

### INSTALLATION INSTRUCTIONS

Cascade hardwood flooring can be installed on all grade levels; on grade, above grade and below grade. This includes installation directly to concrete, terrazzo and wood sub floors, or over existing ceramic tile, wood and vinyl floors, with proper preparation.

#### Installer/Owner Responsibility

It is the responsibility of the owner/installer to inspect the flooring. It is also the owner/installer's responsibility to ensure the jobsite conditions, plus the jobsite sub floors are environmentally and structurally acceptable prior to the beginning of installation.

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 piece be questionable or not meet standards, it should not be used. Materials installed with visible defects will not be covered by the warranty.

The owner and/or installer are responsible for ensuring that the proper installation conditions and appropriate sub floors meet or exceed all NAWFA industry standards. 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 sub floor, and flooring layout. The sub floor must be clean, flat, dry and structurally sound.

We recommend ordering 5% above the actual square footage requirements to allow for cutting and grading of material.

All installation methods to follow NAWFA guidelines.

#### Proper Site Conditions & Handling

1. The building must be complete & enclosed. It is essential that masonry, dry wall, paint and all other 'wet' work to be completed, given time to thoroughly dry as this will effect 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 at 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 between 60-80 degrees Fahrenheit (15-26 degrees Celsius) and relative humidity between 30-50% at all times during and after installation. The use of a humidifier or dehumidifier may be required to maintain these conditions.

4. Cascade Hardwood Flooring can be installed on, below and or above 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 72 hours or longer until conditions are at normal living conditions and meet minimum installation requirements for moisture content.

7. Moisture content should be checked with the appropriate device to ensure proper installation conditions. Moisture content of wood sub floor should not exceed 11% and the moisture content of the wood should be within 2% of the sub floor.

8. Concrete sub floors must be fully cured for a minimum of 30 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)

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 30% - 50% relative humidity.

#### Sub Floor Types & Requirements

**Preferred Plywood Sub Floor:** Use 4'x 8' sheets of 5/8 CDX grade Plywood 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 Sub flooring Requirements:** 4' x 8' sheets of 5/8" CDX grade underlayment with a maximum 16" on center joist construction. If 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 Sub flooring:** Should be 3/4"x 5 1/2" Group 1 dense softwoods, No.2 Common, Kiln dried less than 15% MC.

**Concrete:** Cascade Hardwood Floors can be laid on concrete provided an appropriate sub floor and moisture barriers are laid over concrete. Planks cannot be nailed direct into concrete.

1. Make sure concrete is flat, dry, structurally sound and clean.
2. Floor should be flat to within 1/4" in 10' or 1/8" in 6' .
3. Substrate should be flattened to tolerance.
4. Always use a 6 mil poly moisture barrier when installing over concrete.
5. If a concrete sub floor 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 can not be installed using the glue down method. With light weight concrete you must float the wood flooring.



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### 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 1000 s/f.

**In situ 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 Sub Floor Notes

Sub floor surface must be clean, level, structurally sound, and dry. Cascade Hardwood will not be responsible for any product failure due to poor sub floor conditions or materials. Unsound or damaged sections should be repaired or replaced.

Sub floor 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.

When is very important to nail or screw any area of loose or moving sub floor that will cause squeaks. Cascade Hardwood 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.

## Sub Floor Inspection and Room Preparation

Sub floor 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.

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

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

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

Screw down all creaking and loose sub flooring.

Remove doors and existing baseboards, quarter rounds and thresholds.

Undercut doorjamb using a piece of flooring as a guide.

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

## General Installation Requirements

All wet trades such as tiling, drywall, painting etc. must be completed before hardwood is installed or delivered to the site.

1. Evaluate job-site and sub floor condition to ensure proper installation environment.
2. Read the product instructions thoroughly.
3. The completed floor is only as good as the sub floor, and the installer.
4. Allow for an expansion space of 1/2" around all vertical obstructions.
5. Should a piece be doubtful due to manufacturing, colour, finishing, grade or having a visual defect - do not install it. Cut it for the wall line or place it in a closet. Work out of multiple cartons for a random appearance.

**Note:** Cascade Hardwood may only be installed over hydronic radiant heat (not to exceed 85 degrees Fahrenheit at the subfloor) and in compliance with NWFA guidelines. Please refer to [www.nwfa.org/](http://www.nwfa.org/)

Never strike the floor with a hammer or mallet as this may damage the finish. In glue down and floating applications, do not use ratchet straps to secure the floor.

For glue down or floating applications, restrict any foot traffic for 24 hours following installation.

**Note:** Minor occasional noise (such as squeaking) within the flooring is inherent to all staple and nail down applications and can occur as environmental conditions change.

## Completing the Job

1. Fill visible joints and gaps with a non silicon based filler that blends with the floor color. Helpful hint: Test filler on spare piece of plank.

**Note:** The use of fillers/putty and stain is a recommended and acceptable industry practice. Full plank replacements are also acceptable forms of repair and do not affect the integrity of the floor when done correctly



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2. Install molding and trim making sure not to nail into the hardwood flooring.

3. Sweep and/or vacuum floor then clean with a hardwood flooring cleaner.

**Note:** You must stay off floor for at least 12 hours when using either floating or glue down methods, and then remove tape as prolonged contact may damage the floor. Never leave the tape on the flooring for more than 24 hours.

Upon completion, cover the floor with a breathable wrapping to protect the finish if necessary.

### 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.

### Wood Dust

Sawing, sanding and/or machining wood products can produce wood dust, which can cause a flammable or explosive hazard. Wood dust may also lead to lung, upper respiratory tract, eye, and or skin irritation, and some species of wood may cause dermatitis and or allergic respiratory effects. The International Agency for Research on Cancer (IARC) has classified wood dust as a nasal carcinogen in humans. The National Toxicology Program (NTP) has also classified wood dust as a known human carcinogen.

- Avoid dust contact with ignition source.
- Sweep or vacuum dust for recovery or disposal.
- Avoid prolonged or repeated breathing wood dust in air.
- Approved respirators may be needed depending upon dust conditions.
- Avoid dust contact with eyes and skin. Wear Gloves and safety glasses when handling and machining the product.
- First Aid: If inhaled, remove to fresh air. If irritation persists, contact a physician.

### Tools & Accessories

Broom/Vacuum	Tape Measure
Saws and jamb saw	Hard Wood Cleaner
Hammer	Dust Mask
Ear Plugs and Glasses	Chalk line
Pencil	Proper Trowel
Appropriate Adhesive	Moisture Meter (wood & concrete)
Vapour Retarder	Galanized finish nails
Tapping Block	1 1/2" - 2" Mechanical Fastner
Underlayment	& appropriate fastners
Rubber Mallet	15 gauge staples with 1/2" crowns
	16 gauge cleats

### Glue Down Installation

Ensure the subfloor is secure and flat within acceptable tolerances. Clean and / or vacuum subfloor for any contaminants and debris.

1. Select starter wall. Usually an outside wall is best as it's most likely to be straight and square with the room. The floor must be installed perpendicular to the joist direction.

2. From both ends of your starter wall, measure out the width of two planks plus 1/2" expansion space. Snap a chalk line from these points parallel to the starting wall. You will begin to install flooring from this point and return later to install the first two rows later.

3. Secure a straight edge along the chalk line and between the line and the starter wall, to assist in laying a straight floor.

4. Using a quality moisture cured urethane, spread adhesive starting from chalk line the width of 2 planks, using the proper trowel held at a 45-degree angle. Follow adhesive manufacturer's instructions concerning trowel size, temperature and airflow.

5. Install the first row of starter planks, tongue facing the starter wall, along the chalk line and secure into place. Take your time. Proper alignment at this stage will ease the rest of the installation. Misalignment at this stage can cause side and end gaps to appear in future rows.

6. Add second row taking care to ensure proper alignment. Once installed tape boards together with only a blue or green painter's tape that is approved for factory finished floors to keep them tight and reduce movement and gapping. Remove any glue residue immediately. **Note:** Glue that dries on the surface may damage the finish.

7. Once first two rows are straight and secure, spread adhesive with the appropriate trowel size on a 45° angle as far as you can comfortably reach across and continue to install boards, securing them into place. Never spread more than can be covered in 30 to 45 minutes. If adhesive flashes up, remove dried portion and apply again.

8. As you install the boards, make sure to stagger end joints (at least 6") and randomly install different lengths to ensure natural appearance. Do not create discernable patterns such as "H" or "steps". Select boards to create a uniform appearance without clusters of short lengths or sections of light or dark planks. Do not install any objectionable boards that have visual defects or are not consistent with the grade being installed.

9. Continue across floor spreading adhesive and installing planks making sure to tape planks together as you go maintaining a 1/2" expansion space at all fixed vertical obstructions.

Set plank into adhesive without sliding the board. Occasionally lift the board and check to determine adhesive transfer. Transfer should cover 90% or more of the back of the board.

10. Remove all excess glue immediately using cleaning solutions recommended by adhesive manufacturer. Always make sure cleaning cloth is clean otherwise it may leave a hazy residue on your floor.



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## Cascade Engineered Flooring

**Note:** Glue that dries on the flooring may not be able to be removed without damaging the floor finish.

Once floor is complete return to starting wall, remove straight edge (if using) and glue down final two rows.

Inspect the floor, cleaning off any glue residue and touching up any minor defects. Cover with a breathable wrapping to protect the finish if necessary.