

## **SOLID HARDWOOD | INSTALLATION GUIDE**

**Before you begin installation, please read all notes and instructions carefully.**

We recommend that the installer follow all guidelines set forth by the National Wood Flooring Association ([www.nwfa.org](http://www.nwfa.org)) for the job site, subfloor and general installation recommendations.

This flooring is intended for indoor use only. It is important to maintain a stable home environment year round by keeping temperatures at normal levels, between 60° to 80° F and relative humidity levels between 35% to 60%. The use of a humidifier or dehumidifier may be required to maintain these conditions.

Hardwood flooring can be installed on grade and above grade with the proper pre-installation procedures.

Wood flooring is a natural product that will vary in natural characteristics which is to be expected. Carefully inspect all material for visible defects in grade, manufacturing, and finishing. Inspect all material carefully for color, finish, sheen and defects PRIOR to installation. Material with visible defects found after installation are not covered under warranty. Installation implies acceptance of the quality, dimensions, and appearance of the flooring. If you are not satisfied with your flooring, please contact our customer support team and do not install until concerns have been addressed and you are satisfied with your flooring.

### **ACCLIMATION**

The wood flooring boards should be placed in the room in which they are to be fitted to acclimatize 5-7 days. Laying the plank flat out of the box to allow them to acclimate is ideal. Otherwise, carefully stack the boxes and open box ends to allow air to circulate through the planks. Do not stack more than 8 boxes.

The boards should be stored and laid in a room with relative humidity between 35% and 60%. The room temperature should be between 60° to 80° F.

### **INSTALLER / OWNER RESPONSIBILITY**

It is the responsibility of the owner/installer to inspect all flooring prior to installation for defects. It is also the owner/installer's responsibility to ensure the jobsite conditions, including but not limited to the jobsite subfloors as environmentally and structurally acceptable prior to installation.

Carefully inspect all material for visible defects in grade, manufacturing, and finishing. Wood flooring is a natural product that will vary in natural characteristics which is to be expected.

**Reactive Stain** – Hardwood that is treated with a reactive chemical stain will result in color variation. Carefully selected chemicals interact with the tannins, a natural occurring compound that is linked to color change, in the wood to replicate the oxidative processes that occur in wood when it is exposed to the elements. This results in a naturally aged look that would typically take years and decades for the wood to develop themselves. Depending on how much stain is applied and the grain structure, absorption of the stain will differ from plank to plank, as well as within the same plank. As the color follows the grain, the variation that occurs within the individual planks will collectively blend all of the boards together.

Prior to installation, the owner and/or installer are responsible for the final inspection of materials and is encouraged to report any deficiencies in grade, manufacture and finish directly to the seller. Should an individual plank be questionable or does not meet standards, contact your dealer – do not install the flooring – any material installed with visible defects void the warranty. We do not warrant against natural variations from sample to plank or from plank to plank that will occur after installation.

We recommend ordering 5% above the actual square footage requirement to allow for cutting and grading of material. Diagonal, herringbone, or bordered installations do require a higher percentage.

Due to inherent variations with wood flooring products, the installer must work out 4-5 cartons simultaneously to ensure proper blending across the floor.

**CAUTION - WOOD DUST:** *The International Agency for Research on Cancer (IARC) has classified wood dust as a natural carcinogen. Sawing, sanding, and/or machining wood products can produce wood dust that can cause respiratory, eye, and skin irritations. Equipment should include a dust collector to reduce wood dust in the air. Sweep or vacuum dust for recovery or disposal. Wear a designated dust mask to reduce exposure to wood dust. Avoid dust contact with eyes and skin. Wear gloves and safety glasses when handling and machining the product. In case of irritation, flush eyes or skin with water for at least 15 minutes. If other side effects occur, request medical assistance immediately.*

*Attention California Installers and Consumers: The installation of this product is known to the State of California to cause cancer.*

**ASBESTOS WARNING:** *Do not sand existing resilient tile, sheet flooring, backing, or felt linings as these products may contain asbestos fibers that are not easily identified. The inhalation of asbestos dust can cause asbestosis or other serious bodily harm. Check with local, state, and federal laws for handling hazardous material prior to attempting the removal of these floors.*

### **JOB-SITE CONDITIONS**

1. The building must be complete & enclosed. It is essential that masonry, dry wall, paint and all other 'wet' work be completed and given time to thoroughly dry as this will affect the moisture content of the job site.
2. The exterior grading should be complete with all gutters, downspouts and drainage directed away from the building. The crawl space must have adequate cross ventilation (equaling 1.5% of the, on grade, total sq. ft.) and a vapor barrier of 6-8 mil polyethylene film (covering 100% of the crawl space), joints overlapped and taped. There must also be a minimum of 24" from the ground to the underside of the joists.
3. Permanent HVAC systems must be working and in operation 7 days prior to installation to stabilize the interior environment to normal living conditions and to acclimate the flooring. The HVAC must also be in operation during and after the installation to ensure a stable environment to protect the hardwood floor. Ideal conditions are a temperature of between 60-80 degrees Fahrenheit (15-26 degrees Celsius) and relative humidity of between 35 - 60% at all times during and after installation. The use of a humidifier or dehumidifier may be required to maintain these conditions.
4. Engineered wood flooring can be installed on, above, and below grade level, but should not be installed in full bathrooms or other wet environments.

5. Take special care when transporting & unloading hardwood flooring at the job site. Store the hardwood flooring in a safe dry place making sure to provide a 4" air space under cartons that are stored upon "on-grade" concrete floors. Flooring should be stored in small lots in the rooms where the installation will take place and allowed to properly acclimate/condition to the job environment.
6. Flooring should be allowed to acclimate for a minimum of 5 days or longer until conditions are at normal living conditions and meet minimum installation requirements for moisture content. **Note: In particularly arid or excessively humid parts of the country, flooring may take as much as two weeks to acclimate & reach equilibrium with the environment.**
7. Moisture content should be checked with the appropriate moisture meter to ensure proper installation conditions. Moisture content of the wood subfloor should not exceed 11% and the moisture content of the wood should be within 2% of the subfloor.
8. Concrete subfloors must be fully cured for a minimum of 60 days and dry (3lbs or less/24 hrs./1,000 sq. ft., with a calcium chloride test) or less than 75% with relative humidity probes (in-situ testing)
9. Ensure exterior landscaping is complete and graded away from the foundation. Gutters and downspouts must be in place directing rain water away. Always store wood flooring in a controlled environment of 60 - 80° Fahrenheit (15° - 26° Celsius) and 35 - 60% relative humidity.

## Subfloor Types & Requirements

### *Sub-Floor Levelness Requirements*

**Before beginning installation, sub-floor levelness must be checked. It is required that sub-floors be level to within 3/16" in a 10 foot radius. This requirement applies to all types of sub-floors and all installation methods. The performance of flooring that is installed on non-conforming sub-floors will be greatly compromised and will void all warranties.**

The owner and/or installer is responsible for ensuring that the proper installation conditions and appropriate subfloors meet or exceed all NAWFA industry standards. The subfloor must be clean, flat, dry and structurally sound. Proper installation can be affected by adverse moisture content in the product, humidity at the job site, acclimation of flooring to local site conditions, preparation of job site, preparation of the subfloor, and flooring layout.

1. Subfloors must be completely clean – free of wax, paint, oil, sealers, adhesives, curing compounds, dirt, and other debris.
2. Subfloors must be structurally sound. Replace any water-damaged, swollen, or delaminated subfloor or underlayment. Any problems caused by inadequate substructures or improper preparation of substructures void all warranties.
3. Subfloors must be dry. An appropriate moisture content test using a pin-type moisture meter must be done and documented. For concrete floors, the slab must be cured for a minimum of 30 days before the moisture test.
4. The subfloor must be flat, meeting a minimum of 3/16" within 10" (5 mm in 3 m) or 1/8" in 6' (3 mm in 2 m). For concrete subfloors, sand high areas or joints, or fill all low spots with a cement-based leveling material (with a

minimum compressive strength of 3000 psi). Leveling compounds must also be cured for a minimum of 30 days before the moisture test.

**Preferred Plywood Subfloor:** Use 4'x 8' sheets of 5/8 CDX grade Ply- wood underlayment or 23/32" OSB underlayment with joist spacing 16" on center or 19.2 on with floor truss system. If joists are spaced over 16" on center or floor truss system over 19.2" on center, an additional layer of 1/2" CDX laid diagonal or perpendicular with 1/8" spacing will be required between sheets of underlay. Particle board is not an approved subfloor for nail down or glue down applications.

**Minimum Plywood subflooring Requirements:** 4 'x 8" sheets of 5/8" CDX grade underlayment with a maximum 16" on center joist construction. If the joist system is spaced over 16" on center an additional layer of 1/2" CDX Plywood underlayment, laid diagonal or perpendicular, will be required.

\*Minimum specified materials at maximum span and spacing may result in movement, gaps, and noises.

**Solid Board subflooring:** Should be 3/4"x 5 1/2" Group 1 dense soft- woods, No.2 Common, Kiln dried less than 15% MC.

**Concrete:** Solid Hardwood Floors can be laid on concrete provided an appropriate subfloor and moisture barriers are installed over concrete.

1. Make sure concrete is clean, flat, dry and structurally sound.
2. Floor should be flat to within 3/16" in 10'.
3. Substrate should be flattened to tolerance.
4. Always use a 6 mil poly moisture barrier when installing over concrete (Floating installation).
5. If a concrete subfloor is lightweight (less than 100 lb.) rule of thumb: Draw a nail across the top of concrete and if it leaves an indentation, it is probably lightweight concrete and cannot be installed using the glue down method. With light weight concrete you must float the wood flooring.

**Moisture testing for material and wood subfloors:**

Using a pin-style meter, test wood for moisture content. Wood should be between 6% - 9% moisture content prior to installation. The subfloor should be within 2% difference of the hardwood, with the moisture content of the subfloor not to exceed 11%.

Crawl spaces must be cross-ventilated (1.5% of the total sq. ft.). 6-8 mil black poly covering 100% of the ground and a minimum of 24" from the ground to the bottom of the joists.

**Test concrete for moisture using one of the following methods:**

**Calcium chloride test:** Follow test manufacturer's directions, performing 3 tests for the first 1,000 s/f and one additional test for every subsequent 1,000 s/f. Moisture emission rate should not exceed 3 lbs per 1,000 square feet.

**Insitu test:** Relative humidity probes should read 75% relative humidity or less in all areas.

For further information on moisture testing, follow the guidelines published by the National Wood Flooring Association, [www.nwfa.org](http://www.nwfa.org).

### **Additional Subfloor Notes**

Subfloor surface must be clean, flat, dry and structurally sound. Manufacturer will not be responsible for any product failure due to poor subfloor conditions or materials. Unsound or damaged sections should be repaired or replaced. Subfloor surface should be scraped or sanded clean and made flat prior to installation. The surface must also be free of any wax, dirt, paint, oil, grease, sealers, curing compounds and other debris. Sand or grind high spots and fill low spots with an approved floor patch compound.

It is very important to nail or screw any area of loose or moving subfloor that will cause squeaks. Manufacturer recommends the use of nails or screws with panels fastened every 12 inches along the joists or intermediate supports to ensure soundness of floor when complete.

### **Subfloor Inspection and Room Preparation**

Subfloor must be completely dry. If installing over new concrete slab, allow 60 days or more to dry thoroughly. The installer must test the concrete using recommended testing methods and levels.

Subfloor must be free of any paint, oil, greases, dirt, sealers, curing agents, dust and other residues.

If installing on any wood subfloor, the moisture content difference between wood floor and wood subflooring should not be more than 2%.

If installing over an existing vinyl floor, make sure vinyl is free of waxes, polishes, and is secured to the subfloor and that the underlying subfloor meets subfloor conditions.

Screw down all creaking and loose subflooring.

Remove doors and existing baseboards, quarter rounds and thresholds.

Door frames and other wooden obstacles should be sawed off at the bottom to allow enough room for the underlayment and planks to slide under.

### **RADIANT HEAT**

**EXCEPT FOR THE HICKORY, MAPLE, & ACACIA & EXOTIC SPECIES SELECTIONS, ½” or thicker flooring is warranted for installation over hydronic radiant heat if installed per these instructions. However, flooring is not warranted over *electric* radiant heat systems. Only hydronic systems are approved. Please carefully read the “Radiant Heat” section below before finalizing product selections.**

**Note: Flooring made with a hickory, maple or acacia or exotic species top layer is exempt from radiant heat warranty coverage.**

Flooring is not warranted for use over radiant heat systems heated by electric elements. Only hydronic systems are approved. Hydronic systems must include in-floor temperature sensors and an outdoor thermostat that allows the

system to adjust the water temperature according to anticipated heat loss. Flooring installed in multi unit projects where the water temperature is not regulated separately in each unit is not warranted.

Prior to installation over radiant heat moisture testing must be conducted and documented per ASTM 1869-89 (Calcium Chloride Test) or, for wood subfloors, using a pin type meter. The moisture content for concrete subfloors must not exceed 2.0 lbs. per 1000 square feet per ASTM 1869-89 (Calcium Chloride Test), and the moisture content for wood subfloors must not exceed 12%. If moisture levels exceed these limits, do not install the flooring.

The surface temperature of the subfloor must never exceed 82°F in any location. The temperature setting must always remain within 15°F of normal operating level, and should never be turned completely off. Excessive heat, rapid heating, and/or failure to maintain humidity levels between 30% and 60% are likely to cause cracking, cupping and other forms of floor failure. Slight surface checking (cracking), particularly at the ends of planks, should be expected in installations over radiant heat and do not constitute a product failure.

All concrete must be allowed to properly cure and dry for a minimum of 4 weeks prior to the operation of the radiant heat system. The system should then be operated at least 2/3 maximum output for a minimum of 2 weeks prior to installation of flooring to further allow moisture from the subfloor to dissipate and reach equilibrium. This procedure must be followed regardless of the time of year. Four (4) days prior to flooring installation, reduce the thermostat to 65°F.

As always, relative humidity of the jobsite must be maintained between 35 to 60%. Use of a humidification/dehumidification system may be required to maintain the proper humidity levels, particularly over radiant heat. Failure to maintain proper humidity levels will void all warranties.

Beginning 48 hours after installation, slowly raise the temperature of the heating system to its preferred operating level over a period of 5 days.

**[GLUE DOWN INSTALLATION]**

**TOOLS & ACCESSORIES**

- |   |  |
|---|--|
| <input type="checkbox"/> Broom or Vacuum    | <input type="checkbox"/> Hammer                    |
| <input type="checkbox"/> Moisture Meter     | <input type="checkbox"/> Pry Bar                   |
| <input type="checkbox"/> Safety Gloves      | <input type="checkbox"/> Wood Flooring Adhesive    |
| <input type="checkbox"/> Measuring Tape     | <input type="checkbox"/> Rags, Square Notch Trowel |
| <input type="checkbox"/> Hand Saw           | <input type="checkbox"/> Mineral Spirits           |
| <input type="checkbox"/> Chalk              | <input type="checkbox"/> Adhesive Remover          |
| <input type="checkbox"/> Electric Miter Saw | <input type="checkbox"/> Straight Edge             |
| <input type="checkbox"/> Floor Cleaner      |  |

\*The flooring installer is responsible for determining if the adhesive to be used is specified for the particular product being installed and proper trowel and spread rates per adhesive manufacturers’ instructions.

**INSTALLATION INSTRUCTIONS**

1. Mark out a straight line parallel to the chosen wall, allowing a 10mm gap for expansion. It may be necessary to scribe the first row of boards to achieve the correct alignment.

2. Once the first row of boards is correctly aligned and glued into place, weigh them down while the glue sets. Any surplus glue that may seep out onto the surface of the wood must be removed immediately with a damp cloth. The glue should not be applied in the groove or the tongue of the flooring.
3. Continue to fit the boards from the left to the right of the room. Always stagger the end joints by a minimum of 150mm and a maximum of 300mm. Measure and trim the last board to fit, allowing for the 10mm expansion gap. Where possible, use cut-offs to start the next row.
4. Flooring straps can be used to pull boards together and hold them into place whilst the glue dries.
5. The expansion gap of 10mm must be maintained during installation.
6. For the last row of boards, you can use the sandwich technique to measure the width of the board required, ensuring that the row is no less than 10cm in width.
7. All pipes, pillars, frames, etc. must be cut around to provide suitable expansion gaps.

#### **[NAIL OR STAPLE DOWN INSTALLATION]**

#### **TOOLS & ACCESSORIES**

- |   |   |
|---|---|
| <input type="checkbox"/> Broom or Vacuum    | <input type="checkbox"/> Pry Bar, Drill             |
| <input type="checkbox"/> Moisture Meter     | <input type="checkbox"/> Air Hose                   |
| <input type="checkbox"/> Safety Gloves      | <input type="checkbox"/> Tapping Block              |
| <input type="checkbox"/> Measuring Tape     | <input type="checkbox"/> In-line Air Regulator      |
| <input type="checkbox"/> Hand Saw, Chalk    | <input type="checkbox"/> Compressor                 |
| <input type="checkbox"/> Electric Miter Saw | <input type="checkbox"/> Pneumatic Nailer / Stapler |
| <input type="checkbox"/> Floor Cleaner      |   |
| <input type="checkbox"/> Hammer             |   |

\*The flooring installer is responsible for determining if the nailer/stapler to be used is specified for the particular product being installed and is adjusted properly to avoid damage to the flooring.

#### **INSTALLATION INSTRUCTIONS**

1. Select an outside wall as the starter wall, which will likely be straight and square with the room.
2. Mark a straight line parallel to the chosen wall, allowing a 10mm gap for expansion. It may be necessary to scribe the first row of boards to achieve correct alignment.
3. Along the straight line, install the first row of starter boards. The tongue must face away from the chosen wall. Drill pilot holes through the face of the plank (we suggest every 6") in the dark grain. Approximately 1" from the back edge of the board and secure planks with 1" finishing nails.
4. For the first few rows, pre-drill holes, then blind nail at a 45 degree angle through the tongue 1" to 2" from the end joints and every 6" in between along the length of the starter boards.

5. Continue to install the flooring. Always stagger the end joints by a minimum of 150mm and a maximum of 300mm. Measure and trim the last board to fit, allowing for the 10mm expansion gap. Where possible, use cut-offs to start the next row. Nail or staple 1" to 2" from the ends and 3" to 4" thereafter.
6. In case there are gaps between adjacent boards, use a tapping block to help engage the boards together until the tongue-and-groove is flush and tight.
7. For the last row of boards, allow for the expansion along the end wall if it is necessary to cut the width.
8. Drill pilot holes in the face every 6" (try to drill holes in darker portions of the wood) and install with 1" finishing nails. Countersink nails and fill with appropriate colored wood filler. Remove excess filler from the surface with a clean rag and proper cleaner.