different adhesive than non-porous subfloors. See adhesive instructions. If oil, grease, or other contaminants have deeply penetrated the concrete, and cannot be thoroughly removed, TUFFPLANK cannot be installed. If latex liquid has been used to seal off old cutback adhesives, the concrete has become non-porous.
- 2. Lightweight concretes:** Concretes in the lower end of this range are generally used for thermal and sound insulation fills for roofs, walls, and floors. The higher densities are used in cast-in-place walls, floors, roofs, and for pre-cast elements. The minimum density of the concrete should be greater than 90 lbs per cubic foot. The minimum compressive strength should be 3,500 psi or greater. If installing over gypsum or other forms of light concrete always apply an Acrylic based Primer-Sealer coat before troweling adhesive.
- 3. Wood subfloors:** Should be standard double layer construction, with a finished thickness of at least 1" and should have 18" of well ventilated air space underneath. Crawl spaces should be insulated and protected by a vapor barrier. Do not install vinyl flooring over a sleeper type subfloor, or over plywood that is directly over a concrete slab.

### Approved Adhesive:

TUFFPLANK requires a preapproved adhesive. Please visit [www.tuffplank.com](http://www.tuffplank.com) for a list of approved adhesives. Use the proper notch trowel indicated on the adhesive bucket or spec sheet to spread adhesive for the proper spread rate.

All instructions and requirements from TuffTak must be followed, including but not limited to approved working conditions in order to be covered by TUFFPlank's warranty.

All flooring must be rolled by a 100 lb roller after installation in order to help adhere flooring to adhesive properly within the required timeframe as defined the adhesive. In hard to reach areas, use a hand roller. Failure to do so can result in lack of bond and/or excessive thermal expansion, or contraction.

### Approved Underlayments:

- 1. PLYWOOD:** Use only American Plywood Association (APA) underlayment grade plywood – minimum ¼" thickness. Allow expansion spacing between plywood butt joints of 1/32" – 1/16". When installing underlayment, stagger cross-joints 4' on an 8' panel (minimum 16"), lightly butt the panels, and set fasteners flush or slightly below the surface level of the underlayment. Fill underlayment seams, nail holes and any indentations with an approved Portland cement-type floor patch, allow recommended drying time, sand the patch smooth, vacuum or sweep and apply adhesive (all dust must be COMPLETELY removed to ensure a strong adhesive bond). Sand filled when patching material has cured. Manufacture-certified Poplar, Birch and Spruce plywood underlayment, with a fully sanded face and exterior glue can also be used.
- 2. LAUAN PLYWOOD:** When used as an underlayment, it should be Type 1 (exterior grade). The best grade is BB and the next is CC. No lesser grades are acceptable. There is a wide variety of quality and species classes as lauan. Some may present severe problems such as discoloration, indentation, loss of bond and delaminating when used as an underlayment. Note: Extremely porous underlayments such as lauan as well as any other extremely porous wood or particleboard will reduce the flash and working time of adhesives. It is best to use an Acrylic Based Primer-Sealer coat to these products. If a claim results where lauan underlayment has been used, a manufacturers certification of lauan grade must accompany the claim.

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## Non-Approved Substrates

Non-approved substrates include, but are not limited to: Oriented strand board (OSB), particleboard, hardboard, treated plywood, strip wood floors, chipboard, waferboard, masonite, knotty plywood, glass mesh tile boards, cementitious tile backer boards, fire-retardant or preservative-treated plywood, asphalt tile, rubber tile, self-stick tile and all roll or sheet membranes/underlayments.

**NOTE:** Any appearance or performance-related problems related to the underlayment are the responsibility of the installer and/or underlayment manufacturer.

## Radiant Heat:

Subfloors should have operated for at least 3 weeks prior to installation to drive out moisture and calibrate temperature settings. All radiant heat floors should be turned off 3 days prior to installation and remain off for at least 6 days after installation to allow the adhesive to fully cure. Maximum operating temperature should never exceed 85°F. Radiant heat components must be a minimum of ½" separated from flooring system.

## Quarry Tile, Terrazzo, and Ceramic Tile:

Properly cleanse substrate using a commercial degreasing/dewaxing solution. Grind any highly polished or irregular surfaces. Fill any low spots, holes, chips and seams that may telegraph through the new flooring.

## Material Handling and Storage:

All TUFFPLANK Tiles must be stored in a warm, dry area. Do not expose to very hot or cold temperatures. It is required that you acclimate materials (flooring and adhesive) to jobsite conditions in the room it is to be installed a minimum of 24 to 48 hours before scheduled installation. TUFFPLANK must be stored laying flat and cartons never on edge. Check to make sure color and lot numbers are the same on jobs requiring more than one box on tile. Mix tile from several different cartons to blend minor shade variations.

## Temperature:

Flooring and subfloor room temperature should be between 65° and 80° Fahrenheit. Concrete and other sub-floors temperatures can be very different from the ambient air temperature. You will need to make sure both air and floor temperatures are within the acceptable range above. Maintain proper temperature before and after installation. The building's heating and air-conditioning system should be turned on at least one week before installation. Fully functioning HVAC with thermostats is required. Temporary heating and cooling do not sufficiently control temperature and humidity. Failure to follow these guidelines may result in an installation failure including but not limited to flooring expansion (creating peaks) or contraction (causing gaps).

## Moisture:

Never install TUFFPLANK vinyl wherever surface or subfloor moisture is present. Excessive moisture will cause failure. New concrete slabs must cure for a minimum of 90 days. Even existing concrete slabs can have moisture problems. To be sure, conduct a moisture test several days before installation. The installer is responsible for moisture testing. See adhesive buckets for details. MOISTURE GUIDELINES FOR THE FLOOR COVERING INDUSTRY available from the World Floor Covering Association, at 1-800-624-6880.

## PH Levels:

Moisture can directly affect the cure, set and bond of adhesives. On well-cured adhesives, the presence of pH values has proven to be the most significant factor in adhesive failures. It is vital that moisture be present for pH to be a factor. High pH levels are due to cement, type of aggregate, cement ratio of concrete and how well cured the concrete surface is. On new or existing concrete a pH test should be taken. A pH level above 9 is unacceptable, and the floor should not be installed.

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## Porosity:

A non-porous substrate is one which does not absorb water. If you are not sure whether a floor is porous or nonporous, sprinkle some water on the floor over several different areas. If the water beads up then it's a nonporous floor. If it soaks in, it's a porous floor. Use a small amount of water for the test, and allow floor to completely dry before continuing. If a bare concrete floor is not porous, a sealer or curing compound may have been used. Such treatments should be removed before installing a new floor or underlayment, and the floor retested for porosity at that time.

## HVAC:

Full HVAC is required and at comfortable levels as moisture is removed constantly and this will provide for a drier atmosphere that affects the adhesion to the subfloor favorably. However in hot and humid climates the air conditioning can cause condensation in the floors so that the subfloor must have a moisture barrier beneath the slab or in the crawl space.

## SUBFLOOR PREPARATION

In general, all substrates must be free of contaminants such as dirt, weak concrete, grease, wax, oil, sealers, paints, curing compounds, and old adhesives. The surface should be leveled to within 1/8 inch in ten feet; and all constructions seams, expansion joints, and holes should be filled level with the surrounding surface to eliminate telegraphing of such irregularities.

## Removing Old Adhesives:

Old asphaltic "cut-back" adhesives can destroy new adhesive and stain TUFFPLANK vinyl. These must be completely removed, encapsulated or covered with plywood underlayment. Be sure to remove adhesive in dips, joints, etc. Some previously manufactured cut-back adhesives contained asbestos fibers, which are not readily identifiable. Do not use power removal devices, which can create dust. The use of solvent-based adhesive removers is not recommended. NOTE: If d-limonene (citrus-based) cleaners/removers are used (Orange All), subfloor must be thoroughly rinsed. If complete removal of old adhesives or covering them with plywood is not possible, the use of a Portland Based Leveling or Patching Compound is acceptable. Please follow manufacturer's instructions carefully. For "Recommended Work Practices for the Removal of Resilient Floor Coverings" write to the Resilient Floor Covering Institute, 966 Hungerford Dr., Suite 12-B, Rockville, MD 20850.

## Patching & Leveling:

Use only Portland-cement based patching and leveling compounds. Self-leveling underlayments can have very high moisture content and require longer curing time: up to 10 days. Check with a moisture meter before starting installation.

**Note:** Adding latex to levelers will normally make the floors NON-POROUS. Test for porosity and use the non-porous adhesive instructions if necessary.

Follow the manufacturer's instructions. Do not over-water underlayments! Sand underlayment smooth after it is cured. The installer is responsible for cure times, moisture content, adhesive bonding and the structural integrity of any leveling or patch compound used.

## Embossing Levelers:

Embossing levelers are for sheet goods with textures that could telegraph through TUFFPLANK products and be visible on the surface. Note: The use of levelers on sheet goods will not create a porous subfloor.

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## Concrete Slabs:

**NOTE:** All concrete (new and old) must be tested

- The installer is responsible for moisture testing.
- New concrete should cure with good ventilation at room temperatures for no less than 90 days and must be tested for moisture and pH prior to installation.
- Do not install where moisture, hydrostatic pressure, or alkaline conditions are evident. (See below)
- Concrete must be clean, dry, smooth, and structurally sound and free of paint varnish, adhesive, oil, grease, solvents and other extraneous material including curing and parting compounds, sealers and surface hardeners that will inhibit bonding.
- Lightweight concrete should be avoided because of its inherent weakness
- Whenever possible grind a concrete subfloor to tolerance rather than fill.

Installation failures due to the above issues are not the responsibility of TUFFPLANK and warranties will not apply. Whenever questionable surfaces are involved, TUFFPLANK recommends a bond test as described later in this section.

Properly prepare substrate by grinding or sanding. All dust must be COMPLETELY removed to ensure a strong adhesive bond. Surface irregularities will telegraph through the tile.

Allow at least 24 hours for underlayment drying before installing TUFFPLANK flooring. If self-leveling underlayments are used they must fully cure before installing TUFFPLANK floor tiles. Test self-leveling compound for moisture before installing. The installer is fully responsible for moisture and leveler related problems.

## Sealers:

TUFFPLANK does not endorse any concrete or floor sealers against moisture. IF MOISTURE IS PRESENT, DO NOT INSTALL FLOOR. Some sealers will protect the installation against alkalinity. Some also serve as a barrier between old and new adhesives to deaden old adhesive tack, prevent plasticizer migration and seal over dust or old cutback adhesives. Most latex- and acrylic-based sealers are compatible with TUFFPLANK adhesives. Apply sealers to the floor according to the manufacturer's instructions. Be sure to apply the product evenly across the entire surface of the floor. There must be no gaps in the installation. Allow sealer to dry completely before applying adhesive.

**NOTE: TUFFPLANK warranties its Tile and Adhesives to be free of defects. The condition of a subfloor, which causes adhesion problems due to not recommended, improper, incorrectly prepared sealers, embossing, patches, concrete, etc, becomes the sole responsibility of the installer and/or manufacturer of the particular sub-flooring product.**

## Existing Resilient Floors:

When installing TUFFPLANK floor tile where there is an existing resilient floor, it may be best to remove the present floor and prepare the structural floor for a fresh application of the TUFFPLANK.

If existing resilient tile and sheet vinyl floors are in good condition and thoroughly bonded to the structural floor, it may be possible to install. The exception is that any tile or sheet that is a cushion construction must be removed. *Note: A layer of resilient or soft underlayments like lauan may compromise the inherent strength of TUFFPLANK Tiles and Planks to resist indentations. Do not install over more than one layer of existing flooring.*

**Note:** The use of levelers on non-porous subfloors will not create a porous subfloor. Existing tile or sheet resilient floor must be stripped using TUFFPLANK approved stripper to remove wax or other contamination and rinsed with clear water and allowed to dry. This is also the case when new sheet vinyl is used. Very smooth or high-gloss floors need to be lightly abraded to rough up the surface to allow proper adhesive bonding.

In some areas it has become common to use underlayment. Call TUFFPLANK Technical Support for special requirements for such products.

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## Quarry Tile, Terrazzo, Ceramic Tile:

Properly cleanse substrate using a commercial degreasing/dewaxing solution. Grind any highly polished or irregular surfaces. Fill any low spots, holes, chips and seams that may telegraph through the new flooring. Test for porosity and use the appropriate adhesive application method. Bond tests are required.

## Moisture and PH Testing:

A moisture test should be done several days before installation. The installer is responsible for moisture testing. TUFFPLANK recommends all concrete subfloors (new and old) be tested using Calcium Chloride Test ASTM F1869. Unacceptable results using this method would be over 5 lbs for 24 hours per 1000 square feet. Electronic meter testing is not considered a replacement for a Calcium Chloride Test; the following moisture readings are just an indication that a Calcium Chloride test should be performed.

Concrete subfloors must have moisture barriers installed under the slab and be determined, through testing, to be dry and not subject to water absorption.

For more information about moisture problems and moisture testing, refer to MOISTURE GUIDELINES FOR THE FLOOR COVERING INDUSTRY available from the World Floor Covering Association, at 1-800-624-6880.

## Bond Test:

To determine if a subfloor is compatible to TUFFPLANK adhesives, or to determine if the porous or non-porous adhesive application method is required, use this test: Using the flooring and adhesive suitable for the subfloor, install a 2'x2' section following the recommended installation procedures. Select areas next to walls, columns, or other light traffic areas. Tape the perimeter with duct tape to prevent edge drying of the adhesive. After 48 hours, the adhesive should be dry and the flooring should be difficult to remove. Note: the adhesive is dry at this point – but not cured. Full cure and maximum bond does not occur for 6-8 days.

On large installations, tests should be taken every 50 feet. Bond testing may take some time to complete, but the cost and time involved in a floor failure are considerably more.

## General:

For best results, the room temperature in the area of installation must be 65-80° F before, during, and after installation. Flooring must be acclimated in the room they are to be installed in for a minimum of 24 to 48 hours prior to installation. Be sure to use TUFFPLANK tiles of the same color lot for best color matching. Mix tile from several different cartons to blend minor shade variations. If the TUFFPLANK Tile or Plank has directional arrows follow accordingly if not lay tile and planks keeping the embossing of the product flowing in the same direction.

**Note:** All Warranties and guarantees regarding the suitability and performance of any products, if not supplied by TUFFPLANK, rests with the material manufacturer or the installation contractor and Not with TUFFPLANK.