

## 01 | MAINTENANCE AND PREVENTION TIPS

To keep the original quality and beauty of the product, follow the maintenance suggestions below:

- Use a vacuum cleaner regularly, removing any abrasive product that may be on the floor;
- Place door mats at all the entrances of your house and in places close to bathrooms, sinks, utility areas, etc.;
- Before putting the furniture in its place, apply felt protection disks on the ends of the legs of chairs, tables and moving items;
- Be careful with old shoes that may scratch the floor;
- Even though the Triângulo Floors have a UV protection finish, protect your flooring from the sun rays. Intense exposure to sunlight may cause modifications on the original coloring;
- While cleaning the floor do not use oil based products (e.g. wax), ammonia, petroleum or any other abrasive (such as a domestic detergent). Clean it with a soft cloth lightly dampened with warm water or with a product destined to the cleaning of wood floors with finish.
- If any liquid is spilled on the floor, wipe it immediately with a dry cloth.

Engineered Hardwood Flooring can be installed over most properly prepared subfloors and are engineered to be dimensionally stable, making them suitable for installation over all grade levels where moisture conditions do not exist. Please see installation guidelines and the proper job site conditions required below or contact Technical Services at 1-(757)420-4771. Note: Please follow all NFWA recommendations for proper job site conditions and installation guidelines.

### CAUTION: WOOD DUST

Cutting, sanding or machining wood products produces wood dust. While wood products are not hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200), the International Agency for Research on Cancer (IARC) and the State of California have classified wood dust as a human carcinogen.

**PROPOSITION 65 WARNING:** This product produces wood dust when cut, sanded or machined. Wood dust is considered a carcinogen by the State of California.

**Precautionary Measures:** Airborne wood dust can cause respiratory, skin and eye irritation. Power tools should be equipped with a dust collector. Use an appropriate NIOSH-designated dust mask. Avoid dust contact with skin and eyes.

**First Aid Measures in case of irritations:** In case of irritation flush eyes with water. If needed seek medical attention. If dermatitis occurs, seek medical attention.

**CWARNING! DO NOT MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVES OR OTHER ADHESIVES.**

Previously installed resilient floor covering products and the asphaltic or cutback adhesives used to install them may contain either asbestos fibers and/or crystalline silica. The products in this carton DO NOT contain asbestos or crystalline silica. Avoid creating dust. Inhalation of asbestos or crystalline 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 and may govern the removal and disposal of material. See current edition of the Resilient Floor Covering Institute (RFCI) publication "Recommended Work Practices for Removal of Resilient Floor Coverings" for detailed information and instructions on removing all resilient covering structures.

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# INSTALLATION GUIDELINES

## 01

### WARNING ADVERTISING INSTALLER / OWNER RESPONSIBILITIES

You've made an excellent choice by acquiring a product of exceptional quality, thus protecting your investment. Flaws on wood floors may happen as a natural characteristic of the wood. The Triângulo floors are produced with the most modern and sophisticated machines and within acceptable industry standards, allowing only up to 5% of defective products, based on the Original Purchase Order.

Read all the instructions in this guide before starting the installation of your flooring. These instructions are directed to an experienced hardwood floor installer. If there are any doubts, check with a professional or contact the National Wood Flooring Association (NWFA), at [www.nwfa.org](http://www.nwfa.org).

The installer / owner must be aware of the following and important considerations before starting the installation:

- The responsibility for the final quality inspection of the product is exclusively of the installer / owner. This inspection must be done before starting the installation, using reasonable selective criteria (common sense). If you detect any problem, do not install the floor and contact the sales person.
- Triângulo's Engineered Floors may be installed directly on the concrete or on a wood underlayment. What will determine the type of installation to be used is the quality of the finish of the place of installation.

The inspection for this decision must be done before starting the installation of the floor. For Triângulo's Solid Floors a nail down installation is recommended.

- A margin of 5 to 10% in additional flooring must be considered in relation to the size of the area to receive the flooring, to compensate for the losses with cuts.

**CLEAN UP Immediately clean any wet adhesive from the prefinished side of the hardwood flooring using the manufacture recommended adhesive remover. Note: urethane adhesives will chemically bond with and permanently disfigure the hardwood finish if not removed while wet. This is not covered by the finish warranty.**

See all information and installation guidelines below or contact Technical Services at 757-420-4771. Note: Please follow all NWFA recommendations for proper job site conditions and installation guidelines.

#### Equilibrium Moisture Content Chart

Temp.	Relative Humidity, Percent																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98
30°F	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	26.9
40°F	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	26.9
50°F	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	26.9
60°F	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	26.8
70°F	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	26.6
80°F	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	26.0
90°F	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	26.0
100°F	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	25.6

*From the U.S. Dept. of Agriculture "Wood Handbook – Wood as an engineered Material"*

#### SOLID WOOD SUBFLOORS - DIRECT GLUE OR FLOATING INSTALLATIONS

ACCLIMATION INSTRUCTIONS - PLACE HARDWOOD CARTONS IN PROPER JOB SITE CONDITIONS FOR 48 HOURS PRIOR TO INSTALLATION. DO NOT REMOVE THE FACTORY SEALED PLASTIC UNTIL READY FOR INSTALLATION, ONLY OPENING THOSE CARTONS WHICH WILL BE INSTALLED AT THAT TIME. THE ENGINEERED HARDWOOD HAS BEEN PRE-ACCLIMATED AND SEALED IN ITS PACKAGING.

ACCLIMATION INSTRUCTIONS FOR SOLID - PLACE HARDWOOD CARTONS IN PROPER JOB SITE CONDITIONS AND OPEN PACKAGING. THE LENGTH OF ACCLIMATION TIME WILL VARY BASED ON THE HARDWOOD AND ITS ENVIRONMENT. ACCLIMATION IS COMPLETED ONCE A MOISTURE BALANCE IS REACHED BETWEEN THE HARDWOOD AND ITS NORMAL INDOOR SURROUNDINGS. THIS CAN TAKE DAYS TO WEEKS TO ACCOMPLISH. FOR THE BEST RESULTS, INDOOR TEMPERATURES SHOULD BE KEPT BETWEEN 60-80 DEGREES FAHRENHEIT AND RELATIVE HUMIDITY LEVELS BETWEEN 30-50%, BEFORE, DURING, AND AFTER INSTALLATION.

- Minimum 3/4" (19 mm) thick with a maximum width of 6" (15 cm) installed at a 45° angle to the floor joists.
- Group 1 dense softwood (Pine, Larch, Douglas fir, etc.) No. 2 common, kiln dried with all board ends bearing on joists.
- For direct glue-down applications add 3/8" (9.5 mm) approved floor panel underlayment.

## CONCRETE SUBFLOOR MOISTURE CONTENT

On and below grade applications are susceptible to moisture and should be tested for moisture prior to installation in several locations within the installation area. Acceptable conditions for above, on and below grade applications on concrete are:

- LESS THAN 3 LBS./1000 SQ. FT./24 HRS. CALCIUM CHLORIDE TEST (ASTM F1869) OR
- LESS THAN 75% RH LEVELS IN CONCRETE USING IN-SITU PROBES (ASTM F 2170-02) OR
- NO GREATER THAN 5% ON A TRAMEX CONCRETE MOISTURE ENCOUNTER METER OR EQUIVALENT CONCRETE MOISTURE METER.

## 02 | JOB SITE INSPECTIONS

The Engineered Long and Single Strip and the Engineered Veneer Face of Triângulo Floors may be installed above, on the same level, or on levels below the ground.

The Triângulo Solid Floor may only be installed above and at ground level, never below it.

The Floor must be the last item to be installed. All the work that involves water and humidity must be completely finished. The concrete must be clean, completely leveled and as dry as possible (60 to 90 days, minimum). The equilibrium humidity level in the environment must be ensured that it is within acceptable limits (8% to 10%). This may be easily verified using the following Equilibrium Moisture Content Chart.

Subfloor must be level to 1/8 inch per 10-foot span. To check, stretch a 10-foot string or lay a 10-foot straightedge over the subfloor. If the subfloor dips or crowns 1/8 inch or more in the span, it must be leveled. Use a cementitious patch or leveler to level low areas in the subfloor. If the floor has a crown or rise, level it by sanding to meet the 1/8 inch specification.

It is the total responsibility of the installer / owner the testing of the moisture of the concrete slab and the wood subfloor or underlayment (when applicable), and the equilibrium moisture level in the environment, before the installation.

## 03 | TOOLS AND ACCESSORIES

Basic tools to install the Triângulo floors:

- Measuring tape • Chalk line • Hand saw or circular saw • Manual sand paper • Hammer • Adhesive tape • Wood wedges
- Cleaning product for wood floors
- Adhesive Manufactures recommended adhesive remover. If using a Urethane adhesive be aware the adhesive must be removed while wet.

For glue down installation:

- Modified Polymer/Silane or Urethane Adhesive for Hardwood Floors • Wood strips for "holding block"
- For easier cleanup, we suggest Silane or Polymer based adhesives.
- Use the manufacture's recommended trowel to apply adhesives.

For nail down installation:

- Hardwood Floor Nailer • 1 1/2" or 1 3/4' 18 Gauge Cleat/Nail • Glue assist is recommended.

For "Floating" installation:

- T&G Adhesive for hardwood floor • Polyethylene pad with noise reduction and moisture barrier features

## 04 | INSTALLATION

### a) FOR GLUED DOWN INSTALLATION.

Utilization: Engineered Flooring

Cut the door jambs so that the floor may fit under them. Start the installation by the longest wall of the room (A).

Drawing a chalk line (B – Figure I), you may delimitate a "working area" (C). This space will give the installer a free area to work without having to move on the adhesive that will be spread on the place of installation.

Using aligned wood pieces and 2" concrete nails, establish a "holding block" (E) to start the installation, nailing them before the chalk line.

This holding block will help fixing the floor, giving the necessary support when pressing the strips on the adhesive.

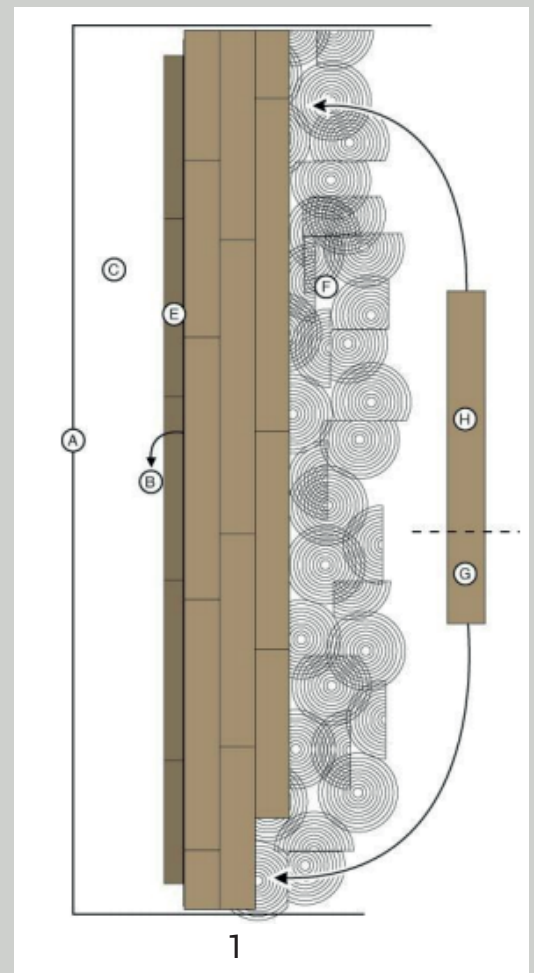
Leave a 1/2" space for the natural expansion of the floor on the four sides of the room, close to the walls (D).

Installing:

Spread an appropriate adhesive for Hardwood Floors Installations in a circular shape (F). Select the first wood piece and place it on the ground, on the glue, with the groove side turned to the holding block, pressing the piece against the adhesive. Do the same thing up to the last piece. Measure and cut the last piece to complete the first row of wood strips (G). Use, whenever possible, the leftover piece to start the next row (H). During all the installation, use pieces with at least 6" (15cm) difference, shorter or longer than the ones used on the prior row (figure III). Use adhesive tapes and wood wedges to help keep the pieces immobile until the glue dries.

Remove the holding block and install the last floor rows in the working area.

Wait 72 hours to use the floor. Remove the wedges and the adhesive tapes and install the skirting boards (I), setting them on the wall (J).



b) FOR NAIL DOWN INSTALLATION.

Utilization: Engineered Flooring / Solid Floors.

Make sure that the wood underlayment (L) is installed correctly. Cut the door jambs so that the floor and the underlayment may fit under them. Start the installation from the longest wall in the room (A).

Draw a chalk line (B – Figure II), to allow an aligned installation of the strips in relation to the wall (K). The glue assist method is recommended for engineered hardwood floors which are 5" or wider.

Installing:

Place the first strip of the floor aligned between the chalk line and the wall, with the groove close to the wall and the tongue aligned with the chalk line (figure II). Drive the setting nails on the face of the floor, as close as possible to the wall, so that the skirting boards cover their heads (M).

Measure and cut the last piece to complete the first row of wood strips (G). Use, whenever possible, the leftover piece to start the next row (H).

From the second row of strip to the last one, drive the nails 4" apart in the tongue, in a 45° angle (N).

During the whole installation use pieces with at least 6" (15cm) difference, longer or shorter than the ones used in the prior row (figure III).

Remember to leave a ½" space for expansion, in the four sides of the installation, close to the walls (D).

Install the skirting boards (I), setting them on the wall (J). The floor is ready to be used.

c) FOR "FLOATING" INSTALLATION

Utilization: Engineered Long Strip Engineered Single Strip / Engineered Veneer Face Floors.

This installation may be done with or without a wood underlayment.

For this installation it's necessary to place a polyethylene 2-in1 pad with moisture barrier. under the wood floor that will insulate the area avoiding unwanted noises.

Cut the door jambs so that the floor, the underlayment (if used), and the rug may fit under them.

Spread the polyethylene rug over the whole area, over the underlayment (if used).

Establish a chalk line (B – Figure II), to guarantee an aligned installation of the strips in relation to the wall. (K).

Start the installation by the longest wall (A).

Leave a ½" space for the natural expansion of the floor on all four sides of the installation, close to the walls (D).

Installing:

Apply the glue on the groove of each strip (longitudinal and top). Place the first strip aligned between the chalk line and the wall, with the groove close to the wall and the tongue aligned with the chalk line (figure II).

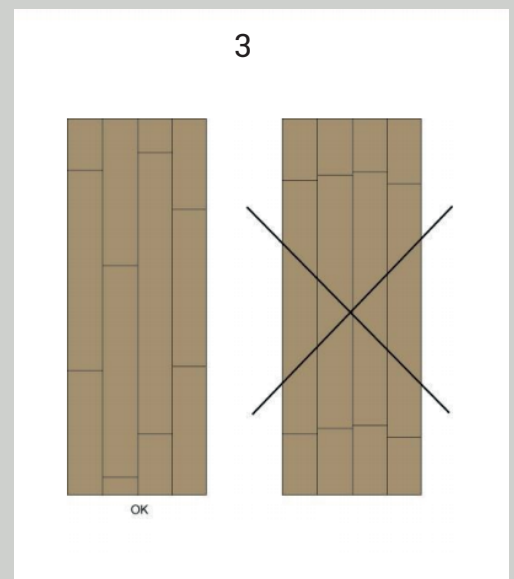
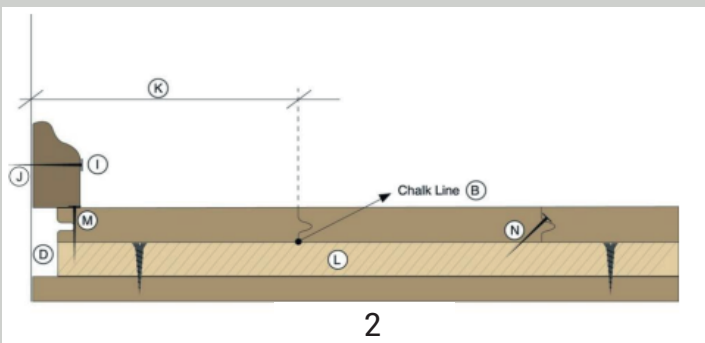
Measure and cut the last piece to complete the first row of wood strips (G). Use, whenever possible, the leftover piece to start the next row (H).

For the floor to remain immobile until the glue dries use adhesive tape and apply wood wedges between the wall and the strips.

During the whole installation use pieces at least 6" (15 cm) shorter or longer than the ones used in the prior row (figure III). Don't forget to leave a ½" expansion space on the four corners of the installation, close to the walls. (D).

Wait 48 hours to use the floor. After this time, remove the wedges and the adhesive tapes and install the skirting boards (I), setting them on the wall (J).

Use transition pieces when necessary. We suggest that you place them in installation areas larger than 322 sqft (approx. 30m<sup>2</sup>).



To keep the original quality and beauty of the product, follow the maintenance suggestions below:

- Use a vacuum cleaner regularly, removing any abrasive product that may be on the floor. (using the bare floor setting)
- Place door mats at all the entrances of your house and in places close to bathrooms, sinks, utility areas, etc.;
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- While cleaning the floor do not use oil based products (e.g. wax), ammonia, petroleum or any other abrasive (such as a domestic detergent). - Clean it with a soft cloth or micro-fiber covered mop, lightly dampened with a product destined to the cleaning of prefinished hardwood floors.
- Only those cleaning products made specifically for cleaning prefinished hardwoods, such as Bona Hardwood Floor Cleaner and similar products are recommended. Triângulo does NOT produce, sell, nor warranty these cleaning products. (do NOT use scented versions which contain essential oils)
- If any liquid is spilled on the floor, wipe it immediately with a dry cloth.

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