

Wood Flooring Installation

INSTALLER/OWNER RESPONSIBILITY

Hardwood floors are a product of nature and therefore, not perfect. Jiasen wood floors are manufactured in accordance with accepted industry standards, which permit a defect tolerance not to exceed 5%. All hardwood flooring may contain manufactured and or natural defects.

- The installer assumes all responsibility for final inspection of product quality. This inspection of all flooring should be done before installation. Carefully examine flooring for color, finish and quality before installing it. If material is not acceptable, do not install it and contact the seller immediately.
- Prior to installation of any hardwood flooring, the installer must determine that the job-site environment and the sub-surfaces involved meet or exceed all applicable standards and recommendations of the construction and materials industries. These instructions recommend that the construction and subfloor be dry, stiff and flat. The manufacturer declines any responsibility for job failure resulting from or associated with sub-surface or job-site environment deficiencies.
- Prior to installation, the installer/owner has final inspection responsibility as to grade, manufacture and factory finish. The installer must use reasonable selectivity and hold out or cut off pieces with defects, whatever the cause.
- Use of stain, filler or putty stick for defect correction during installation should be accepted as normal procedure.
- When flooring is ordered, 5% must be added to the actual square footage needed for cutting and grading deviation allowance.
- Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use the piece.

TOOLS & ACCESSORIES CHECK LIST

- Broom
- Hand saw
- Table Saw, Jig Saw & Circular Saw
- Flooring Nailer
- Tape Measure
- Hammer
- Chalk Line
- Moisture Meter

NOTE: When using a mechanical nailer, follow the nailer manufacturer’s instructions regarding the use of proper adapters and nails (or cleats). Improper fasteners, machines and air pressure can cause severe damage. It is not responsible for damage caused by use of improper tools or misuse.



Nailing Guidelines

Improper pressure settings and failure to use proper adapters can cause severe damage to the flooring. The correct fastening machine and air pressure setting will properly set the nail in the nail pocket (figure #2).

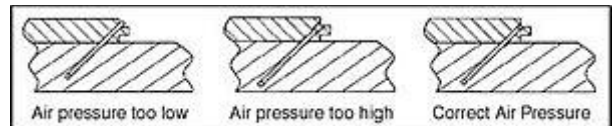


Figure #2

NOFMA NAILING GUIDE

Inadequate nailing contributes to cracks and noisy floors by allowing movement of the flooring.

SIZE FLOORING	SIZE NAIL TO BE USED	SPACING
T&G STRIP 3/4" thick x 1 1/2", 2 1/4" through 3 1/4"	2" barbed flooring cleat, 7d or 8d flooring nail, or 2" 15 gauge staples with 1/2" crowns	10" - 12" apart 8" - 10" preferred
T&G PLANK 4" - 8"	2" barbed flooring cleat, 7d or 8d flooring nail, or 2" 15 gauge staples with 1/2" crowns	8" apart

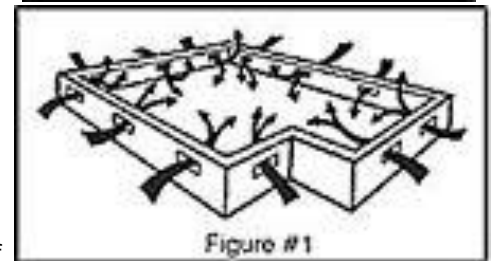
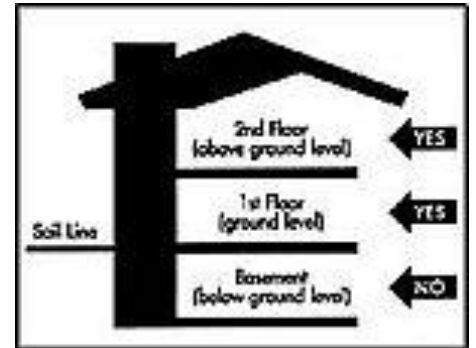
Blind nail along the length of strip/plank and near the ends (1"-3"). Minimum of 2 nails per strip/plank.

SIZE FLOORING	SIZE NAIL TO BE USED	SPACING
1/2" thick T & G STRIP x 1 1/2" & 2"	1 1/2" barbed flooring cleat, 5d screw, cut steel, or wire casing nail	10" apart
3/8" thick T&G STRIP x 1 1/2" & 2"	1 1/4" barbed flooring cleat, 4d bright wire casing nail	8" apart
Do not mix types of fasteners when blind nailing the field, except near walls where hand nailing is required.		

PRE-INSTALLATION

Job Site Inspection

- The building should be closed in 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 except for the final coat on the base molding. When possible, delay installation of base molding until flooring installation is complete.
- Exterior grading should be complete with surface drainage directing water away from the building. All gutters and downspouts should be in place.
- Solid hardwood may be installed on, above and qualified below grade. Do not install in full bathrooms.
- Basements and crawl spaces must be dry and well ventilated.
- Crawl space must be a minimum of 24" (600 mm) from the ground to underside of joists. A ground cover of 6-8 mil black polyethylene film is essential as a vapor barrier with joints lapped six inches and taped. 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 (see figure #1).
- Sub-floor must be checked for moisture content using the appropriate testing method.
- Permanent air conditioning and heating systems should be in place and operational. The installation site should have a consistent room temperature of 60-75-degree F and humidity of 35-55% for 14 days prior, during and until occupied, to allow for proper acclimation.



STORAGE AND HANDLING

Hardwood flooring should be stored in the environment in which it is expected to perform. Deliver the materials to an environmentally controlled site. Materials should be allowed to acclimate for as long as necessary to meet minimum installation requirements for moisture content. Handle and unload with care. Store in a dry place being sure to provide at least a four-inch air space under cartons to be stored upon "on-grade" concrete floors. Flooring should not be delivered until the building has been closed in with windows and doors in place and until cement work, plastering and all other "wet" work is completed and dry. Concrete should be at least 60 days old. Air conditioning/heating systems should be in place and in operation at least 14 days prior, during and after installation of the flooring.

SUBFLOOR REQUIREMENTS

SUBFLOORS MUST BE:

- CLEAN - Scrape, broom clean, and smooth. Free of wax, paint, oil or debris.
- LEVEL/FLAT - Within 3/16" in 10' and/or 1/8" in 6'. Sand high areas or joints. Low spots can be flattened using shims or layers of builders felt between the wood and the subfloor during installation.
- STRUCTURALLY SOUND - Nail or screw any loose areas that squeak. Replace any water-damaged, swollen or delaminated subflooring or underlayment, as they are unable to properly hold fasteners. Avoid subfloor with excessive vertical movement unless they have been properly stiffened prior to the installation of the wood flooring.
- DRY - Check moisture content of subfloor. Moisture content of wood subfloor must not exceed 13% on a wood moisture meter, or read more than a 4% difference (3% for plank) than moisture level of product being installed.

RECOMMENDED SUBFLOOR SURFACES

NAIL-DOWN OR GLUE-DOWN:

GLUE-DOWN ONLY:

- PREFERRED:
 - 3/4" (19 mm) CDX grade plywood
 - 3/4" (23/32") OSB PS2 rated underlayment
 - MINIMUM: 5/8" CDX grade plywood
 - Existing solid wood flooring
 - Vinyl, resilient tile, cork flooring
 - 3/4" chip, waferboard, particleboard
- Concrete slabs
 - Acoustic concrete
 - Ceramic, terrazzo, slate and marble
 - Metal
 - Cork (Acoustic)

SUBFLOOR TYPES:

Note: Do Not Install Solid Hardwood Floors Over Radiant Heated Subfloors

CONCRETE

Solid hardwood floors may be glued directly to sound dry concrete when using proper adhesive in conjunction with Concrete Sealer. All concrete subfloors should be tested for moisture content. Visual checks are not reliable. Acceptable test methods for subfloor moisture content include:

- A 3% Phenolphthalein in Anhydrous alcohol solution. Chip the concrete at least 1/4" deep (do not apply directly to the concrete surface) and apply several drops of the solution to the chipped area. If any color change occurs, further testing is required.
- Calcium Chloride test. The maximum moisture transfer must not exceed 3 lbs./1000 square feet with this test.
- Concrete Moisture Meter (figure #3). Moisture readings should not exceed 4.5 on the upper scale. (Figure #3 shows an unacceptable reading of over 4.5)



Figure #3

NOTE: Test several areas, especially near exterior walls and walls containing plumbing.

A "DRY" SLAB, AS DEFINED BY THESE TESTS CAN BE WET AT OTHER TIMES OF THE YEAR. THESE TESTS DO NOT GUARANTEE A DRY SLAB. ALL CONCRETE SLABS SHOULD BE TREATED WITH PROPER CONCRETE SEALER.

ACOUSTIC CONCRETE

Glue-Down Only - Acoustic concrete normally contains large quantities of gypsum that may inhibit the adhesive's capability to properly bond. Acoustic concrete must be primed with the concrete manufacturers recommended primer/surface hardener. The concrete must have a minimum compressive strength of 2500 PSI.

WOOD/CONCRETE SUBFLOOR SYSTEMS

Bonded: Install suitable moisture retardant followed by a plywood subfloor with a minimum thickness of 3/4". Allow 1/2" expansion space around all vertical objects and 1/8" between all flooring panels. The panel must be properly attached to the subfloor using a minimum of one fastener per square foot and more if necessary. Use pneumatic or powder actuated fasteners. Do not hand nail the subfloor with concrete nails. Install a moisture retardant barrier with joints lapped 6" and begin installation of flooring using 1 1/2" fasteners.

WOOD SUBFLOORS & WOOD STRUCTURAL PANEL SUBFLOORS

Plywood: Must be APA CDX grade or better.

Oriented Strand Board (OSB): Must be PS2 rated installed sealed side down.

Particleboard: Must be a minimum 40-LB density, stamped underlayment grade and 3/4" thick.

Do not install over pressed wood or fiber board.

Nail-Down or Glue-Down

Make sure existing floor or subfloor is dry and well nailed or screwed down every 6" along each joist to avoid squeaking or popping before the floor is installed. Measure moisture content of both subfloor and wood flooring to determine proper moisture content with a reliable wood moisture meter (figure #4). The wood subfloor must not exceed 13% moisture content as measured with a reliable wood moisture meter. The difference between the moisture content of the wood subfloor and the wood flooring must not exceed 4%.



Figure #4

Optimum performance of hardwood floor covering products occurs when there is no horizontal or vertical movement of the subfloor. The MINIMUM subfloor recommendations described above are for 16" O/C joist spacing. The thicker, PREFERRED subfloor recommendations described above will allow 19.2" joist spacing if the joist manufacturer's recommended span is not exceeded. Spacing in excess of 19.2" O/C may not offer optimum results. Install flooring perpendicular to the floor joists when possible. Installations should not be made parallel to the floor joists or on joist spacing that exceeds 19.2" O/C unless the subfloor has been properly stiffened. Stiffening may require the addition of a second layer of subflooring material to bring the overall thickness to at least 1-1/8".

All underlayment panels should be spaced 1/8" apart to insure adequate expansion space. This can be achieved by using a circular saw set at the depth of the underlayment and cutting around the perimeter of the panel. T&G panels normally have built in expansion; DO NOT cut around the perimeter of T&G panels. Do not install over existing glue-down wood floors. Do not install over nailed floors that exceed 3-1/4" in width. Wide width floors must be overlaid with plywood. When installing over existing wood floors parallel with the flooring, it may be necessary to install an additional 1/4" layer of plywood to stabilize the flooring or install the wood floor at right angles. Applicable standards and recommendations of the construction and materials industries must be met or exceeded.

RESILIENT TILE, RESILIENT SHEET VINYL & CORK FLOORING

Nail-Down

Make sure the vinyl or tile is full spread adhesive and well bonded to the subfloor. Do not install over more than one layer, which does not exceed 1/8" in thickness over suitable subfloor. If vinyl or tiles are loose, crumbled, or in poor condition,

install an underlayment directly over the sheet vinyl (linoleum) or vinyl tiles. CAUTION: Some older type tiles become brittle with age. Ascertain that the nail will penetrate these materials and that breakage does not occur. Remove if necessary.

Glue-Down

If the tiles or sheet goods are well bonded, clean the surface thoroughly with a good quality household detergent. De-gloss flooring as necessary to create a good adhesive bond using an abrasive pad. If vinyl appears to have a coating of wax or other maintenance materials, it must be removed with the appropriate floor stripper. Allow ample drying time. (Note: Do not sand any resilient products for they may contain asbestos fibers, which may be harmful.) Do not install over floors that exceed two layers. Cork floors must have all sealers and surface treatments removed before installation begins.

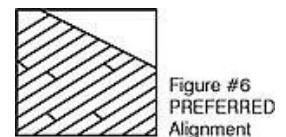
DOORWAY AND WALL PREPARATION

Undercut door casings. Remove any existing base, shoe mold or doorway thresholds. These items can be replaced after installation. All door casings should be notched out (figure #5) or undercut to avoid difficult scribe cuts.



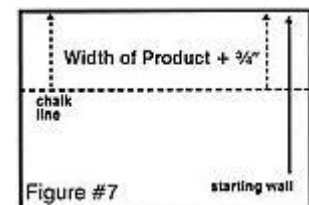
GENERAL INSTALLATION TIPS

- Floor should be installed from several cartons at the same time to ensure good color and shade mixture.
- Be attentive to staggering the ends of boards at least 6", when possible, in adjacent rows (figure #6). This will help ensure a more favorable overall appearance of the floor.
- Installation parallel to the longest wall is recommended for best visual effects, however, the floor should be installed perpendicular to the flooring joists unless subfloor has been reinforced to reduce subfloor sagging. Find appropriate subfloor from "Subfloor Type" section in this instruction manual.
- Large spans in areas of high humidity may require the addition of internal or field expansion. This can be accomplished by using spacers, such as small washers, every 10-20 rows inserted above the tongue and removed after several adjoining rows have been nailed or glued.



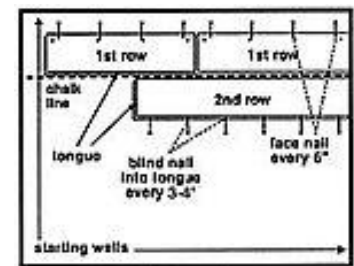
STEP 1: ESTABLISH A STARTING POINT: ALL INSTALLATIONS

- In at least two places, measure out equal distance from the starting wall and 12" -18" from the corners and 3 1/8" from the wall. Mark these points and snap a chalk line (figure #7).



STEP 2: INSTALLING FIRST ROWS: NAIL-DOWN INSTALLATION

- Use longest, straightest boards available for the first two rows.
- Align tongue of first row on chalk line with groove facing the starting wall. Face-nail the groove side no closer than 3" from the edge and 8" intervals from each end at a 45-degree angle down through the nailing "pocket" of the tongue (figure #9) OR pre-drill the nail holes following the same spacing guidelines. Pre-drill at the 45-degree angle down through the nailing "pocket" on top of the tongue (figure #9). Face-nail the groove side where pre-drilled. When complete, blind-nail at a 45-degree angle through the tongue of the first row. Fasten with appropriate length nails (see NOFMA nailing chart). Countersink nails to ensure flush engagement of groove. Avoid bruising the wood by using a nail set to countersink the nails. Continue blind-nailing using this method with following rows until a nailer can be used.



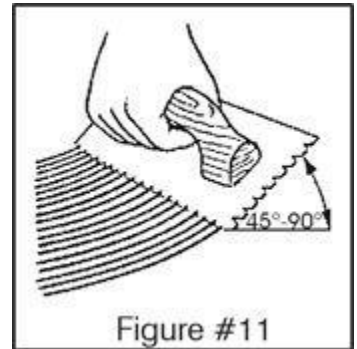
STEP 4: INSTALLING THE FLOOR: NAIL-DOWN INSTALLATION

- Fasten a sacrificial board to the floor. Check for surface damage, pressure setting, tongue damage, etc. before proceeding. Make all adjustments and corrections before installation begins. Once proper adjustments have been made, remove and destroy the board.
- Begin installation with several rows at a time, fastening each board with at least two fasteners, no more than 8" apart and no closer than 3" from the ends (to avoid splitting). Tighten boards as necessary to reduce gaps before fastening.
- End-joints of adjacent rows should be staggered to ensure a more favorable overall appearance. Install the floor from several cartons at the same time to get a more favorable overall appearance.
- The last 1-2 rows will need to be face-nailed where clearance does not permit blind nailing with nailer. Nail or pre-drill and face-nail on the tongue side following the nailing pattern used for the first row.
- Rip final row to fit and face-nail. If the final row is less than 1" in width, it should first be edge-glued to the previous UNINSTALLED row and the two joined units should be face-nailed as one.

STEP 3: SPREAD THE ADHESIVE: GLUE-DOWN INSTALLATION

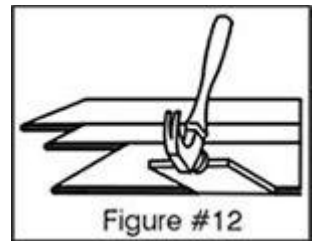
- Use the recommended trowel (instructions on adhesive pail) for thickness of the flooring to get required spread rate and ridging height.
- The adhesive should not be applied if subfloor or room temperature is below 65-degree F (20-degree C).
- Spread sufficient amounts of the adhesive with a proper trowel (refer to instructions on pail) in an area that can be covered in 60 minutes. WORKING TIME WILL VARY DEPENDING ON JOB SITE CONDITIONS.
- Hold trowel at a minimum 45-degree angle firmly against the subfloor to maximize spread rate. The trowel will leave ridges of adhesive and very little adhesive between the ridges. The chalk line should remain visible through the adhesive ridges.

NOTE: Clean adhesive from the surface of the floor frequently. Do not use blue tape before adhesive is removed. Use clean towel, changed frequently to prevent haze and adhesive residue.



STEP 4: INSTALLING THE FLOOR: GLUE-DOWN INSTALLATION

- Use the longest, straightest boards available for the first two rows. The first row 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.
- When installing pieces, engage the end-joint first as close to side (long) tongue and groove as possible and then slide together tightly to engage 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.
- Check for a tight fit between all edges and ends of each plank. End-joints of adjacent rows should be staggered 6" when possible to ensure a more favorable overall appearance.
- If necessary, nail a sacrificial row with 1" nails on the dry side of your chalk line to help hold the first row in place.
- It may be necessary to align product with a cut-off piece of scrap as shown (figure #12 - Keep scrap angle low to avoid edge damage).
- To eliminate minor shifting or gapping of product during installation, use 3M 2090 Blue Painter's Tape or equal to hold the planks together. All adhesive should be cleaned from the surface BEFORE applying tape. Cured adhesive is VERY difficult to remove. After installation is complete, remove all tape from surface of newly installed flooring. Do not let tape remain on flooring longer than 12 hours. Avoid use of masking tape, which leaves an adhesive residue.
- Be sure not to spread adhesive too far ahead of your work area.
- Occasionally lift a board and check for adhesive transfer. Adequate adhesive transfer is necessary to ensure bond.



INSTALLERS - ADVISE YOUR CUSTOMER OF THE FOLLOWING

SEASONS: HEATING AND NON-HEATING

Recognizing that wood floor dimensions will be slightly affected by varying levels of humidity within your building, care should be taken to control humidity levels within the 35-55% range. To protect your investment and to assure that your floors provide lasting satisfaction, we have provided our recommendations below.

- Heating Season (Dry) - A humidifier is recommended to prevent excessive shrinkage in wood floors due to low humidity levels. Wood stoves and electric heat tend to create very dry conditions.
- Non-Heating Season (Humid, Wet) - Proper humidity levels can be maintained by use of an air conditioner, dehumidifier, or by turning on your heating system periodically during the summer months. Avoid excessive exposure to water from tracking during periods of inclement weather. Do not obstruct in any way the expansion joint around the perimeter of your floor.

FLOOR REPAIR

Minor damage can be repaired with a touch-up kit or filler. Major damage will require board replacement.

STEP 5: COMPLETING THE JOB

- Clean floor with Adhesive Cleaner. Complete cleanup with a thorough cleaning using cleaner.
- Re-install any transition pieces that may be needed, such as Reducer Strips, T-moldings, or Thresholds. These products are available pre-finished to blend with your flooring.
- Re-install all base and/or quarter round moldings. Nail moldings into the wall, not the floor.
- Do not cover the floor while the floor is still moveable. Do not cover with a non-breathable material such as plastic.
- To prevent surface damage avoid rolling heavy appliances and furniture on the floor. Use plywood, hardboard or appliance lifts if necessary.