

### PRIOR TO INSTALLATION

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Read all instructions completely and carefully before beginning any project. Final product inspection is the responsibility of the installer/owner prior to installation. Installer must use reasonable selectivity and hold out or cut off pieces with obvious defects, whatever the cause. Five percent (5%) must be added to actual square footage needed as allowance for cutting waste and errors in manufacturing. If an individual piece appears to be doubtful as to grade or manufacture, the installer should not use the piece of flooring. Installation implies acceptance of flooring.

As with all Hardwood manufacturers, if any questions arise that are not covered within our installation instructions, always refer to the National Wood Flooring Association (NWFA).

#### **CAUTION: WOOD DUST**

***Sawing, sanding and machining wood products can produce wood dust. Airborne wood dust can cause respiratory, eye, and skin irritation. The International Agency for Research on Cancer (IARC) has classified wood dust as a nasal carcinogen in humans.***

#### **JOB SITE CONDITIONS:**

In a new construction, hardwood flooring should be one of the last items installed. All work involving water or moisture (plumbing, acoustical ceilings, dry wall taping, etc.) should be completed prior to wood flooring being installed. Heating and air systems should be fully operating maintaining a consistent room temperature at 16°C to 27°C (60-80° F) and a constant relative humidity of 40 to 55%.

Flooring should not be delivered until the building has been closed in and cement work, plastering, painting and other materials are completely dry. Concrete and plaster should be cured and at least 60 to 90 days old. Check basements and underfloor crawl space to be sure that they are dry and well ventilated to avoid damage caused by moisture.

For proper acclimation, flooring should be at the job site at least 72 hours prior to installation or as long as necessary to meet minimum installation requirements for moisture content. **Acclimation within a closed or sealed carton may not be adequate due to lack of air movement, especially in dryer climates. Please take appropriate measures to ensure proper acclimation, which may entail removal of outer plastic wrapping or opening of cartons and peeling back of interior plastic wrapping if packaged in this manner.** (Do not open the ends of cartons only, as this can lead to tapered ends of individual flooring strips or planks).

Handle with care. Do not stand on ends. Store flooring in a dry place being sure to provide at least a four-inch air space under and around cartons.

Do not store directly on concrete or near outside walls. Cartons should be placed in the installation area.

The installation site should have consistent room temperature at 16°C to 27°C (60-80° F) and a constant relative humidity of 40 to 55% for a minimum of 5 days prior to installation of wood flooring. Note: The moisture content of the subfloor and wood flooring should be checked by an appropriate

method. There should be no more than 4% (2% on planks 3" and wider) moisture content difference between properly acclimated wood flooring and subflooring materials, taking into consideration normal living conditions and equilibrium moisture content (EMC).

**IMPORTANT:** ¾" solid flooring is for on or above grade installation only. ¾" solid flooring cannot be installed over radiant heat.

### APPROVED SUBFLOOR TYPES:

- APA approved ¾" or thicker exterior plywood.
- ¾" (23/32") OSB on 16" center floor joists properly nailed.
- Concrete slab with additional approved wood sleepers and screed system. (See NWFA's guidelines)
- Wood Floors (if installed at proper angle only).
- Resilient tile and sheet vinyl if installed over an above mentioned and approved subfloor.

**NOTE:** Particle board is not an acceptable subfloor.

### SUBFLOORS MUST BE:

- Clean – scraped or sanded, swept, free of wax, grease, paint, oil and other debris
- Smooth/Flat – within 1/8" in 6'. Sand high areas or joints, fill low areas
- Structurally Sound – nail or screw any loose areas that squeak. Replace any damaged subflooring or underlayment
- Dry – an 8 to 10% moisture content is ideal and must never exceed 13% prior to installation of wood flooring.

**REMEMBER:** All moisture testing must be before wood has been acclimated 72 hours and job site requirements met.

**Wood Substrates:** Test the moisture of the wood substrate using a calibrated moisture meter approved for testing wood moisture according to the meter manufacturer. The reading should not exceed 13%, or read more than a 4% difference than moisture content of products being installed. (maximum 2% for planks 3 1/4" and wider)

**Concrete Slabs (regardless of existing floor covering):** Must have a minimum of ¾" plywood installed as a screed/sleeper system with a minimum of 6mil polyfilm vapor barrier secured to the slab for solid hardwood to be nailed or stapled only. Engineered may be glued directly to the concrete.

All concrete subfloors must be tested for moisture content prior to installation of the hardwood flooring. The moisture content of the concrete subfloor must not exceed 3 lbs/1000 sq. ft emissions or contain a Relative Humidity of 75% or less, referring to ASTM F2170.

### METHODS TO TEST IF MOISTURE IS PRESENT IN THE CONCRETE SUBFLOOR:

1. Use an approved calibrated concrete moisture meter as a preliminary measurement for mois-

ture such as: Delmhorst Moisture Meter Model G Tramex Concrete Encounter. Follow manufacturer's specific calibration requirements. Generally, this type of testing will only give you an idea if moisture may be present. This does not imply a safe reading to install.

2. Perform a polyfilm test. Tape down 2' x 2' polyfilm squares (a clear garbage bag or plastic drop cloth will do) in several places on the floor. Wait 24 – 48 hours, and then check for the appearance of condensation on the inside of the bag or plastic for a darkening on the concrete subfloor. Either occurrence signals the likely presence of excess moisture, requiring a mandatory calcium chloride test or in-situ RH test ASTM C2170.

Once you have determined the moisture content, a test must be performed to determine the moisture and alkalinity emissions through the concrete slab.

- Perform a calcium chloride test according to the manufacturer's instructions. The maximum acceptable reading is 3-lbs. /24 hours/1000 sq. ft. for moisture emissions or RH in-situ probe test have a max of 75%.
- Perform a pH test according to the manufacturer's instructions. A pH reading of 6-9 on a pH number scale of 1 – 14 is acceptable.
- If the test results exceed this number the concrete slab should be sealed with appropriate sealers to correct those emissions as per the manufacturer's recommendations.

**Installation on plywood and wood substrates:** Do not install over particleboard. Subfloor should be constructed of 5/8" or thicker plywood when installing directly over minimum 2 x 10 floor joists 16" on center. Plywood sheets should be laid with grained outer plies at right angles to joists; adjacent rows staggered four feet and nailed every 6" along each joist with 7D or larger nails. When installing directly over old wood or strip floor, sand any high spots, re-nail old floor to eliminate squeaks or loose boards, and install new planks at right angle (perpendicular) to the old floor, or over lay old floor with 1/4" plywood underlayment. Leave a 1/8" gap at the edges and nail with 7D or larger nails every 6" at the edges and every 12" in both directions and through the interior of each sheet of plywood. The moisture content of the wood or plywood should not exceed 13%.

### JOB SITE PREPARATION

- Acclimate product for 72 hours prior to installation
- Verify subfloor is level to within 1/8" in 6', and structurally sound. Repair as needed
- Undercut door casings
- Remove any existing wall base, shoe molding, quarter round, and doorway thresholds

### INSTALLATION TOOLS

The following tools will be helpful, if not necessary for proper installation:

1. Moisture meter
2. Mallet
3. Table or circular saw
4. Circular Saw with a fine-toothed blade
5. Chalk-line
6. Tape measure
7. Hammer
8. Drill with 1/16" drill bit
9. Nailset
10. Jamsaw or handsaw
11. A good quality power nailer (in proper working condition, will greatly speed installation)

### GENERAL GUIDELINES

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#### GETTING STARTED

For optimal visual appeal, install parallel with the longest wall. However, to reduce subfloor sagging, the floor should be installed perpendicular to the flooring beams unless the subfloor has been reinforced. Installation should start from the straightest wall, usually an outside wall whenever possible. In at least two places, at least 18" from the corner, measure out equal distance from the starting wall and snap a chalk line. This measurement must be the sum of the width of the flooring plus an additional 3/4" to allow for expansion space and the width of the tongue. Allow 1/2" expansion when installing floating floors.

#### INSTALLATION – FIRST & SECOND ROWS:

For the first two rows, use boards that are among the longest and straightest. Use the widest plank for the first row for random and alternate width products. Align tongue of first row on chalk line. The groove should be facing the starting wall. Pre-drill 1/2" from back (groove) edge, 1" – 2" from each end, and at 6" intervals when possible. Fasten using 4 or 6d finishing nails or 1" pneumatic finish nails/brads. Countersink the nails.

Pre-drill and blind-nail at a 45° angle through the tongue of the first row every 1" – 2" from the ends and spaced in 8" to 10" intervals. To ensure flush engagement of groove with the following row(s), countersink the nails. Continue blind nailing using this method with following rows until stapler can be used. Alternatively use a pneumatic finish nailer and install nails/brads at the same intervals with a minimum length of 1 1/2"-2". To ensure the desired overall appearance, stagger end-joints of adjacent rows at a minimum of 4" to 6" when possible. Please see nailing patterns chart at end of document.

#### INSTALLING THE FLOOR:

Always use the recommended fastener for the specific product being installed. Use a minimum 1 1/2" fastener recommended by the stapler manufacturer 1" to 2" (2.5 – 5cm) from the ends spaced

at 8”to 10” intervals.

Set compressor at 70 PSI. If tongue damage occurs, lower air pressure. Fasten several sacrificial boards to the floor. Check for surface damage, air pressure setting, tongue damage, edge blistering, etc., before proceeding. Make all adjustments and corrections before installation begins. Once proper adjustments have been made, remove and destroy the boards. Work from several cartons when installing the floor to vary the depth and color of the overall look. The last 1 to 2 rows will need to be face-on the tongue side, following the nailing pattern used for the first row.

### NAIL DOWN INSTALLATION

Please refer to the National Wood Flooring Association (NWFA) for nail down installation instructions.

### COMPLETING THE INSTALLATION

- Remove all tape and clean the floor with the recommended hardwood flooring cleaner
- Trim all underlayment (floating only) and install or re-install any transition pieces, reducer strips, Tmoldings, thresholds, bases and/or quarter round moldings that may be needed. These products are available pre-finished to blend with your flooring. Nail moldings into the wall, not the floor
- Inspect the floor, filling all minor gaps with the appropriate blended filler
- If the floor is to be covered, use a breathable material such as cardboard. Do not cover with plastic
- Leave warranty and floor care information with the owner. Advise them of the product name and code number of the flooring they’ve purchased
- To prevent surface damage, avoid rolling heavy furniture and appliances on the floor. Use plywood, hardboard or appliance lifts if necessary. Use protective castors/castor cups or felt pads on the legs of furniture to prevent damage to the flooring.

### REQUIRED FASTENERS LISTED BY NWFA

WOOD FLOORING TYPE	FASTENER TO BE USED	FASTENER SPACING
Solid plank ¾” x 3” or wider	1 ½” – 2” fastener, or 6d-8d casing or finish nails. On slab with ¾” underlayment, use 1 ½” fastener.	Blind fastener spacing along the lengths of the strips, minimum two fasteners per piece near the ends (1” – 3”). In addition, every 6” – 8” apart for blind nailing, 10” – 12” for face nailing. To assist the nailing schedule, option is to apply adhesive.

### CARE AND MAINTENANCE

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Today's wood floors don't require the wax and buff treatment they used to. New technology in stains and finishes call for regular cleaning that takes little more than sweeping or vacuuming, with occasional use of a professional wood floor cleaning product. Over time, wood floors maintain their value and with little effort; preserve their timeless beauty and natural elegance for years to come.

#### **COLOR VARIANCE:**

Beautiful hardwood floors are a product of nature and will darken or lighten over a period of time due to exposure to sunlight. Some species darken deeper than others. This is a natural characteristic of wood and in most cases it will enhance the richness of the floor. Proper UV protection for large windows and doors is highly recommended for protection against over exposure to sunlight.

#### **MAINTENANCE TIPS:**

- Hardwood floors can last a lifetime and are easy to take care of. They will retain their distinctive beauty for years to come with simple and regular floor care maintenance.
- Sweep, dust mop, or vacuum weekly. If vacuuming, make sure vacuum head is a brush or felt, not a beater bar.
- Clean any spills promptly with a soft cloth.
- For more stubborn stains, apply a dime-sized drop of gentle cleaner to the area and rub with cloth. If more muscle is required, use a small amount of mineral spirits.
- Recommended cleaning products: Dry Swiffer or similar, Bona X Swedish Formula Hardwood Cleaner, or Basic Coating Squeaky Hardwood Floor Cleaner.
- Avoid oil soaps, liquid or paste wax, detergents, bleach, vinegar, abrasive soaps, and household cleaners containing lemon oil, tung oil, silicon, or ammonia. These may cause irreparable damage and void warranty.
- Never use a wet mop or douse floor with water or liquid cleaners. These can seep between the cracks and cause moisture damage. Wet mopping also voids warranty.
- Do not use hardwood floor cleaning machines.
- To avoid uneven UV aging and oxidation, rearrange rugs and furniture periodically.
- Minimize abrasive sand and dirt by placing mats on both sides of exterior doors. Area rugs in high-traffic areas are also a good idea. Note: Do not use rugs with rubber or vinyl backings – they trap moisture.
- Place protective pads beneath furniture legs and feet. Keep furniture casters clean.
- Keep pets' nails trimmed.
- Remove shoes with cleats, spikes, or exceptionally pointy heels.
- Take great care when moving furniture and heavy objects. Lay down a protective sheet of plywood.

**NOTE:** It is normal to have occasional sounds walking over any floating floor since it is not nailed or glued. This does not diminish the warranty of the product and should be anticipated. Sounds may vary or go away during heating and cooling seasons throughout the year that relate to the home's relative humidity fluctuations.