

I. GENERAL INFORMATION

Owner/Installer Responsibility

Beautiful hardwood floors are a product of nature and therefore, not perfect. Satin Flooring floors are manufactured in accordance with accepted industry standards, which permit grading deficiencies not to exceed 5%. These grading deficiencies may be of a manufacturing or natural type. When flooring is ordered, 5% must be added to the actual square footage needed for cutting and grading allowance (10% for diagonal installations).

- Prior to installation of any hardwood flooring products, the owner/installer must determine that the job-site environment and the sub-surfaces involved meet or exceed all applicable standards. Recommendations of the construction and materials industries, as well as local codes, must be followed. These instructions recommend that the construction and subfloor be clean, dry, structurally sound and flat. The manufacturer declines any responsibility for job failure resulting from, or associated with, subfloor and substrates or job-site environmental deficiencies.
- Prior to installation, the owner/installer has final inspection responsibility as to grade, manufacture and factory finish. The installer must use reasonable selectivity and pull out or cut off pieces with deficiencies. Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use the piece.
- Use of stain, filler or putty stick for touch-up and appropriate products is accepted as part of normal installation procedures.

II. PREPARATION

Storage and Handling

Handle with care. Store in a dry place, being sure to provide air space under cartons which are stored “on-grade” on concrete floors. Flooring should not be delivered until the building has been enclosed with windows, doors in place, cement work, plastering and all other “wet” work is completed and dry. Although it is not necessary to acclimate engineered flooring, it is best to store it in the environment in which it is expected to perform prior to installation. Check the adhesive label for adhesive storage requirements.

Job-Site Conditions

- The building should be enclosed with all outside doors and windows in place. All concrete, masonry, framing members, drywall, paint and other “wet” work should be thoroughly dry. The wall coverings should be in place and the painting completed. When possible, delay installation of base molding until flooring installation is complete. Basement and crawl spaces must be dry and well ventilated.
- Exterior grading should be complete with proper surface drainage. All gutters and downspouts should be in place.
- Engineered flooring may be installed below, on, or above grade level. Do not install in full bathrooms.
- Crawl spaces must be a minimum of 18” (46cm) from the ground to the underside of the joists. A ground cover of 6-20 mil black polyethylene film is essential as a vapor barrier with joints lapped 6” (15cm) and sealed with moisture-resistant tape. The crawl space should have perimeter venting equal to a minimum of 1.5% of the crawl space square footage. These vents should be properly located to foster cross ventilation.
- Where necessary, local regulations prevail.
- Permanent air conditioning and heating systems should be in place and operational. The installation site should have consistent room temperature of 60-80°F and relative humidity of 35-55% for 14 days prior to and during installation and until occupied.

Subfloor Conditions

- CLEAN - Subfloor must be free of wax, paint, oil, sealers, adhesives and other debris.
- FLAT - Within 3/16” in 10’ (5mm in 3m). Sand high areas or joints. If the floor is to be glued down, fill low areas with a latex additive cementitious levelling compound of 3,000- PSI minimum compressive strength. Follow the instructions of the leveling compound manufacturer but make certain that the leveling compounds are completely DRY before beginning installation. When mechanically fastening the floor down, do not use leveling compounds. Leveling materials must provide a structurally sound subfloor that does not affect the holding power of the fastener.
- DRY - Check and document moisture content of the subfloor using the appropriate moisture test. Concrete subfloors must be a minimum of 30 days old before testing begins.

• **STRUCTURALLY SOUND** - Nail or screw any areas that are loose or squeak. Wood panels should exhibit an adequate fastening pattern, glued/screwed or nailed as system requires, using an acceptable nailing pattern. Typical: 6" (15cm) along bearing edges and 12" (31cm) along intermediate supports. Flatten edge swell as necessary. Replace any water damaged, swollen or delaminated subflooring or underlayments. Avoid subfloors with excessive vertical movement. Optimum performance of hardwood floor covering products occurs when there is little horizontal or vertical movement of the subfloor. If the subfloor has excessive vertical movement (deflection) before installation of the flooring, it is likely it will do so after installation of the flooring is complete.

Subfloors with Radiant Heat (Water Systems Only)

NOTE: Always make certain the product selected is recommended for this type of application.

- System must be operational and heated for at least 7 days prior to beginning the installation.
- Use an incremental control strategy that brings the floor through temperature changes gradually, which may include an external thermostat.
- Turn off heat and let subfloor cool down to room temperature 3-4 hours prior to starting the job.
- Before installation begins, ascertain that the heating system is designed and controlled for wood flooring. Failure to do so may cause excessive heat damage and shrinkage. NOTE: Refer to radiant system manufacturer's precautions for staple-down installation. Beware of stapling through radiant tubing.
- After installation, turn the heating system back on immediately. The finished floor surface must not exceed 85°F (29°C) throughout the life of the floor.
- Radiant heating systems normally create dry heat that can lower interior humidity levels. It may be necessary to add humidity with humidifiers to maintain the recommended levels (35-55%) and prevent damage to the wood floor.
- The flooring should be end-glued over radiant heat to reduce longitudinal shrinkage. Apply a bead of the recommended wood glue to the groove end, then insert the tongue. Wipe excess adhesive immediately.

Tools & Accessories Needed (All Installation Methods)

- Broom • Tape measure • Hammer • Chalk line & chalk • Hand saw or jamb saw • Satin Flooring floor cleaner
- Table saw • Eye protection • Recommended wood glue • Moisture Meter (wood, concrete or both) • Transition and wall moldings • Dust mask • Jig saw

(Add for glue-down applications)

- Recommended adhesive and adhesive remover • Recommended trowel
- Recommended wood glue

(Add for staple down applications)

- Primatech P250 Nailer
- 2" Staples • Compressor and hose

III. SUBFLOOR/UNDERLAYMENT REQUIREMENTS

Recommended Subfloor/Underlayment Surfaces

(All Installation Methods)

- Wood subfloors • Wood structural panels and underlayment
- Fully adhered existing wood floors

- Fully adhered vinyl sheet, resilient tile, cork flooring and linoleum

Concrete (Glue Down Only)

The flooring can be glued directly to concrete with a minimum compressive strength of 3000PSI. Do not install over a concrete sealer or painted concrete. If present, remove by grinding or sanding. Do not install over slick, heavy troweled or burnished concrete. Roughen the surface as necessary by sanding or grinding.

Concrete Moisture Tests

All concrete should be tested, and results documented, for moisture content. Visual checks may not be reliable. Test several areas, especially near exterior walls and walls containing plumbing. Acceptable test methods for subfloor moisture content include:

- **Tramex Concrete Moisture Meter:** Moisture reading should not exceed 4.5 on the upper scale.
- **Polyfilm Test:** Apply 3' x 3' (1m x 1m) pieces of polyethylene film to the subfloor and leave in place for 24 hours. Assure all edges are completely sealed with water-resistant tape. Darkened concrete or condensation on film indicates presence of moisture and requires additional measurements with the Tramex Meter, Calcium Chloride or RH tests.

NOTE: "DRY" CONC RETE AS DEFINED BY THESE TESTS CAN BE WET AT OTHER TIMES OF THE YEAR, THESE TESTS DO NOT GUARANTEE A DRY SLAB, ALL NEW CONSTRUCTION CONCRETE SLABS SHOULD HAVE A MINIMUM OF 10 MIL POLY FILM MOISTURE BARRIER BETWEEN THE GROUND AND THE CONCRETE.

Wood Subfloors and Underlayment (All Installation Methods)

General: The wood subflooring materials must not exceed 6-12% moisture content. Using a reliable wood moisture meter, measure moisture content of both the subfloor and the hardwood flooring to determine proper moisture content. The difference between the moisture content of the wood subfloor and the hardwood flooring must not exceed 4%. When installing parallel to the floor joists it may be necessary to stiffen the subfloor system by installing an additional minimum of 3/8" (10mm) approved underlayment.

NOTE: As flooring manufacturers, we are unable to evaluate each engineered system. Spacing and spans, as well as their engineering methods, are the responsibility of the builder, engineer, architect or consumer, who is better able to evaluate the expected result based on site-related conditions and performance. The general information provided below describes most common subfloor systems.

Wood Structural Panel Subfloors and Underlayment (All Installation Methods)

Structural panels/underlayment must be installed sealed side down. When used as a subfloor allow 1/8" (3mm) expansion space between each panel. If spacing is inadequate, cut in with a circular saw. Do not cut in expansion space on tongue and groove panels.

- **Plywood:** Must meet Canadian performance standard CAN/CSA 0325-0-92. The preferred thickness is 3/4" (19mm) as a subfloor [minimum 5/8" (16mm)] or 3/8" (10mm) as underlayment.
- **Oriented Strand Board (OSB):** Conforming to Canadian performance standard CAN/CSA 0325-0-92 construction sheathing. Check underside of panel for codes. When used as a subfloor, the panels must be tongue and groove and installed sealed side down. Minimum thickness to be 23/32" (18mm) thick when used as a subfloor or 3/8" (10mm) as underlayment.
- **Wafer board and Chipboard:** Conforming to Canadian performance standard CAN/CSA 0325-0-92. Must be 3/4" (19mm) thick when used as a subfloor and 3/8" (10mm) thick when used as an underlayment.
- **Particleboard:** Must be a minimum 40-lb. density, stamped underlayment grade and 3/4" (19mm) thick.

Solid Wood Subfloors (All Installation Methods)

- Minimum 3/4" (19mm) thick with a maximum width of 6" (15cm) 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 glue-down applications add 3/8" (10mm) approved underlayment.

Existing Wood Flooring (All Installation Methods)

- Existing engineered flooring must be well bonded/fastened. When gluing over existing wood flooring of any thickness, the finishing materials must be abraded or removed to foster an adequate adhesive bond. When flooring is to be mechanically fastened, the existing engineered wood flooring must be a minimum of 3/8" (10mm) thick installed over approved wood/wood composite underlayment that has been properly fastened.
- Existing solid wood flooring that exceeds 6" (15cm) in width must be covered with 3/8" (10mm) approved underlayment and fastened as required. Do not install over solid flooring attached directly to the concrete.

IV. INSTALLING THE FLOOR

General Installation Tips

- Floor should be installed from several cartons at the same time to ensure good colour and shade mixture.
- Be attentive to staggering the ends of the boards at least 4"-6" (10-15cm), when possible, in adjacent rows. This will help ensure a more favourable aesthetic appearance of the floor.
- When installing engineered products of uniform length, begin the rows with starter boards cut to various lengths. Avoid staggering the rows uniformly to prevent stair-stepping. Boards cut from the opposite end of the row may be used for the next starter boards.
- Always allow a minimum 1/2" (12mm) expansion around all vertical obstructions.
- Set compressor at 90 PSI. If tongue damage occurs, lower air pressure.
- Fasten several sacrificial boards to the floor. At least two boards, stapled side by side, must be used to indicate proper machine adjustments.
- 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.
- Install the remainder of the floor working from several cartons.
- The last 1-2 rows will need to be face-nailed when clearance does not permit blind nailing with a stapler. Pre-drill and face-nail on the tongue side, following the nailing pattern used for the first row.

General Information for Glue-Down Applications

- Open times and curing times of all adhesives vary dependent upon subfloor porosity, air movement, humidity and room temperature. Urethane adhesive has a shortened working time in high humidity environments. In areas of low humidity, open time will be longer with urethane adhesives. Adjust the amount of adhesive spread on the subfloor accordingly. The adhesive should not be applied if subfloor or room temperature is below 16°C. **WORKING TIME WILL VARY DEPENDING ON**

SITE CONDITIONS

- Hold trowel at a minimum of 45° angle firmly against the subfloor to obtain a 40-60ft.² (4-5m²) per gallon spread rate. The trowel will leave ridges of adhesive and very little adhesive between the ridges.
- For additional application instructions, follow the recommendations on the adhesive container.
- Proper ventilation within the room must be provided. An electric fan is helpful.

NOTE: DO NOT INSTALL FLOORING USING RUBBER MALLETS. STRIKING THE SURFACE WITH A RUBBER Mallet MAY "BURN" THE FINISH CAUSING IRREPARABLE DAMAGE.

STEP 1: Doorway and Wall Preparation (All Installation Methods)

Undercut door casings and jambs. Remove any existing base, shoe mold or doorway thresholds. These items can be replaced after installation. All door casings and jambs should be undercut to avoid difficult scribe cuts.

STEP 2: Establish a Starting Point (All Installation Methods)

- Installation parallel to the longest wall is recommended for the best visual effects; however, the floor should be installed perpendicular to the floor joists unless the subfloor has been reinforced to reduce subfloor sagging.
- When possible, always begin the layout or installation from the straightest wall, generally an outside wall.
- In at least two places, at least 18" (46cm) from the corner, measure out equal distance from the starting wall and snap a chalk line. The measurement must be the sum of width of the flooring plus an additional 5/8" (14mm) to allow for 1/2" (12mm) expansion space and the width of the tongue. Go to Step 3 for Mechanically Fastened or Step 3 for Glue Down accordingly .

STEP 3: Mechanically Fastened/Staple-Down Installations - Installing First & Second Rows

- Align tongue of first row on chalk line. The groove should be facing the starting wall. Pre-drill 1/2" (12mm) from back (groove) edge, 1"-2" (3-5cm) from each end, and at 6" (15cm) intervals when possible. Fasten using finishing nails or 2" (5cm) pneumatic finish nails/brads. Countersink the nails.
 - Pre-drill and blind nail at a 45° angle through the tongue of the first row 1"-2" (3-5cm) from the ends and spaced in 3"-4" (8-10cm) intervals. Countersink nails to ensure flush engagement of groove with the following row(s). Continue blind nailing using this method with following rows until stapler can be used.
 - End-joints of adjacent rows should be staggered a minimum of 4"-6" (10-15cm), when possible, to ensure a more favourable overall appearance
- STEP 4: Installing the Floor (Mechanically Fastened/Staple-Down Installations)**
- For 1/2" flooring use only 18 gauge, 1/4" crown staples. For 3/4" flooring use only 15.5 gauge, 1/2" crown staples. Place 1"-2" (3-5cm) from the ends spaced at 3"-4" (8010cm) intervals. Continue to step 5.

STEP 4: Glue-Down Installations - Spread the Adhesive

- Spread sufficient amounts of the recommended adhesive with the recommended trowel in an area that can be covered in 60 minutes.
- If necessary, nail a sacrificial row with 2" (5cm) nails on the dry side of your chalk line to help hold the first row in place.

Note: Avoid installing while on the surface of the flooring as boards may shift. If necessary, distribute weight using a kneeler board.

STEP 5: Installing the Floor (Glue-Down Installations)

- The first row of planks should be installed with the edge of the groove lined up on the chalk line. The tongue should be facing the starting wall. The first row must be aligned and seated in the adhesive, as all additional rows will be pushed back to this original row. Remove tongue to allow for expansion space, if necessary, on the row facing the wall.
- Slide together tightly to engage the side (long) joint tongue and groove. To avoid adhesive bleed-through and memory pull-back, avoid sliding pieces through the adhesive as much as possible when placing them in position.
- During the installation occasionally remove a piece of flooring from the subfloor and inspect the back for proper adhesive transfer. Adequate adhesive transfer is necessary to ensure sufficient holding strength.
- If the adhesive skins over and fails to transfer, remove and spread new adhesive to achieve proper bonding.

NOTE: Clean adhesive from surface of the floor frequently, using the recommended adhesive cleaner. Urethane adhesives become extremely difficult to remove when cured. Use clean trowels, changed frequently, to prevent adhesive residue.

- Check for tight fit between all edges and ends of each plank. End-joints of adjacent rows should be staggered 4"-6" (10-15cm), when possible, to ensure a more favorable overall appearance.
- It may be necessary to align the product with a cut-off piece of scrap.
- To eliminate minor shifting or gapping of product during installation, use 3M Scotch-Blue 2080 Tape to hold the planks together. After installation is complete, remove all of the tape from the surface of the newly installed flooring. Do not let the tape remain on the flooring longer than 24 hours as it may damage the finish. Avoid the use of masking or duct tape, which leaves an adhesive residue and may damage the finish.
- Be sure not to spread adhesive too far ahead of your work area.
- Complete the installation using this same technique for the remainder of the floor.
- Avoid heavy foot traffic on the floor for at least 24 hours. Put the furniture and fixtures back into place after 24 hours.

STEP 6: Complete the Installation (All Installation Methods)

- Clean the floor with the Satin Flooring hardwood flooring cleaner.

- Install or re-install any transition pieces, reducer strips, T-moldings, thresholds, bases and/or quarter round moldings that may be needed.
- 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.

- 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.

LEED WOOD STATEMENT

Hardwood & Softwood Dust

Attn: Installers

Caution: Wood Dust

Sawing, sanding and machining wood products can produce wood dust. Airborne wood dust can cause respiratory, skin and eye irritation. The International Agency for Research on Cancer has classified wood dust as a nasal carcinogen in humans. Precautionary Measures: Power tools should be equipped with a dust collector and used in a well ventilated area (preferably outdoors).

- If high dust levels are encountered use an appropriate NIOSH designated dust mask (1/2 face mask respirator with dust cartridges). Follow manufacturer's guidelines for 1/2 face mask respirator fit, use and care.

- Avoid dust contact with skin and eyes. Wear industrial gloves, loose comfortable clothing and boots. Long sleeved shirts and long trousers are recommended if skin irritation occurs. First Aid measures in case of irritations: In case of irritation flush eyes and skin with water for a least 15 minutes. Fire/explosion hazard: Sawdust will help sustain a fire and the dust may form an explosive mixture with air. Avoid sparks, the buildup of static electricity and sources of ignition in all electrical equipment and dust extraction equipment
Means of extinguishing: Dry chemical, carbon dioxide, water spray or foam. Suggest water spray for large fires. Hazardous combustion products: Thermal decomposition will result in the following: Water, carbon dioxide, formic acid, acetic acid, carbon monoxide, methane, wood coal and aldehydes Chronic Effects: Repeated inhalation of dust from this product may increase the risk of nasal cavity cancer. Exposure to sawdust in some susceptible people may result in respiratory and skin sensitization leading to asthma and dermatitis respectively. However, if the work practices noted above are followed, and exposure to airborne dusts are kept low, no acute or chronic health effects are anticipated.

All the recommendations and suggestions herein concerning this product are based upon tests and data believed to be reliable, however it is the user's responsibility to determine the safety, toxicity and sustainability for their own use of the products described herein. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Satin Flooring Hardwood as to the effects of such use, the results to be obtained, or the safety and toxicity of the product nor does Satin Flooring Hardwood assume any liability arising out of use by others. Nor is the information herein to be considered as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.