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# INSTALLATION GUIDELINES

## Elements



FINE BAMBOO FLOORING, PANELS & WORKTOPS

Please read Teragren LLC's [warranty](#), maintenance instructions, and **ALL** of the following guidelines before opening any packaging or beginning your flooring installation. All information within this document is provided as a courtesy to our customers and is meant to be understood as an installation guideline only. The customer and/or the installer is solely responsible for any and all decisions regarding how, where, and when to install any Teragren product.

Teragren LLC recommends using the services of a professional hardwood flooring installer. For more information and for guidelines on the installation of hardwood flooring, please contact the *National Wood Flooring Association* (800-422-4556) or review their [website](#).

Teragren's warranty does not cover variations in color either in individual planks, between the planks, or the variations in color between our product samples and the installed flooring. An industry standard of 5% material overage should be added to the actual square footage required for cutting and grading allowances.

Prior to installation, all material must be inspected to ensure the material received matches the work order. Any visible defects or discrepancies should immediately be reported to your distributor or dealer. It is considered the installer/owner's responsibility not to install flooring having finish, manufacturing, or unacceptable material variations. Individual planks with defects should not be installed or the defect should be cut-out prior to installation. Filler or putty stick may be used to correct minor flooring defects during installation. The Teragren warranty does not cover materials with visible defects once they are installed. Installation of any Teragren product serves as acceptance of that material.

It is the sole responsibility of the installer/owner to determine if the job site's sub-floor and environmental conditions are suitable for the installation of Teragren flooring and accessories.

**NOTE: Unexpected changes to subfloor moisture content or changes to Relative Humidity outside of the approved range of 35-55% may cause Bamboo Flooring to cup, buckle, or otherwise dimensionally change. Bamboo Flooring must be installed over a moisture barrier or vapor retarder:**

- Concrete Subfloors: Use an appropriate liquid or trowel-applied moisture barrier membrane/adhesive system. Impermeable moisture barrier/vapor retarder systems with a perm rating less than or equal to .13 are suggested.
- Wood Subfloors: Use a UU-B-790a, Grade B, Type 1, Style 1a permeable vapor retarder or equivalent with a perm rating between .7 and 1

**Teragren LLC makes no warranty or guarantee of the quality of the chosen installer's work or of a particular installation performed by the installer. Teragren LLC disclaims all liability for any errors or improprieties in the installation of its products.**

### Product Acclimation:

Teragren flooring should be allowed to acclimate on the job site for a minimum of three (3) days.

Open each box, remove the flooring from its packaging, and stack the flooring planks at least 4" off the ground (with stickers between each layer of planks) to allow for complete and even air-circulation around the flooring. For wooden subfloors, the maximum difference in moisture content between the sub-floor and the flooring material should be no more than 2 percentage points (e.g. if wooden subfloor has a moisture content of 6%, the maximum moisture content of the flooring should be 8%). Acclimation should occur at the room temperature expected to be present before, during, and after installation. For maximum material stability, Bamboo Flooring should be installed into environments with relative humidity (RH) and temperature controls capable of maintaining the delivered moisture content of 7-9%. Please reference the following chart for correlations between RH, Temperature, and moisture content (%):

**Relative Humidity levels required to maintain below moisture content:**

| RH         |            | 5%   | 10% | 15% | 20% | 25% | 30% | 35% | 40% | 45% | 50% | 55%  | 60%  | 65%  | 70%  | 75%  | 80%  | 85%  | 90%  | 95%  |  |
|------------|------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|--|
| <b>° F</b> | <b>° C</b> | <b>Moisture content (%) of wood at above relative humidity values:</b> |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |  |
| 30°        | -1.1°      | 1.4  | 2.6 | 3.7 | 4.6 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.5 | 10.4 | 11.3 | 12.4 | 13.5 | 14.9 | 16.5 | 18.5 | 21.0 | 24.3 |  |
| 40°        | 4.4°       | 1.4  | 2.6 | 3.7 | 4.6 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.5 | 10.4 | 11.3 | 12.3 | 13.5 | 14.9 | 16.5 | 18.5 | 21.0 | 24.3 |  |
| 50°        | 10.0°      | 1.4  | 2.6 | 3.6 | 4.6 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.5 | 10.3 | 11.2 | 12.3 | 13.4 | 14.8 | 16.4 | 18.4 | 20.9 | 24.3 |  |
| 60°        | 15.6°      | 1.3  | 2.5 | 3.6 | 4.6 | 5.4 | 6.2 | 7.0 | 7.8 | 8.6 | 9.4 | 10.2 | 11.1 | 12.1 | 13.3 | 14.6 | 16.2 | 18.2 | 20.7 | 24.1 |  |
| 70°        | 21.1°      | 1.3  | 2.5 | 3.5 | 4.5 | 5.4 | 6.2 | 6.9 | 7.7 | 8.5 | 9.2 | 10.1 | 11.0 | 12.0 | 13.1 | 14.4 | 16.0 | 17.9 | 20.5 | 23.9 |  |
| 80°        | 26.7°      | 1.3  | 2.4 | 3.5 | 4.4 | 5.3 | 6.1 | 6.8 | 7.6 | 8.3 | 9.1 | 9.9  | 10.8 | 11.7 | 12.9 | 14.2 | 15.7 | 17.7 | 20.2 | 23.6 |  |
| 90°        | 32.2°      | 1.2  | 2.3 | 3.4 | 4.3 | 5.1 | 5.9 | 6.7 | 7.4 | 8.1 | 8.9 | 9.7  | 10.5 | 11.5 | 12.6 | 13.9 | 15.4 | 17.3 | 19.8 | 23.3 |  |
| 100°       | 37.8°      | 1.2  | 2.3 | 3.3 | 4.2 | 5.0 | 5.8 | 6.5 | 7.2 | 7.9 | 8.7 | 9.5  | 10.3 | 11.2 | 12.3 | 13.6 | 15.1 | 17.0 | 19.5 | 22.9 |  |
| 110°       | 43.3°      | 1.1  | 2.2 | 3.2 | 4.0 | 4.9 | 5.6 | 6.3 | 7.0 | 7.7 | 8.4 | 9.2  | 10.0 | 11.0 | 12.0 | 13.2 | 14.7 | 16.6 | 19.1 | 22.4 |  |
| 120°       | 48.9°      | 1.1  | 2.1 | 3.0 | 3.9 | 4.7 | 5.4 | 6.1 | 6.8 | 7.5 | 8.2 | 8.9  | 9.7  | 10.6 | 11.7 | 12.9 | 14.4 | 16.2 | 18.6 | 22.0 |  |

From the U.S. Dept. of Agriculture "Wood Handbook — Wood as an Engineering Material" Section 3-7

It is important to note that gaps in the floor may come and go seasonally due to temperature and relative humidity changes. The amount of movement depends upon the temperature and relative humidity (bamboo, like all hardwoods, expands and contracts as its moisture content rises and falls).

Teragren bamboo flooring is best installed by one of the following methods: Note the method you choose will be dictated by whether or not the flooring is being installed above or below grade (above ground level or below ground level).

- Above or on grade: Flooring may be installed by nailing, stapling, or gluing planks directly to a wooden or concrete subfloor. Note: Do not nail or staple planks to a concrete subfloor.
- Below grade: Teragren does NOT recommend installing this product below grade

**Tools Recommended**

**Nail or Staple Installation:** Hammer (1 lb), tape measure, chalk line, carpenter square, scribing block, flat bar, 1/2" wedges, saw, chop saw, manual or pneumatic tongue & groove flooring stapler or nailer, 1-1/2"-2" long 15 1/2 gauge 1/2" crown staples or equivalent, or for the nailer 1-1/2"-2" 15 1/2 gauge cleats, moisture barrier (concrete subfloor) or vapor retarder (wooden subfloor).

**Glue-down Installation:** Hammer (1 lb), tape measure, chalk line, pencil, carpenter square, scribing block, flat bar, 1/2" wedges, saw, chop saw, premium wood flooring adhesive, low adhesive painter's tape, moisture barrier.

**Sub-Floors**

A moisture barrier such as 6 mil polyethylene film should be placed in crawl spaces. Wood sub-flooring surfaces must have no flex and must be smooth, level, clean, dry, and free of contaminants. Fix any squeaks or movement in the sub-floor prior to installation. High spots should be sanded flat. Any low spots equal to or greater than 5/64" (2mm) over 78" (1.98 meter) should be filled (brought to level) using a non-compressible material. Suitable surfaces may include concrete, particleboard, wood floors, and both ceramic and vinyl tiles, among others. Please consult with your professional flooring installer to determine suitability of sub-floor surface. Teragren recommends using 5/8" (16mm) T&G CD Exposure 1 plywood for 12" (30.5cm) and 16" (41cm) on center floors (OC), 3/4" (19mm) T&G CD Exposure 1 plywood for 16" (40.6cm) to 19" (48.3cm) OC floors, and 7/8" (22mm) T&G CD Exposure 1 plywood for 24" (61cm) OC floors. A sub-floor of 1-1/8" (28.5mm) plywood over joists at 16" (40.6cm) on center is recommended for an optimal installation. Note: the use of particleboard may result in a substandard subfloor due to the lack of rigidity.

Concrete sub-floors must be tested for moisture in more than one place for consistent readings. Teragren recommends using the Calcium Chloride Test Method to quantify the volume of moisture vapor radiating from a concrete slab surface over time and if vapor pressure exceeds 3 lbs. (1.36kg) per 1000 square feet (93 square meters) in 24 hours to not install the floor. Concrete should be checked for flatness prior to installation and any low spots or voids should be filled to a minimum of 3/16" (5mm) within a 10' (3 meter) radius or 1/8" (3.2mm) in a 6' (1.8 meter) radius, and high spots ground to surface. Surface must be smooth and free of debris, oils, grease and solvents.

## Nail or Staple Down

Prior to installation, for best results, place a UU-B-790a, Grade B, Type 1, Style 1a permeable vapor retarder or equivalent with a perm rating between .7 and 1 over the entire sub-floor following the manufacturer's instructions.

Installed flooring should be square with the space and perpendicular to the joists, leaving a 1/2" expansion space from base plate or wall. Starter rows should be held firmly in place by wedging or blind nailing. Once starter rows are secure, additional rows should be blind nailed directly above the tongue at a 45-50 degree angle to the face of each plank. Fasteners should be spaced at 10 to 12 inch intervals per plank. Nails or cleats should not be placed closer than six (6) inches from the end of planks to prevent splitting of the tongue. When choosing a nail gun, be certain the model is appropriate for the tongue & groove profiles so as not to damage the edge or surface of the flooring.

**The selection and use of any nailer is at the sole discretion and responsibility of the owner/installer.** For a list of nailers tested by their manufacturer(s) as being compatible with Teragren flooring products, please visit [teragren.com/downloads/Teragren Nailer Guidelines](http://teragren.com/downloads/Teragren_Nailer_Guidelines).

## Glue-down Installation

Teragren recommends the use of a low-VOC, premium, water-free flooring adhesive and/or moisture barrier system specifically recommended by the adhesive manufacturer for use with bamboo flooring. Note: Always use a moisture barrier and adhesive system manufactured by the same company – never mix products.

The sub-floor must be extremely flat (see adhesive manufacturer's specifications), be square with the space, and run perpendicular to the joists. Leave a 7/16" expansion space from base plate or wall. Starter rows should be held firmly in place using wedges. Once the starter rows are secure, apply the adhesive per the manufacturers' installation instructions. **NOTE:** Always remove any adhesive from the surface of the flooring (smudges, fingerprints, etc.) before it dries. Clean up as you go – do not wait until the installation is complete. Cured adhesives are very difficult to remove and may permanently damage flooring. **Always follow the adhesive manufacturer's installation instructions.**

For a list of adhesives warranted by their manufacturer(s) as being compatible with Teragren flooring products, please visit [teragren.com/downloads/Teragren Adhesive Guidelines.pdf](http://teragren.com/downloads/Teragren_Adhesive_Guidelines.pdf)

It is up to the owner/installer to confirm the warranty, the environmental statements of the manufacturer, and the suitability of any adhesive for the intended end-use. The selection and use of any adhesive / moisture control system is at the sole discretion and responsibility of the owner/installer.

## Radiant Heat

Teragren CRAFTSMAN Prefinished 6' x 6" Wide Plank bamboo flooring is suitable for installation over many radiant heating systems as long as the surface temperature of the installed flooring never exceeds 85°F. Due to the fact that radiant heating systems create "dry" heat, it is essential that the relative humidity in the installation environment be maintained between 35-55% and that the maximum difference in moisture content between the sub-floor and the flooring material never exceed 2 percent. When floating the flooring, the underlayment may insulate the heat slightly from transferring up through the floor. The owner/installer assumes sole responsibility for ensuring that the job site has environmental conditions/controls suitable for the installation of Teragren bamboo flooring over the chosen radiant heating system. The radiant heat system needs to be in operation for at least 7 days prior to installation, shut off 4 hours prior to installation, and then returned to operation once the installation is complete. When choosing an installer for application over radiant heat, consider a member of the Radiant Panel Association. Please refer to [www.radiantpanelassociation.org](http://www.radiantpanelassociation.org) for more information.

## Maintenance

Teragren recommends vacuuming or sweeping in order to remove dirt and grit prior to cleaning the flooring. Remove any liquid spills promptly. Exposure to the sun and ultra-violet light can accelerate oxidation (color- change). Periodically rearrange rugs and furniture to allow for consistent aging of the flooring. Use area rugs in high traffic areas. Install wood guards on the feet or legs of furniture.

Do not use wax, oil soap or other household cleaners. Teragren recommends using either *WoodWise Floor Cleaner* by [Design Hardwood Products](#) (800.424.7092), or *Bona Swedish Formula® MicroPlus Hardwood Floor Cleaner* by [BonaKemi USA, Inc.](#) (800.574.4674).

Proper care and maintenance can extend the life of your floor for many years; however, at some time a re-coat or total refinishing may be desirable. To re-coat your floor and remain in conformance with the Teragren warranty, follow the manufacturer's instructions at either of the following:

[Basic Coatings](#) *Tykote Sandless Re-coating System* (800.441.1934) or *BonaPrep™ Re-coating Adhesion System* by [BonaKemi USA](#) (800.872.5515).

Contact your Teragren distributor or retailer for more information or [email tech support](#).

