

# INSTALLATION GUIDELINES

## Craftsman II



### *Unfinished 6' x 6" Wide Plank Bamboo Flooring*

#### **Important Product Line Notes:**

- Check Teragren.com for the latest updates to our Installation Guidelines
- Teragren Unfinished Craftsman II Flooring is suitable for installation as a floating system above, on, or below grade, or as a nail or glue down system above or on grade. Use only adhesives certified by their manufacturer for use with Bamboo.
- Acclimation: Teragren Unfinished Craftsman II Flooring should be delivered to the job site no less than 72 hours prior to installation. Flooring should be removed from its packaging and be allowed to acclimate to the relative humidity conditions expected to be present on an ongoing basis. Please see section on Product Acclimation.
- NOTE: Do not install cabinets or walls on top of the floating floor.
- Always install transition pieces between rooms etc. to allow unique spaces to expand and contract in an unrestricted manner
- Ensure flooring is installed to allow for up to 1/2" expansion or contraction around perimeter
- Bamboo Flooring may be installed over radiant floor heating systems (see "Radiant Floors" section below). Surface Temperature of flooring should never exceed 85° F
- The use of Vapor Barriers (over cementitious materials) or Vapor Retarders (over wood) is mandatory
- Installer to document installation date, product run code (off box ends), flooring moisture content, site relative humidity, site temperature, and subfloor moisture content. This information should be retained by the installer and left with the property owner as a permanent record.

#### **Pre-Installation Notes:**

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.

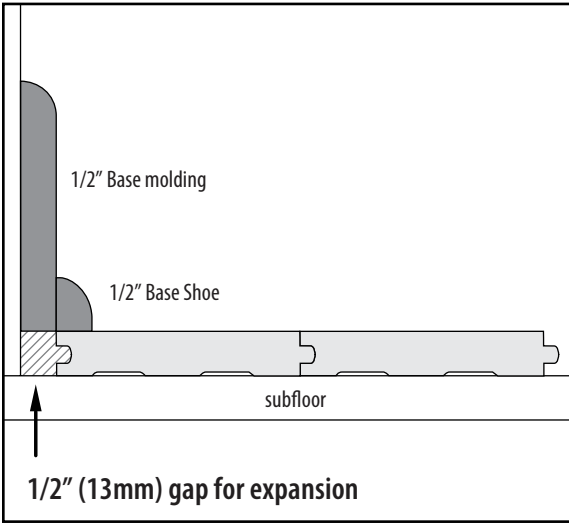
Teragren LLC recommends using the services of a professional hardwood flooring installer. For more information and for guidelines on the installation of hardwood flooring, please contact the National Wood Flooring Association or review their website <http://www.woodfloors.org>.

Because bamboo is a natural fiber, it is not uncommon for natural variations in color to occur within and between individual flooring planks. 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 sticks 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.**

**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 gap, cup, buckle, or otherwise dimensionally change. Bamboo Flooring must be installed into a relative humidity controlled environment over a moisture barrier or vapor retarder (see Sub-Floors section below) per the following specifications:**

- **Concrete Subfloors:** Use an appropriate liquid or trowel-applied moisture barrier membrane/adhesive system. Impermeable moisture barrier 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



**NOTE: Flooring must be installed in such a manner to allow for up to 1/2" expansion and 1/2" contraction of your installed flooring.** Bamboo, like all hardwoods, expands and contracts as its moisture content rises and falls.

Use a combination of wall moldings such as a base-molding and base-shoe together to ensure that the edge of the installed flooring does not strike the wall if it expands and does not show if the flooring shrinks.

**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. 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:**

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.

Acclimation should occur at the room temperature expected to be present before, during, and after installation. For maximum material stability, Bamboo Flooring must 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%	
° F	° C	<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

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 floating, 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:** Flooring must be floated over a suitable subfloor

**Tools Recommended (not all tools may be required):**

**Nail or Staple Installation:** Hammer (1 lb), tape measure, chalk line, carpenter square, scribing block, flat bar, 1/2" (12mm) wedges, saw, chop saw, manual or pneumatic tongue & groove flooring stapler or nailer, 1-1/2"-2" (38-58mm) long 15 1/2 gauge 1/2" crown staples or equivalent, or for the nailer 1-1/2"-2" (38-58mm) 15 1/2 gauge cleats, 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 (concrete subfloor) or vapor retarder (wooden subfloor)

**Floating Installation:** Rubber mallet, tapping block (tested to ensure it won't damage planks), tape measure, chalk line, pencil, carpenter square, scribing block, flat bar, 1/2" (13mm) wedges, saw, chop saw, moisture barrier (for crawl spaces), moisture barrier or vapor retarder (depending on subfloor material), underlayment (floating floor approved underlayment or cork not exceeding 1/8" (3mm) in thickness may be used).

### **Sub-Floor Examination and Preparation:**

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 flooring installation. The sub-floor surface must be level and smooth prior to flooring installation. Subfloors should be checked for flatness prior to installation and any low spots or voids should be filled to a minimum of 3/16" (4.76mm) within a 10' (3 meter) radius or 1/8" (3mm) in a 6' (1.8 meter) radius, and high spots ground to surface.

Acceptable sub-floor specifications include 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 a Calcium Chloride Test Method to quantify the volume of moisture vapor radiating from a concrete slab surface over time and / or a Relative Humidity Probe test to quantify the amount of relative humidity within the slab. The use of a Vapor Barrier (over cementitious materials) or a Vapor Retarder (over wood) is mandatory.

**Note:** Depending on the geographical area and interior climate control systems of the installation environment, to minimize expansion of nailed or glued-down floors that are wider than 20', installers may need to build-in additional spacing between planks and at the edge of rooms. Where additional spacing is required, use a removable spacer between every few rows of planks.

### **Nail or Staple-Down Installations:**

Install a vapor barrier. Installed flooring should be square with the space and perpendicular to the joists, leaving a 1/2" (12mm) 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 (25-30cm) intervals per plank. Nails or cleats should not be placed closer than 6" (15cm) 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 [http://www.teragren.com/downloads/Teragren\\_Nailer\\_Guidelines.pdf](http://www.teragren.com/downloads/Teragren_Nailer_Guidelines.pdf).

### **Glue-Down Installations**

Install a moisture barrier or vapor retarder. 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 1/2" 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 [http://www.teragren.com/downloads/Teragren\\_Adhesive\\_Guidelines.pdf](http://www.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.

## Floating Floor Installation

Install a moisture barrier or vapor retarder over the entire subfloor surface following closely the manufacturer's recommendations. Next, roll out 1/8" (3mm) padding (underlayment) one roll at a time over the moisture barrier or vapor retarder, being careful not to poke holes through or damage either material during installation. Run padding up walls 1" to 1-1/2" (25.4 to 38.1mm) and secure in place with tape. Join padding sections to one-another with tape. Make sure to tape down all loose edges. Other approved floating floor underlayment materials such as cork may be used. Follow underlayment manufacturer's installation instructions. Note: The use of an underlayment or padding thicker than 1/8" (3mm) may result in plank movement causing damage to the flooring and/or friction induced noise such as "creaking" or "squeaking".

Measure the room so that the quantity of flooring required is known (length x width = square feet). If the last board required is too narrow in width, it may be necessary to install length-wise cut boards on both sides of the room to give it an overall balanced look. Ensure that the floor will fit under doors and skirting strips. Existing skirting strips may have to be removed during installation to allow for the expansion perimeter. Ideally, the flooring should be installed parallel to the longest dimension of the room. In a square room, the long joints should (preferably), follow the path of the incoming light. Allow for a minimum expansion space of 1/2" (13mm) around the perimeter of the installed flooring. For floors larger than 16' (4.87 meter) in any one direction, leave an additional expansion space of 1/8" (3.2mm) on the edges for each 48" (1.2 meter) of installed flooring. For example, a 24' (7.3 meter) square room would require about 3/4" (19mm) expansion on all sides. Rooms larger than 40' (12.2 meters) wide (boards running length of room) require an expansion joint in the middle of the room such as could be provided by leaving an intentional gap covered by a t-mold (or other flat molding) or other accessory piece. Any rooms that are not square (such as a T, L, F, or U shaped room) must have non-parallel areas separated by an expansion joint. All door opening must have an expansion joint between rooms. Under no circumstances should the floor's ability to move freely be restricted.

**First Row:** No fastening to the subfloor is required in a floating-style installation. Walls are often not straight; therefore, it is very important to square the first row. Use a chalk line to ensure the rows are perfectly straight. Place a spacing wedge of the desired thickness against the wall. Prior to placing your first plank, squeeze the adhesive into the upper edge of the groove at the end of the plank. Lay the first plank with the long groove edge facing the wall and the tongued end against the spacing wedge. After applying glue to the groove on the end of the second plank, place it at the end of the first plank and gently tap into place. Repeat as required to complete first row. All adhesive spillage should be removed immediately as it occurs to prevent permanent damage to the flooring. Always follow the adhesive manufacturer's instructions as to how to remove unwanted adhesive.

**Second Row:** Begin the second row using the cutoff from the end of the first row as a starter plank for this row. This assures randomly staggered end joints. Apply adhesive to the end and side grooves and engage the planks. Use a tapping block to put the planks together (tap gently until a snug fit is achieved). Continue this process until all but the last plank is finished. Never strike the planks directly in order to engage the tongue and groove. Always use an approved tapping block and hold it tightly pressed to the tongue of the flooring. If not, damage to the top layer could result. It is extremely important that each completed row be secured to the adjacent row with straps or tape. If using tape, be certain that the tape is meant for the purpose of securing prefinished floating floors. Caution: The use of tape other than that specifically designed for prefinished flooring may remove the finish from your floor when the tape is removed.

**Completing Floor:** If necessary, cut planks lengthwise as required to fit planks for the final row. Remove all spacing wedges. Install molding as required to hide expansion gap. Remove all tape and or straps. **Note: Adhesive must be allowed to dry completely per manufacturer's instructions before placing furniture or allowing foot traffic. Never install cabinets or walls on top of a floating floor.**

## Installation around pipes or columns:

Drill holes and saw out flooring as required to make room for any exposed structure or pipe. Note: holes around pipes or other items must be at least 3/4" (19mm) greater in diameter than the pipe or structure.

**Installation with Transition pieces:**

Flooring must be allowed to float freely underneath the overlap portion of the transition piece. To ensure freedom of movement, cut or chisel off tongue as required allowing unrestricted movement of the flooring under the transition piece.

**Sanding Guidelines**

Due to the close tolerances to which Teragren products are milled, a properly installed floor requires only enough sanding to remove any minor height differences between planks to achieve the degree of smoothness desired. Teragren does not recommend sanding with 36 or 40 grit abrasives, especially across grain due to the tendency to tear-up fibers from the flooring.

Teragren recommends the following sanding procedures:

Belt or drum sander: First cut: 60 or 80 grit, oblique to grain both ways

Edger: First cut: 80 grit

Clean and Sweep:

Belt or drum sander: Second Cut: 80 or 100 grit, with the grain

Clean and Sweep: Spot fill or trowel-fill floor

Belt or drum sander Fine Cut: 100 or 120 grit

Edger: Fine Cut: 100 or 120 grit

Clean and Sweep:

Hand sand perimeter and scraped areas or use oscillating sander if stain is to be applied. Use buffing machine and 100-180 grit screen and up to 180 grit pad if floor is to have a natural finish. Use 100-120 grit screen if stain is to be applied.

**Stains & Finishes**

Any common hardwood flooring finish may be applied. As an environmentally-conscious company, Teragren prefers to use non-toxic oil or water-based urethanes.

**Radiant Heat:**

Teragren bamboo flooring is suitable for installation over radiant heating systems capable of maintaining a surface temperature at or below 85°F. When choosing an installer for application over radiant heat, look for members of the Radiant Panel Association. Please refer to [www.radiantpanelassociation.org](http://www.radiantpanelassociation.org) for more information on radiant heat systems.

Please note that the underlayment may insulate the heat slightly from transferring up through the floor and that rugs placed on a floor heated by a radiant source can increase the surface temperature of that floor by 2-3 degrees Fahrenheit. Before installing the flooring, activate the radiant heating system and leave it on for at least 21 days prior to installation. Radiant heating systems must be turned off 24 hours prior to and during flooring installation. The radiant heating system may be reactivated after the flooring installation is complete. Please refer to [www.radiantpanelassociation.org](http://www.radiantpanelassociation.org) for more information.

It is up to the owner/installer to confirm the suitability of any radiant-heating system for the intended end-use. The selection and use of any radiant heating system is at the sole discretion and responsibility of the owner/installer.

**Maintenance Guidelines:**

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® Hardwood Floor Cleaner by BonaKemi USA, Inc. 800.574.4674. Use of some oil soaps or wax based cleaners may cause future difficulty when recoating flooring.

Proper care and maintenance can extend the life of your floor for many years; however, at some time a re-coat 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® Dustfree Refinishing System [www.BasicCoatings.com](http://www.BasicCoatings.com) Toll-Free: 800. 441.1934  
or BonaPrep™ Re-coating Adhesion System by BonaKemi USA [www.bonakemi.com](http://www.bonakemi.com) Toll-Free: 800.872.5515.

[Basic Coatings](#) TyKote® Dustfree Refinishing 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](#).

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