COLSTON

UNFINISHED SOLID HARDWOOD FLOORS, SOFTWOOD FLOORS
& PINE PROFILE BOARDS

INSTALLATION

NAIL DOWN - NAIL/GLUE ASSIST – GLUE DOWN

UNFINISHED WOOD PRODUCTS

NAIL DOWN - NAIL/GLUE ASSIST * GLUE DOWN

Save time & avoid frustration! Please read these entire instructions before starting your installation, and A.I.M. for success!

AIM

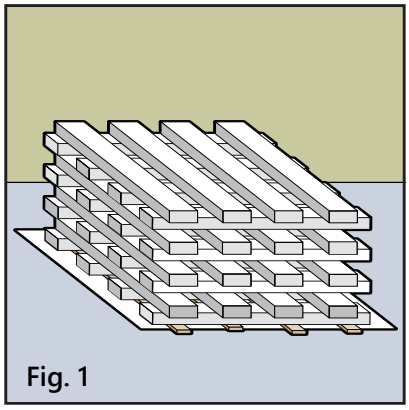


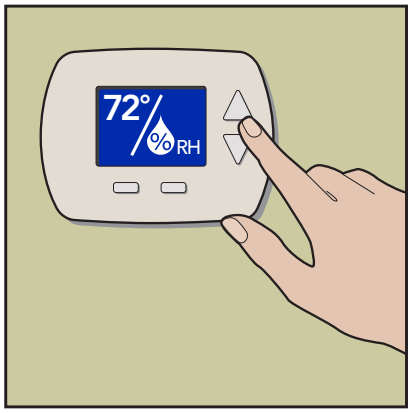
Fig. 1

Acclimate Completely
Acclimate your flooring to your home environment. Time for acclimation will vary. Always check using a meter.

AIM

Install Correctly
Take time to review Lumber Liquidators installation guidelines and follow the National Wood Flooring Association Guidelines to ensure that your installation goes well from beginning to end.

AIM



Maintain Environment
Indoor relative humidity should be maintained with no more than a 20% fluctuation (E.g. 40% -60%). Indoor Relative Humidity levels below 30% or above 70% will likely result in cupping, checking, gaps or bucking.*

*See Temperature and Relative Humidity for more details.

Need Help? To obtain installation assistance or product information concerning this paneling, contact the store of original purchase, or call the Lumber Liquidator's customer care at 800-366-4204.

WARNING! DO NOT SAND, DRY SWEEP, DRY SCRAPE, DRILL, SAW, BEADBLAST OR MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVES OR OTHER ADHESIVES. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product to be removed is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content. See current edition of the Resilient Floor Covering Institute (RFCI) publication, "Recommended Work Practices for Removal of Resilient Floor Coverings" for detailed information and instructions on removing all resilient covering structures. For current information, go to www.rfci.com.

LEAD WARNING: Some paints and finishes in homes built before 1978 may contain lead. Exposure to excessive amounts of lead dust presents a health hazard. Prior to removing or sanding, comply with all applicable federal, state, and local laws, and reference the publication "Lead-Based Paint: Guidelines for Hazard Identification and Abatement in Public and Indian Housing" available from the United States Department of Housing and Urban Development regarding (1) appropriate methods for identifying lead-based paint and removing such paint; and (2) any licensing, certification, and training requirements for persons performing lead abatement work.

MOLD AND MILDEW WARNING: Prior to removing an existing resilient floor or when installing a new floor, if there are visible indications of mold or mildew or the presence of a strong musty odor in the installation area, the source of the problem should be identified and corrected before proceeding with the flooring work. Excessive moisture in the subfloor could promote mold, mildew, and other moisture related issues like the trapping of moisture emissions under the flooring, which may contribute to an unhealthy indoor environment. Mold has the potential to cause health problems and may produce allergens, irritants, and in some cases, potentially toxic substances. Before installing the new resilient flooring, ensure the underlayment and/or subfloor is allowed to thoroughly dry and that any residual effect of excessive moisture, mold, or structural damage has been corrected. Remediation measures may require structural repairs such as replacing the contaminated underlayment and/or subfloor, cleanup measures using appropriate protection and biocide, or hiring a professional mold and mildew remediation contractor. Consult EPA mold guidelines on EPA's website at https://www.epa.gov/mold

WARNING:
Drilling, sawing, sanding or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov/wood

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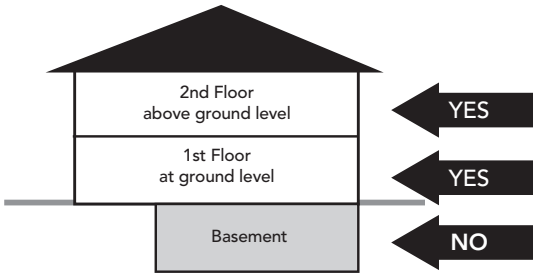
RECOMMENDED USE:

- Residential interior use only.
- **Do not install in wet areas like patios and showers, or exterior areas. Do not install in boats, or other moving vehicles or over radiant heat.**

GRADE:

On and above grade only.



JOBSITE CONDITIONS:

- The building should be enclosed with all doors and windows in place.
- **Prior to delivery and install:** All wet works (e.g. drywall taping, texture, painting, stucco etc.) should be complete and allowed to dry. The rooms should be at normal "lived-in" conditions with HVAC operational for at least one week prior to the installation when home is so equipped.
- When installing in rooms over basements and garages, ensure they are dry and well ventilated.
- Crawlspaces must be dry with a minimum 18" from the bottom of the floor joist to the ground, Crawl space earth (or thin concrete slab) should be covered 100 percent by a vapor retarder of black polyethylene (minimum 6 mil) or any recommended puncture-resistant membrane, such as Class C, meeting ASTM D1745. Ventilation shall be per local building codes.
- Ensure that exterior doors and appliances have sufficient clearance to accommodate the new flooring.
- Do not undercut metal door jambs before first confirming it doesn't violate local building and fire codes.
- To avoid damages to the floor's finish, all construction activity should be completed before installing this floor.
- All gutters should be in place and functioning properly. Yard grading should be sloped to run water away from the home foundation.
- The installer -not the manufacturer or retailer - is responsible for making sure that the site conditions are appropriate prior to installation of this floor.

ACCLIMATION:

- Stack boxes no more than eight cartons high in areas to receive new flooring (remove plastic from outside of boxes if present). Ensure each layer is evenly supported to prevent distortion. Elevate stack using 2 x 4's as illustrated in Fig. 1 above. **On concrete; place a layer of 6 mil poly down first during the acclimation process.**
- For some exotic species, extended acclimation time should be expected and planned for. Time is not the determining factor; moisture testing is required to confirm that product is acclimated. Use a meter that is species adjustable, E.g. Ligno-scanner SDM or mini-Ligno DX/C moisture meter. If using alternate meter check the meters specifications that meter can be used with the wood species that you are installing.
- Check the moisture content of multiple planks. It's recommended to randomly test 40 boards for up to the first 1,000 square feet, and an additional 4readings per 100 square feet thereafter, and average the results. The flooring's average moisture content must be within 4% of the subfloor for strip flooring (boards 2-1/4" or less) and 2% for plank flooring (3" or wider).
- Any unusually high or low moisture readings should be isolated and not installed in the floor.
- Keep a permanent record of all readings.

TEMPERATURE:

For best product performance, ensure the temperature in the home is between 60° and 80° F before, during, and after installation and for the life of the flooring.

RELATIVE HUMIDITY:

For best performance, flooring should be ideally conditioned, installed and maintained to consistent indoor temperatures of 60°- 80° F and relative humidity of 30% or above to 70% or below with a maximum fluctuation of 20%, before, during and after the installation and for the life of the flooring). Ideal interior environmental conditions will vary from region to region and jobsite to jobsite, the relative humidity figures on your project maybe higher or lower.

The key is to ensure that the change in relative humidity stays within a 20% range (e.g.30% to 50% or 35% to 55% etc…) and does not fluctuate beyond 20% for sustained periods, enough to affect the flooring. Home environments where the indoor Relative Humidity levels are below 30% or above 70% are not recommended.

Not following the written recommendations can negatively impact board performance and may result in excessive movement, squeaks, board gapping, board-edge cupping, cracks, twists, finish splits, flaking, chipping, fading and other related issues.

Any home that may have a sustained change in relative humidity greater than 20% fluctuation needs an HVAC system equipped with a humidifier or dehumidifier to regulate the interior environment within a 20% range of fluctuation. Installing wood in an environment that is not maintained can be detrimental to the flooring.

The map below can be used to calculate what the optimum baseline or average moisture content of interior wood products should be prior to installation for each state and region. The first number indicates the average moisture content of wood during the wintertime (months having lower humidity), and the second number indicates the average moisture content during the summer time or (months having higher humidity). To calculate the optimal baseline or average wood moisture content in your state or region, add the high season number and low season number together then divide by two. Example: If your state or region has an expected low of 6% to a high of 12% moisture content, the average baseline moisture content of the wood before installation would be 9%. The goal is to acclimate the flooring to this average figure and then the installation can begin.

Very dry or humid regions of the country usually require extended conditioning to balance the new flooring to the environment it will service. The most reliable moisture-content numbers will be obtained using a species-specific moisture meter to determine the moisture content of the wood flooring.

The USDA moisture map is a helpful guide for installations. Without proper temperature, humidity and ventilation controls, actual moisture content in any location may differ significantly from these numbers. In all cases it is the installer or homeowner's responsibility to determine if the indoor environment, moisture content and jobsite conditions are suitable for wood floor installations.

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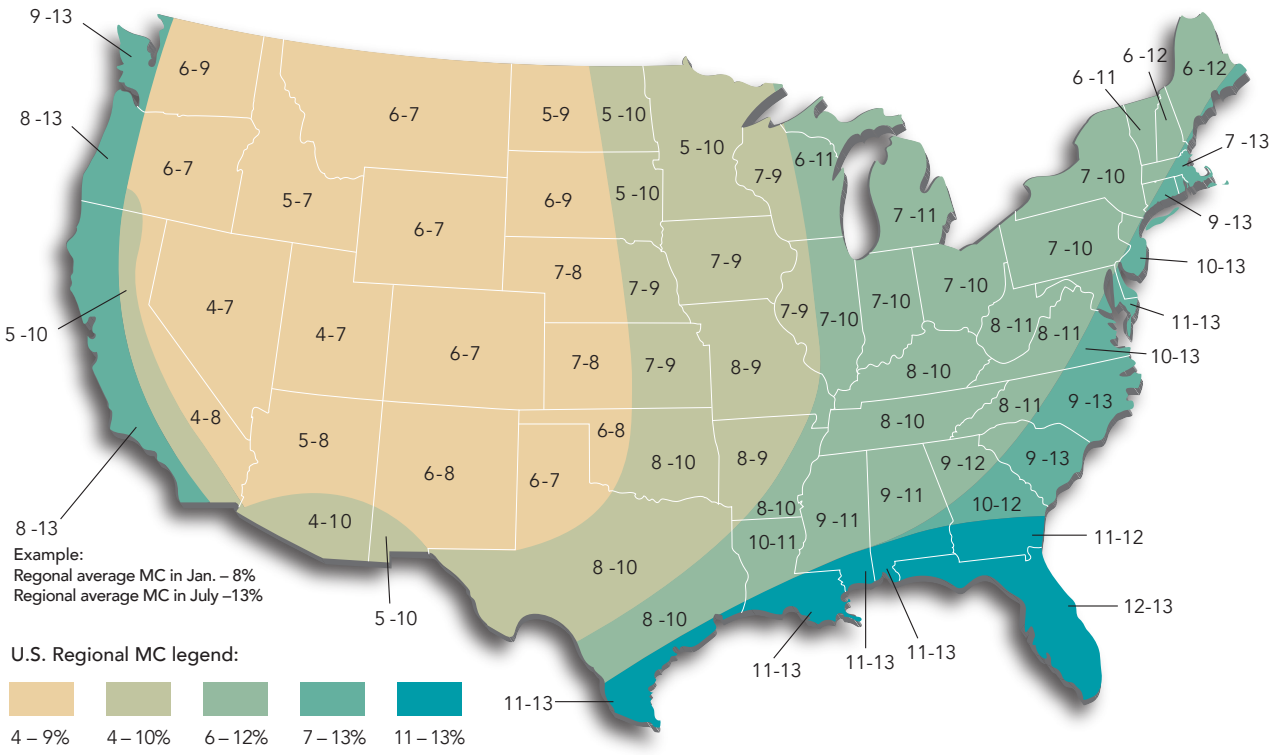
Summer / Winter Moisture Map



The effects of Temperatures and Humidity on wood flooring

Wood products are sensitive to moisture, temperature and humidity. Refer to the chart below to better understand the best in-home environmental relationship between relative humidity (RH) and temperature and its effects on wood moisture content. Determine the current temperature and RH within your home with a hygrometer. Find the combination of temperature and RH in your area on the chart (temperature variations are listed on the left side of the chart, humidity variations are listed along the bottom).
Example: The target or ideal moisture content for wood products is shown in the shaded area to be within 6.1% to 9.4% Wood flooring will perform best when the interior environment is controlled to stay within a relative humidity range of 30% - 50% or 45% to 65%, for example, and a temperature range of 60° to 80° Fahrenheit. (In some geographical areas, the ideal humidity range might be higher or lower, 30% - 50% or 45% to 65% for example). It is critical to maintain the relative humidity in your home to not fluctuate more than 20% at any given time of the year. Wood flooring installed in areas with a wider variation in RH (fluctuation in RH of more than 20%) can negatively impact board performance and may result in excessive movement (expansion / contraction, squeaks, board gapping, board-edge cupping, finish splits and other related issues).

Moisture Content of Wood at Various Temperatures and Relative Humidity Readings

°F	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98
30	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.0
40	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.0
50	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.0
60	1.3	2.5	3.6	4.6	5.4	**6.2**	**7.0**	**7.8**	**8.6**	**9.4**	10.2	11.1	12.1	13.3	14.6	16.2	18.2	21.7	24.1	26.8
70	1.3	2.5	3.6	4.5	5.4	**6.2**	**6.0**	**7.7**	**8.5**	**9.2**	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9	26.6
80	1.3	2.4	3.5	4.4	5.3	**6.1**	**6.8**	**7.6**	**8.3**	**9.1**	9.9	10.8	11.7	12.0	14.2	15.7	17.7	20.2	23.6	26.3
90	1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3	26.0
100	1.2	2.3	3.3	4.2	5.0	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17.0	19.5	22.9	25.6

Relative Humidity (RH percent)

Chart taken from Wood Handbook: Wood as an engineering Material (Agriculture Handbook, 72).
Forest Products Laboratory, U.S. Department of Agriculture

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CUTTING ALLOWANCE and MANUFACTURER TOLERANCE

CUTTING ALLOWANCE (cutting waste):

A 10' x 10' room has net 100 square feet (Sq. Ft.) the actual area that will have flooring, but more product is required to allow for cutting which generates unusable pieces.

Carefully measure the net square feet required, adding up multiple areas.

The table gives an approximate recommendation for cutting allowance:

Quantities are always rounded up to the nearest box.

Tip: If more than half a box is not available for spares we recommend ordering an extra box.

Please note: Actual cutting waste may be lower or higher based on room layout. E.g. multiple rooms vs. one large area and "pattern" being installed.

Net Area SqFt	Total with Cutting Allowance SqFt	% Applied
100	110	10
200	218	9
400	432	8
600	642	7
800	848	6
1000	1050	5
above 1000 SqFt add 5%		

Consider carefully before returning boxes. Keeping extra boxes is a great idea and inexpensive insurance against damage, if a repair is needed the product and batch will be the same, and you have options even if the product has been discontinued. Diagonal installations may require 5% extra material over and above the cutting and manufacturer tolerance allowance.

MANUFACTURER TOLERANCE:

Natural wood products may have different manufacturer tolerances depending on grade/type of wood and manufacturer tolerance of 5 – 20% may be allowed.

Cutting allowance and manufacturing tolerance combined, is the waste factor.

Please refer to the Grade manufacture tolerance % below to help gauge how much extra material is required for your project.

WOOD GRADES:

Select Grade:

Select Grade has the most uniform color with no large knots and the longest average length of planks. Also referred to as First Grade.

Recommended manufacturer tolerance 5%-8%

Natural Grade:

Natural Grade will have some color variation, mineral coloring and small knots. It can also be referred to as #1 or 2nd grade. Note: This product contains shorter than average length boards; some are 2 feet or less in length.

Recommended manufacturer tolerance 8%-10%

Millrun Grade:

Millrun will have more color variation, mineral coloring and small knots. Mill Run Grade flooring is a mixed grade and will have a balanced mixture of boards that will include; select, natural and rustic grades.

Recommended waste factor for this grade is between 8%-10%

Character Grade:

Character grade consists of Natural and rustic grade material, it will have a natural appearance displaying the full characteristics of the hardwood species.

All color variations occurring naturally in the species are allowed. Characteristics may include; color variations from board to board due to a mix of natural heartwood and sapwood along with small to medium sized knots and mineral streaks.

Recommended manufacturer tolerance 10%-12%

Rustic Grade:

Rustic grade has larger tight knots and some open knots with the most pronounced variation in color. This grade may contain, but not is limited to defects including, splits, shake, and have shorter average lengths which all add to the flooring's distressed look. Rustic grade is also known as Tavern grade, Utility grade, # 3 grade and C grade. It's a great choice when character marks and contrasting appearance are desired.

Recommended manufacturer tolerance 15%-20%

Please Note: The waste factors on this page are offered as a helpful guide and are not intended to take the place of an installer's visual inspection, expertise or informed judgment.

If defects are greater than the waste factor indicated for your flooring, please contact your local store or call Customer Care at 1-800-366-4204.

In all cases the amount of waste can be reduced by using unsatisfactory planks by:

1. Cutting out affected area to create a satisfactory piece and using as starter / end pieces for rows.
2. Placing in areas that appearance does not matter.
3. Using planks in the case of width issues as the last row.

USER / OWNER / INSTALLER RESPONSIBILITIES:

Install in good lighting.

- Product installation constitutes acceptance. Visually inspect the product and determine acceptability before installation. Claims will not be accepted regarding visual defects after flooring has been installed. If any planks are unacceptable due to color, finish, milling or any other reason, it is your responsibility to determine to use them, hide them in areas like closets, trim off the imperfection, or not install them at all.
- You should plan on being present during your installation to ensure that all required procedures are completed and boards with visible defects are not installed. It is important to inspect individual boards and to frequently step back to observe the "whole picture" before installation is completed.
- A reasonable amount of installed flooring (up to 25% or 100 sq. ft. whichever is less) is enough to determine acceptance of quality.
- Retain a box label and keep on file with your receipt for future reference.

If quality issues are suspected stop the installation and call your local store or CUSTOMER CARE at 800-366-4204.

Our natural solid wood flooring is by nature beautiful and unique when installed correctly.
As a natural product wood expands and contracts with changes in relative humidity effecting its moisture content, and although manufactured to tight specifications, by the time it comes to installing, plank dimensions may have changed naturally during storage and the acclimation process. Depending on the type of wood these changes may not be uniform across all cuts, and this aspect becomes more apparent as the plank width gets greater, these are not manufacturing defects but normal for solid wood and should be expected. With this in mind, for all solid wood flooring racking out is a key aspect of installing the flooring. Experienced installers are aware of the nuances and have techniques for address what may at first seem to be issues with the flooring.

1) Width variation: During racking, pull from multiple boxes check for a tight fit, if the planks do not match width wise, begin a sorting process, like widths to like widths. If a board tapers use at the beginning or end of a row. If boards have multiple width and cannot be using in the same row, cut to same width and use in starter or finish rows.
2) Bowing: In most cases when nailing bowing can be eliminated during the nailing process, but for glue down more attention to the concern may result in extra culled boards, even when using straps to pull the boards together.
3) Cut the bowed boards into shorter pieces and use as starter or finish boards in a row, use in closets or other hidden areas.

Note: Check your starting line, it needs to be very straight a slight bow in the starting line can results in all the above concerns without any issue with the actual product.

Checks, knots and other features:

Although natural and included within certain grades, some boards may not meet your individual expectations.

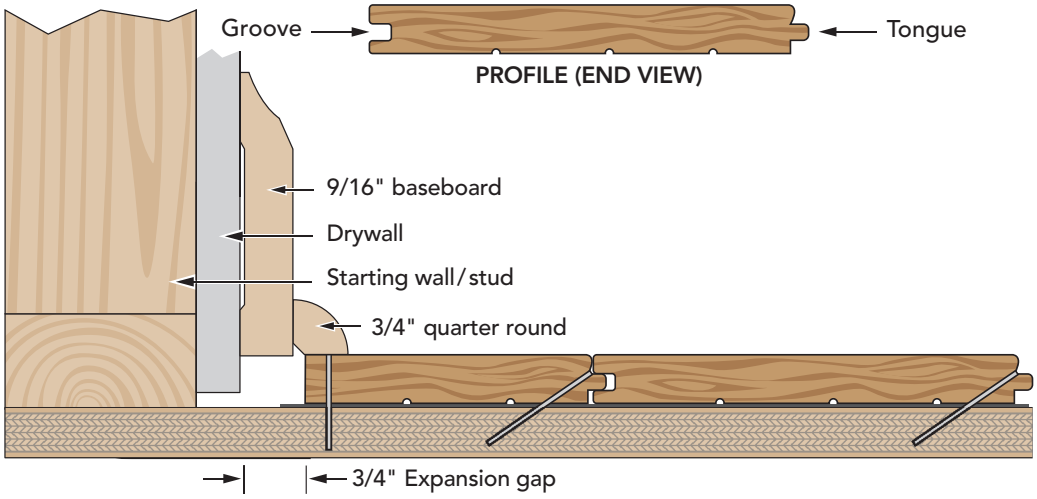
It is perfectly acceptable to cull these planks, depending on the "look" you want, but you may need to purchase additional material. to complete your project.

With this in mind manufacturers advise extra materials. Always check the grade of wood to determine how much extra material is required over and above the cutting allowance. If the amount used for culling is greater than the manufacturer allowance please do not hesitate to contact your store or customer care to resolve the concern.

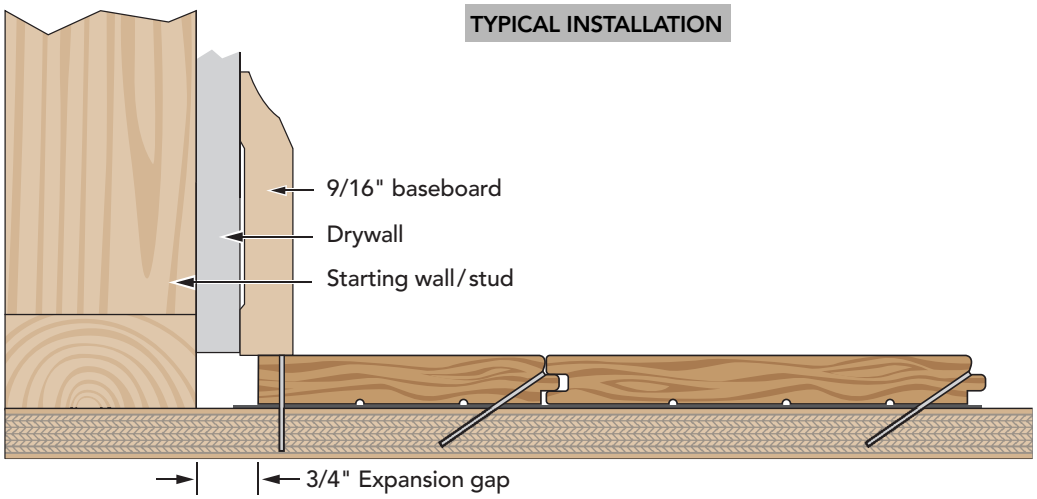
The use of putty, stains, wood blend sticks or markers to touch-up prefinished flooring before, during and after installation is considered normal practice.

EXPANSION SPACE:

A minimum gap of 3/4" is required between the flooring and all vertical obstructions (walls, door jambs, pipes, staircases, posts, fixtures, built-ins, etc.).



TYPICAL INSTALLATION



How to achieve required Expansion Gap using base board only

If the room has electric baseboard heaters, leave a minimum of 3/4" between the surface of the flooring and the bottom of the heaters, allowing heat to circulate properly.
NOTE: Gapping and buckling can develop if expansion space requirements are not followed.

RUN WIDTH AND LENGTH:

Nail down: No limit in run length or width.
Flooring must have room to expand and contract freely.

CABINETS / FIXED FIXTURES:

• Although not recommended, cabinets may be installed on top of this product.

SUNLIGHT:

Depending on the species, your flooring will naturally change color “patina” with prolonged exposure to sunlight. Use of window coverings, shades, or tinting your windows is recommended to slow this natural process.

SUBFLOORS NEED TO BE: CLEAN – FLAT – DRY:

All substrates must be structurally sound and free from movement or deflection.

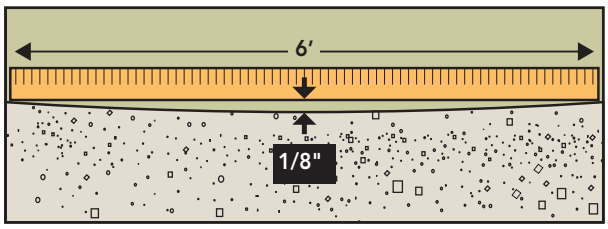
CLEAN:

Free from particles including but not limited to: dust, dirt, and grit.

SUBFLOOR MUST BE FLAT AND SMOOTH

FLAT:

Subfloors must be flat within 1/8" over 6' and 3/16" over 10' and smooth, abrupt peaks and valleys must be avoided.



DRY:

Follow product use limitations and adhesive manufacturers technical data sheets (TDS) / install guide.
Do not install this flooring over plywood underlayment attached to concrete, unless it is known that an appropriate moisture barrier has been installed (all applications).

- For installations using mechanical fasteners of 1-1/2" and longer, the subfloor should be flat to within 1/4" in 10 feet or 3/16" in 6 feet radius.
- For installations using mechanical fasteners of less than 1-1/2", the subfloor should be flat to within 3/16" in 10 feet or 1/8" in 6 feet radius.
- **Improper substrate or flatness can result in gaps, squeaks, premature wear on surface and poor plank fitting during assembly.**

WOOD SUBFLOOR PREPERATION:

- Screw down loose or squeaky sections of plywood and replace areas that are damaged.
- To address flatness concerns sand or plane high spots and fill the low spots with a material approved for use under wood flooring.
- 15 - 30 lb. roofing felt, vinyl tile or similar can be used (in layers) to build up low areas on wood subfloors to a max. 3/16" provided fastener holding strength is not compromised.
- Installers are responsible to use materials to ensure product performance.
- Substrates that are not level/flat due to structural deficiencies should be repaired by a licensed contractor.
- Never apply plastic sheet over wood subfloors.

STRUCTURAL REQUIREMENTS:

Note that joist spacing determines minimum subfloor thickness.

Joist spacing 16" on center (OC) or less

– Plywood: Minimum of (5/8", 19/32") Oriented Strand Board (OSB): minimum (3/4", 23/32")
Advantech minimum (3/4", 23/32")

Joist spacing 16" up to 19.2" (OC)

– Plywood: Minimum of (3/4", 23/32") Oriented Strand Board (OSB): minimum of (3/4", 23/32")

Joist spacing over 19.2"up to maximum 24" (OC)

– Plywood: Minimum of (7/8") Oriented Strand Board (OSB): Minimum of (1") or two layers of subflooring or brace between truss/joists in accordance with local building codes.

Particleboard panels are not an acceptable underlayment for nailing down wood flooring, due to their inability to hold fasteners or retain integrity as fasteners are driven in.
Where particleboard exists, replacement of the subfloor to NWFA Guidelines, or installation of a double-layer subfloor system is required.

Double layer subfloor system:
The particleboard forms the first layer. Over this 19/32" plywood or OSB panels (underlayment grade) are installed. The panels are oriented perpendicular (8' long edge) to the floor framing and offset 4" minimum from the existing subfloor seams, and ends of the panels offset by at least a joist/truss space. (Note seams should never align)Alternatively, panels may be installed on a diagonal.
Maintaining 1/16" – 1/8" gap around all four side of the panel and 3/4" gaps at any vertical obstructions, E.g. Walls, pipes, etc.. Fasten panels at 12" O.C. along panel edges and 12" O.C. grid in the field.
Fasteners should be ring, screw shank nails, proprietary screws, or equivalent fasteners and should penetrate the entire subfloor panel but not the joists/truss.
Application of an elastomeric wood floor or subfloor adhesive is often necessary in joining the two panels together.

MOISTURE TESTING:

Use a meter that is species / material adjustable. E.g. Ligno-scanner SDM or mini-Ligno DX/C moisture meter.

- If using alternate meter check that meter can be used with the subfloor material in question.
- Test sub-floor in multiple locations, with an appropriate wood moisture meter, take MC readings in a minimum of 20 test locations for up to the first 1,000 square feet, and an additional 4 readings per 100 square feet thereafter, and average the results.
- Testing locations should be representative of the entire project and include a minimum of three tests per room receiving wood. Pay special attention to exterior walls and plumbing.
- The general rule of thumb is to ensure the MC of the wood subfloor is no more than 4% greater than the MC of solid strip (<3" widths) wood flooring, and no more than 2% greater than the MC of solid plank (≥3" widths) wood flooring being installed.
- Moisture readings must not exceed 12%.
- Higher readings indicate a moisture concern that needs to be addressed before installation can begin.
- For future reference, documenting and saving the test results is recommended.

PREPARATION FOR NAIL DOWN - NAIL/GLUE ASSIST over CONCRETE SUBFLOORS:

In some situations, a nail down installation method maybe preferred as an alternative to direct glue to concrete. In this case a plywood subfloor would need to be installed prior to nailing.

PLYWOOD SUBFLOOR OVER CONCRETE

A Floating Subfloor System over concrete (not attached to the subfloor)

- Concrete should be flat to within 1/8" over 6' or 3/16" over 10'
- Install 6 mil (plastic) poly sheeting completely covering the concrete overlap seams 6" and duct tape.
- Minimum two layers of 1/2" minimum CD Exposure 1 Plywood subfloor panels (CDX) 4' x 8' sheets.
- Square-edged plywood panels should be placed with 1/8" gaps between sheets and a ¾" minimum expansion space at all vertical obstructions and wall lines.
- Place the first plywood layer with edges parallel to wall, without fastening. Leave 3/4" space between wall and plywood.
- Lay the second layer perpendicular or at 45 degree angle to the first.
- Screw and glue (with urethane or construction adhesive) the second layer to first layer on 12" interior grid pattern (6" on the perimeter). Use fasteners long enough to secure the flooring to the subfloor and not penetrate the (plastic) poly sheeting. ***Nail-Down Subfloor System over Concrete (attached to the subfloor)***
- Use minimum 3/4" (23/32, 18.3mm) CD Exposure 1 Plywood subfloor panels (CDX), 4' x 8' sheets.
- Concrete compressive strength must equal 3000 psi or better.
- Concrete should be flat to within 1/8" over 6' or 3/16" over 10'.
- Install 6 mil (plastic) poly sheeting completely covering the concrete overlap seams 6" and duct tape.
- **Note**: Fasteners may be powder-driven pins, pneumatic driven nails, or other fasteners suitable for concrete application. Check with fastener manufacturer for specification such as length, drill size, and/or shot load where applicable.
- Stagger panel joints allowing approximately 1/8" expansion space around all panels to prevent edge peaking due to compression caused by panel swell.
- Allow 3/4" minimum expansion space at all vertical obstructions.
- Panels should be mechanically fastened. For powder load or pneumatic pressure information, contact the manufacture.
- Nailing requirements, minimum 32 shots per 4' x 8' panel.
- Areas with higher humidity may require additional fasteners.
- Use 1-1/2" long fasteners when nailing 3/4" flooring to this subfloor.

Glue-Down Subfloor System over Concrete (attached to the subfloor)

- Follow the adhesive manufacturers recommendations for type of adhesive, floor prep, moisture barrier and trowel size
- Concrete compressive strength must equal 3000 psi or better.
- Concrete should be flat to within 1/8" over 6' or 3/16" over 10'.
- Use minimum 3/4" (23/32, 18.3mm) CD Exposure 1 Plywood subfloor panels (CDX), 4' x 8' sheets.
- Cut 4' x 8' sheets into (4) 12"x 8" planks
- Place 12"x 8' planks into wet adhesive, stager joints min 12" allow planks to fully bond/cure before wood installation.

UNDERLAYMENT:

Check LL Floorings product page for cushion recommendations. At a minimum Silicon Vapor Shield® between the flooring and subfloor to minimize squeaking and when installing over crawl spaces, rooms over basements and garages to provide moisture vapor protection. Install underlayment parallel to the new flooring.

HELPFUL TOOLS: (as needed)

- Tape measure • Pencil • Chalk line • 6' level • Miter saw • Table saw • 60 tooth carbide tip saw blades • Jamb saw
- Eye protection • Ear protection • Niosh dust mask • Knee pads • Gloves • Blue painters tape (2080) • PVA wood glue
- Compressor with regulator • Air hose • Floor nailer • Brad / Stapler • Drill • Drill bit set • Hammer • Flat pry bar
- Broom • Hygrometer (to monitor in-home humidity) • Species adjustable moisture meter (wood) • Calcium chloride moisture or (RH) Relative Humidity test (concrete) • Approved adhesive remover • Cloth rags • Color putty) • Stain markers
- Speed square

ADDITIONAL NOTES:

When moving furniture and heavy equipment, use luan board, plywood, or other similar covering to protect the floor.

Each project is unique and different. Installation advice or recommendations are given as a courtesy and not intended to take the place of an installer's visual inspection, expertise or informed judgment, the end user / contractor on-site is ultimately responsible for ensuring that selected products are appropriate for state or local building codes, ensuring a safe distance from heat sources such as wood stoves, fireplaces, space heaters and the final use of the product.

INSTRUCTIONS CONTINUE ON NEXT PAGE

NAIL DOWN - NAIL/GLUE ASSIST METHOD SOLID WOOD

PROFILE (End View)

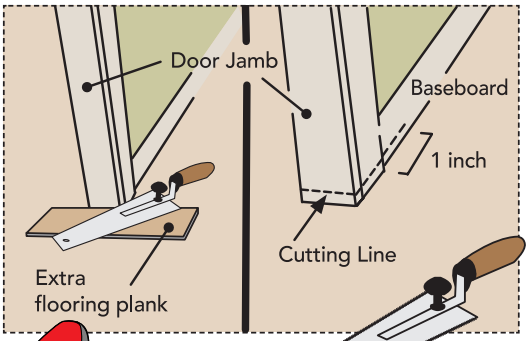
FOR WIDE PLANKS 5" or more "NAIL GLUE-ASSIST" method is recommended
(See important details below on page 15)

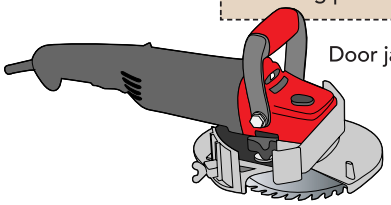
STEP 1. GETTING STARTED:

Remove any existing quarter round, shoe moldings, baseboards and doorway transitions.
Remove existing floor covering as required, check floor flatness per details on previous page and address any issues.
Check that all doors will swing open with adequate clearance over the new flooring prior to starting any work.

Important: Do not cut metal door frames before first confirming it does not violate local building and fire codes. Any metal doors must be addressed by a specialist to adjust.

Undercut all door casings and jambs with a jamb saw to allow the flooring to slide under the doorjamb. If a baseboard is still in place, extend the undercut about 1" beyond the door frame casing. To find the height to cut the jamb, lay a scrap piece of flooring next to the door frame and lay the saw blade on top. After cut, ensure the floor plus underlayment does not bind, always leave 1/16" clearance under the door jamb / casing for the floor to be able to move freely without vertical restriction. **Check for alarm or other low voltage wiring before cutting.** Ensure that appliances have proper clearance to accommodate the new flooring.





Door jamb saw

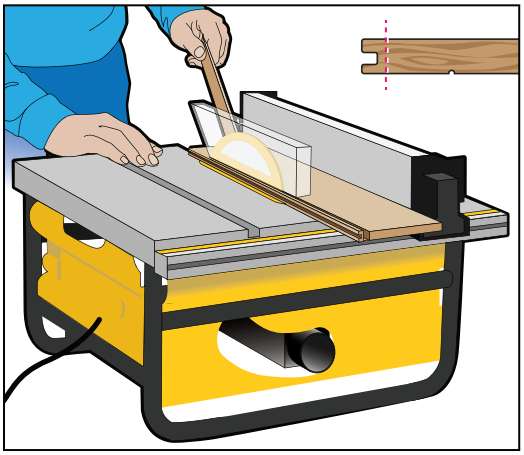
Electric jamb saw

STEP 2. LAYOUT:

Determine which direction the planks will be installed. Without subfloor modification the flooring must be laid perpendicular to the subfloors joists.
If the flooring needs to be installed Parallel to the subfloor joists a second layer comprised of 15/32nd panels should be fastened to the subfloor using ring or screw shanked nails or proprietary screws long enough to only penetrate the existing subfloor and not penetrating the subfloor joists. Considerations are fireplaces, doors, cabinets, and transitions. For best appearance, full planks are desirable at the focal point and most cases it is the longest unbroken wall in the room.
Installers: It is advisable to determine the installation layout and direction (North/South vs East/West) with the end user.
IMPORTANT: Mix materials from several cartons to ensure best overall color/shade appearance of the installed floor.
Install recommended underlayment as required, e.g. white Silicon Vapor Shield®.
Preparation of planks for the starting row when needed: To avoid very narrow pieces at finish wall, measure the distance between the starting wall to the finish wall, then divide this number by the width of the flooring planks. The fraction is the width of the last plank.

E.g. for a 12' room:
Start – Finish = 144" – 1.5" (3/4" expansion x 2) = 142.5"
Width of Plank = 5"
142.5 ÷ 5 =28.5
28 full planks are required and last will be fraction x plank width
5" x 0.5 = 2.5"
If width of last plank is less than 2.5", balance by cutting (Rip) starting row of planks accordingly.

NOTE: If a narrow strip is unavoidable for the last row, the final two rows can be glued together using PVA tongue and groove adhesive at the long seams to avoid board separation.



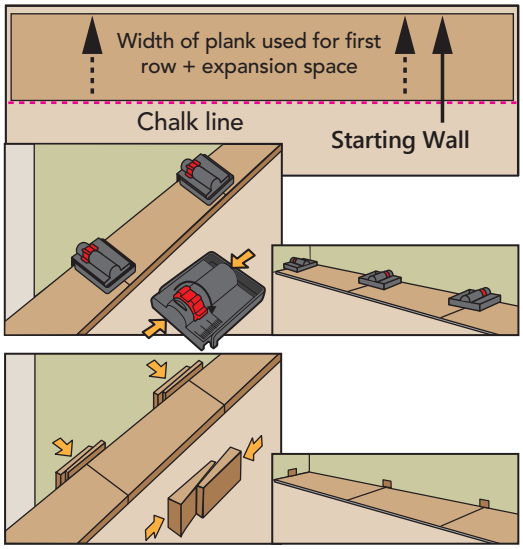
STEP 3. ESTABLISH A WORKING LINE

In at least two places, measure out **equal distance** from your starting wall, 12"–18" from each corner.

The distance from the starter wall to the line will be the width of the plank used on first row, the 3/4" expansion space. Mark these points and snap a chalk line (as shown) parallel to your starting wall. Be sure to maintain proper gap around all vertical obstructions, e.g. newel posts, raised hearths, upright pipes, etc.

Install the flooring with the tongue side facing away from the starting wall (use long straight planks for the first two rows).

Use wedged spacers to maintain minimum expansion gap between the flooring and the walls. Place spacers adjacent to each plank joint, and at the beginning and end of each row.



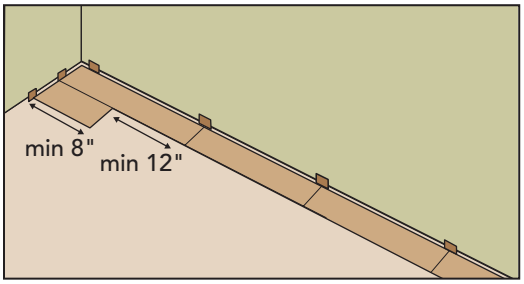
STEP 4. THE FIRST ROW

- Working left to right, lay first plank in the left-hand corner, up against the spacers (the tongue edge should follow along the working line and be facing toward you). Continue laying the first row until you reach the other wall.

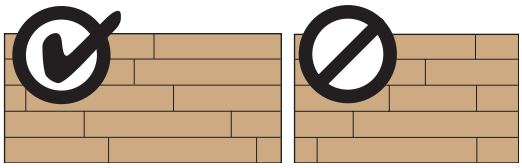
  Note: See Step 6 for cutting the last plank in row to fit.
- Pre-drill and top nail the first row of boards using a 3/32" drill bit and 6d finishing nails about 1" from the back edge. Countersink the finish nail using a nail punch and fill with close matching wood filler. Confirm the first row is straight. Pre-drill and blind nail the 2nd and 3rd rows using 6d finish nails above the board tongue until nailing machines can be used. (set finish nails with nail punch).

STEP 5. IMPORTANT:

When laying planks, avoid starting or ending rows with cuts (short side) less than 8" in length. Stagger the end joints from row to row, by at least 8" to ensure the structural integrity of your floor and a pleasing appearance.



Pay close attention to avoid “stair step” or “H-patterns” appearing in the flooring.

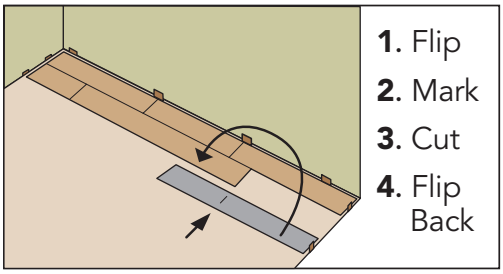


STEP 6. CUTTING END-OF-ROW BOARDS

The last board in each row must be cut to fit, while still maintaining a 3/4" expansion gap at the walls.

Here’s how:

1. Flip the plank over, end-to-end.
2. Lay the flipped board next to the row of planks and mark it on the face.
3. Cut the plank at the mark
4. Flip the plank back over and install as normal.



STEP 7. FLOORING (Racking):

After installation of the first three rows, “rack-out” about 100 sq. ft. of flooring approx. 4" or 5" away from the last secured row.

Pull from several boxes to mix board color to create a random look. After racking out 100 sq. ft. of flooring begin nailing the floor, always inspecting the boards for dimpling and defects as you install. Continue nailing until you get to the last one or two rows.

The last one or two rows will have to be top nailed. Again, pre-drill and use finishing nails. The last row will need to be cut lengthwise to fit properly. Allow for proper expansion.

We recommend you use edge glue for this last row if less than 2-1/2" wide.

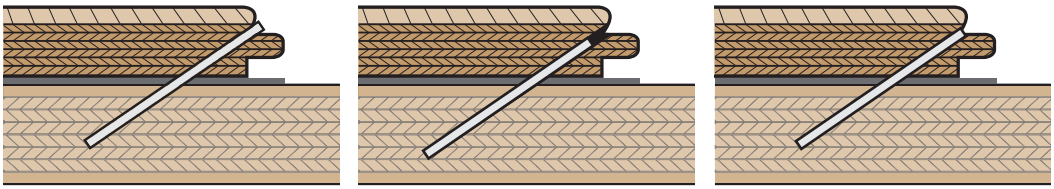
STEP 8. NAIL DOWN:

Tongue fracture and surface dimpling is not a manufacturer defect and can be minimized by installing the flooring in proper lighting, using the correct fastener thickness or gauge, using the recommended shoe adaptor, or changing the height/angle of nail entry. It is common and can be minimized by installing the flooring in proper lighting, using the correct nail thickness or gage, using the recommended shoe adaptor, or changing the angle of nail entry.

To further reduce the occurrence of surface dimpling and tongue fracture the use of thinner 18 gauge cleat nails is recommended especially for harder exotic floors, but is no guarantee to prevent all surface dimples. In addition, many installers will sometimes adjust the nailer angle temporarily by applying layers of duct tape to the bottom nailer foot plate. The use of an over-size base or foot plate to distribute the nailing force is encouraged. If however, surface dimpling still occurs, pre-drill and hand nail the flooring using a 3/32" drill bit and 6d steel finish nails. Do not use staples on exotic flooring. Staples may increase the risk for tongue fracture and surface dimples. Do not mix fasteners when nailing. Staples and cleats hold differently when mixed can result in irregular fastening and may allow excessive movement. When face or top nailing, pre-drilling is recommended. Pick areas of the grain or pattern that would best hide touch-up fillers. Do not use significantly bowed, crooked or twisted boards. Use a wood spline or slip tongue whenever a change in board direction is needed. Splines should be glued with PVA wood glue and nailed into place. Forcing or pounding floor boards together with a rubber mallet during assembly can bruise or damage factory finished board edges.

Air compressor tips

Adjust the regulator to ensure proper air pressure and setting of fasteners. Set air compressor to 70-80 PSI or at the lowest air pressure needed to set the fastener flush into the wood, adjust as needed, too much pressure can create board-edge damage. Do not exceed the nailer or air hose limitations. Air hose over 25' can cause a poor response, loss of proper PSI, jamming and miss-fire. To prevent air leaks, apply white Teflon tape to all threaded connections. Make sure that the fastening mechanism is recommended for the floor, is in good working condition, is fully adjustable, is at the appropriate angle, and that it seats fasteners properly against the tongue of the board to prevent top edge and surface dimple damage.

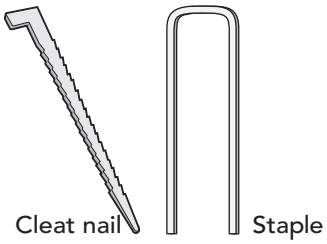


Air Pressure Too Low | Air Pressure Too High | Correct Air Pressure

Fastener spacing:

When using any nailer ensure that you are using the correct size shoe-plate matching the thickness of the flooring. In addition, fine tuning proper nail height adjustment can be easily accomplished by using a piece of 1/16" or 1/8" cardboard or similar material taped to the bottom of the shoe-plate, used as a shim.

Use either cleats or staples; do not use both types on the same floor – each holds differently.



Cleat nail | Staple

DOMESTIC SPECIES

Floor Thickness	Recommended Nailer	Fastener Type	Fastener Length
3/4"	Norge 2n1 nailer	15.5 gauge staple or 16 gauge cleat	1-1/2" to 2"
	Norge 18 gauge floor nailer	18 gauge cleat	1-1/2" to 1-3/4"

EXOTIC SPECIES

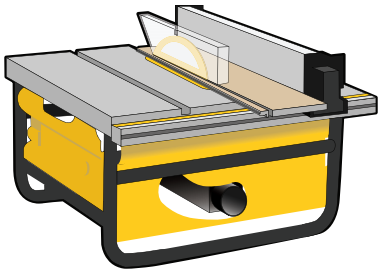
Floor Thickness	Recommended Nailer	Fastener Type	Fastener Length
3/4"	Norge 18 gauge floor nailer	18 gauge cleat	1-1/2" to 1-3/4"

FASTENER SPACING

Board Thickness / Width	**Fastener Spacing** Minimum 2 fasteners per board
3/4" less than 3" wide	Place fasteners 1" to 3" from ends and every 8" to 10" apart
3/4" x 3" wide or wider	Place fasteners 1" to 3" from ends and every 6" to 8" apart

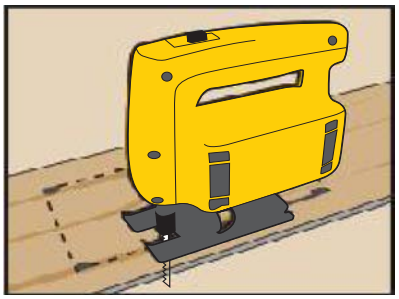
The best method for cutting Solid wood flooring is to use a power miter saw.

Power, table, circular and jig saws can also be used to cut this flooring product.



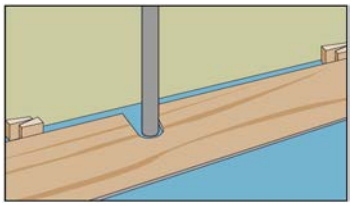
FITTING AROUND IRREGULAR SHAPED OBJECTS:

Make a template to fit around pipes or irregular shaped objects. Place the pattern upon the plank and trace. Cut along the trace lines using a jig saw, and install plank.
Note: Be sure to leave the recommended expansion space around all fixed objects, cabinetry and metal door jambs.

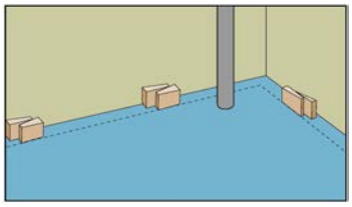


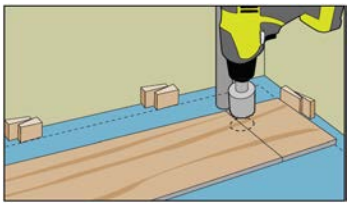
PIPES:

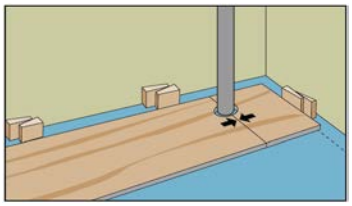
When a pipe is passing through the floor make a hole on the plank 3/4" greater than the radius of the pipe, cut the plank with a 45º angle towards the hole. The cut-off pieceedges are glued in the position again.



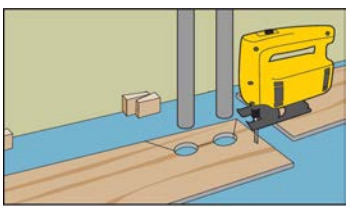
When there is single pipe on a wall, you can plan to have the end-joints meet at pipe, drill and install as shown.

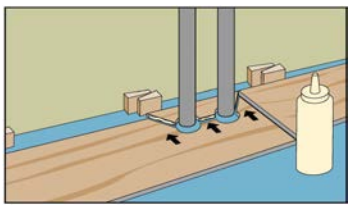






If there are multiple or larger pipes passing through the floor make hole(s) on the plank 13/4" greater than the radius of the pipes, cut the plank with a 45º angle towards the hole. The cut-off piece *edges* are glued in the position again.

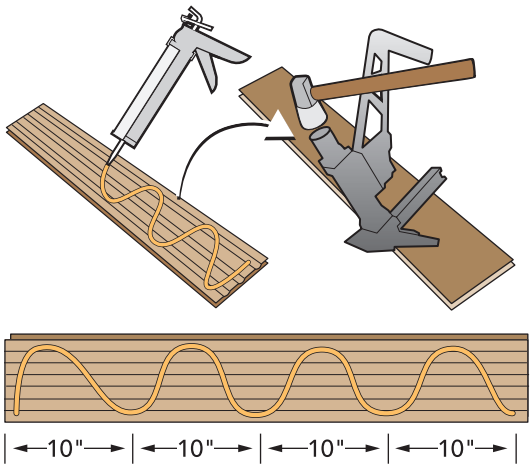




FOR WIDE PLANKS 5" or more "NAIL GLUE-ASSIST" method is recommended
(See important details below)

NAIL GLUE-ASSIST FOR WIDE PLANKS "5" OR MORE"

Wider plank flooring uses fewer fasteners per sq. ft. To ensure a long lasting installation fasteners need to be supplemented using adhesive, therefore it is recommended that wide plank (5" or greater) flooring be installed using the nail and glue-assist installation method.



Follow pre-installation guidelines, use the recommended nailing schedule and type of fastener as detailed in **Fastener and Nailer selection** above, plus an approved wood floor adhesive in cartridge form e.g. Bostik's Best or Tread-lock. The adhesive should be applied in a continuous 1/4" bead in a "Serpentine" pattern, with a minimum spacing of 1" from the edges where the full curve (peak-to-peak) is about twice the width of the board, **e.g. for 5" plank (10" peak-to-peak "as shown")**. For other applications (patterns) of adhesive, please review the *NWFA Guidelines 2019*.

When nailing down wood flooring over a conditioned space that is maintained at the same conditions as the living/ interior space, no vapor retarder is required. Wood floors installed in these conditions may be nailed with a glue-assist directly to the subfloor.

When installing wood flooring over unconditioned space (garage, basement or compliant crawl space **(see job site conditions page 10),** use of a liquid-applied, or similar Class II vapor retarder that is compatible with the flooring adhesive may be used to allow for a glue-assist directly to the subfloor. E.g. MVP4.

Note: ***Underlayment is not used for Nail Glue Assist method.***

DIME ROWS:

To help minimize buckling or damage to flooring caused by expansion, additional spacing between rows may be needed, more or less spacing between rows may be needed, depending on geographical region, interior climate controls and season of the year.

When additional spacing is required: Use a washer or removable spacer to leave additional space every few rows and/or start in center of room and work out to both sides. Do not use spacers that may cause damage on pre-finished products.

SPLINES:

Splines are used to facilitate installing in two directions from the center of a room or to change direction of the flooring.

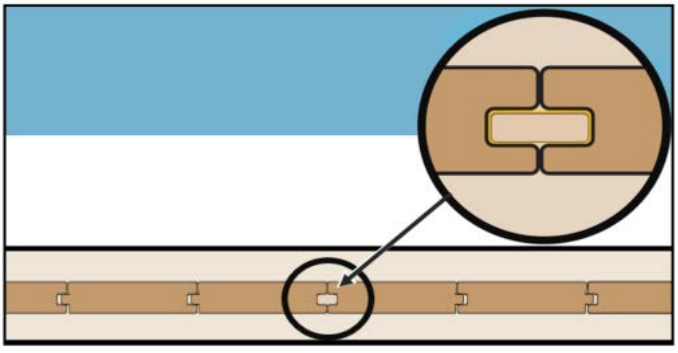
1. Snap a line down the center of the room.
2. Following the line fasten a starter board to the floor using wood screws.
3. With the grove of the flooring against the starter board being careful not to disturb the started row nail the first row
4. Use a blind nailer to install the remaining rows of wood flooring
5. After installing in one direction, remove the starter board.
6. Apply wood flooring adhesive and Install a spline or a slip tongue in the groove of the board that was against the starter row.
7. Secure the spline using a blind nailer. To keep the spline in alignment for the next flooring board.

TIP: use a scrap piece of wood flooring to run along the length of the spline as you nail.

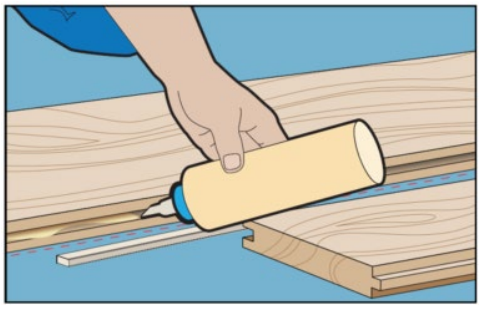
Complete the installation in both directions.

The basic principles (steps 6 and 7) can be applied to change direction of the flooring.

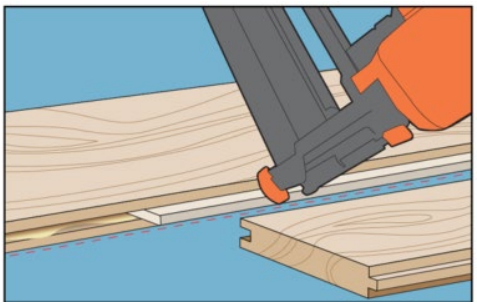
Larger room areas over 30 ft. benefit from added center expansion and this is achieved by starting the installation at the center of the room using splines. As you can see in the image below the tongues now face both ways.



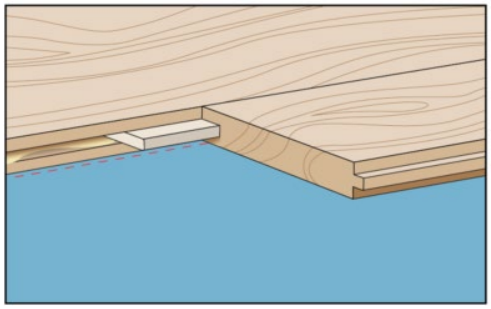
Splines should always be glued into place using a Tongue and Grove adhesive



And then nailed along the starting line



Subsequent rows are nailed into place in the normal fashion



STEP 9. TRANSITIONS

In areas where your new floor meets other types of flooring, such as carpet or tile, select an appropriate molding to get a professional looking and safe transition.

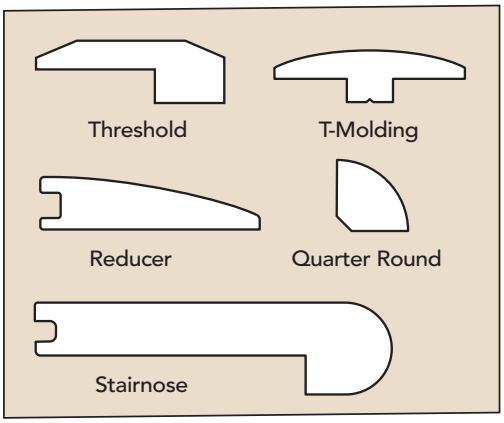
Threshold moldings transition from floor to carpet and are used at sliding doors, raised hearths, etc.

Reducer moldings transition from floors to hard surfaces that are lower than the floor, such as vinyl or VCT tile.

Stair-nose moldings must be used for all "floating" installations. Example: when the flooring meets at the top of a stairway "going down".

T-Moldings cover expansion spaces at doorways, and they transition from your new floor to other hard surfaces of similar height.

3/4" Quarter Round moldings are used to cover expansion spaces between the baseboards and the flooring.



REPAIRS:

Save extra planks from the initial order in the event that installed planks become damaged and repairs are needed. This will ensure lot number and shading compatibility.

GLUE DOWN * NAIL DOWN - NAIL/GLUE ASSIST

Save time & avoid frustration! Please read these entire instructions before starting your installation, and A.I.M. for success!

AIM

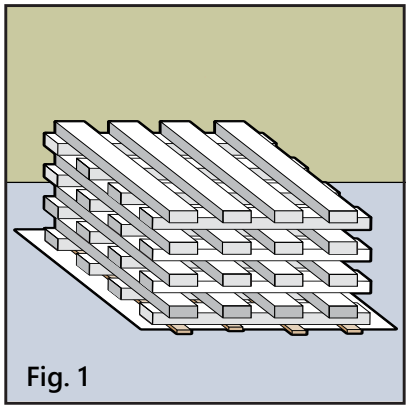


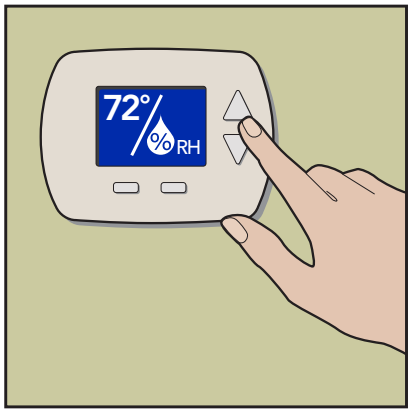
Fig. 1

Acclimate Completely
Acclimate your flooring to your home environment. Time for acclimation will vary. Always check using a meter.

AIM

Install Correctly
Take time to review Lumber Liquidators installation guidelines and follow the National Wood Flooring Association Guidelines to ensure that your installation goes well from beginning to end.

AIM



Maintain Environment
Indoor relative humidity should be maintained with no more than a 20% fluctuation (E.g. 40% -60%). Indoor Relative Humidity levels below 30% or above 70% will likely result in cupping, checking, gaps or bucking.*

*See Temperature and Relative Humidity for more details.

Need Help? To obtain installation assistance or product information concerning this paneling, contact the store of original purchase, or call the Lumber Liquidator's customer care at 800-366-4204.

WARNING! DO NOT SAND, DRY SWEEP, DRY SCRAPE, DRILL, SAW, BEADBLAST OR MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVES OR OTHER ADHESIVES. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product to be removed is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content. See current edition of the Resilient Floor Covering Institute (RFCI) publication, "Recommended Work Practices for Removal of Resilient Floor Coverings" for detailed information and instructions on removing all resilient covering structures. For current information, go to www.rfci.com.

LEAD WARNING: Some paints and finishes in homes built before 1978 may contain lead. Exposure to excessive amounts of lead dust presents a health hazard. Prior to removing or sanding, comply with all applicable federal, state, and local laws, and reference the publication "Lead-Based Paint: Guidelines for Hazard Identification and Abatement in Public and Indian Housing" available from the United States Department of Housing and Urban Development regarding (1) appropriate methods for identifying lead-based paint and removing such paint; and (2) any licensing, certification, and training requirements for persons performing lead abatement work.

MOLD AND MILDEW WARNING: Prior to removing an existing resilient floor or when installing a new floor, if there are visible indications of mold or mildew or the presence of a strong musty odor in the installation area, the source of the problem should be identified and corrected before proceeding with the flooring work. Excessive moisture in the subfloor could promote mold, mildew, and other moisture related issues like the trapping of moisture emissions under the flooring, which may contribute to an unhealthy indoor environment. Mold has the potential to cause health problems and may produce allergens, irritants, and in some cases, potentially toxic substances. Before installing the new resilient flooring, ensure the underlayment and/or subfloor is allowed to thoroughly dry and that any residual effect of excessive moisture, mold, or structural damage has been corrected. Remediation measures may require structural repairs such as replacing the contaminated underlayment and/or subfloor, cleanup measures using appropriate protection and biocide, or hiring a professional mold and mildew remediation contractor. Consult EPA mold guidelines on EPA's website at https://www.epa.gov/mold

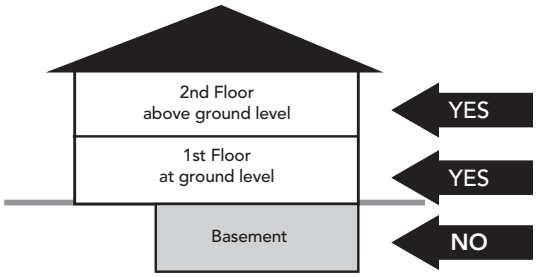
WARNING:
Drilling, sawing, sanding or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov/wood

RECOMMENDED USE:

- Residential interior use only.
- **Do not install in wet areas like patios and showers, or exterior areas. Do not install in boats, or other moving vehicles or over radiant heat.**

GRADE:

On and above grade only.



JOBSITE CONDITIONS:

- The building should be enclosed with all doors and windows in place.
- **Prior to delivery and install:** All wet works (e.g. drywall taping, texture, painting, stucco etc.) should be complete and allowed to dry. The rooms should be at normal "lived-in" conditions with HVAC operational for at least one week prior to the installation when home is so equipped.
- When installing in rooms over basements and garages, ensure they are dry and well ventilated.
- Crawlspaces must be dry with a minimum 18" from the bottom of the floor joist to the ground, Crawl space earth (or thin concrete slab) should be covered 100 percent by a vapor retarder of black polyethylene (minimum 6 mil) or any recommended puncture-resistant membrane, such as Class C, meeting ASTM D1745. Ventilation shall be per local building codes.
- Ensure that exterior doors and appliances have sufficient clearance to accommodate the new flooring.
- Do not undercut metal door jambs before first confirming it doesn't violate local building and fire codes.
- To avoid damages to the floor's finish, all construction activity should be completed before installing this floor.
- All gutters should be in place and functioning properly. Yard grading should be sloped to run water away from the home foundation.
- The installer -not the manufacturer or retailer - is responsible for making sure that the site conditions are appropriate prior to installation of this floor.

ACCLIMATION:

- Stack boxes no more than eight cartons high in areas to receive new flooring (remove plastic from outside of boxes if present). Ensure each layer is evenly supported to prevent distortion. Elevate stack using 2 x 4's as illustrated in Fig. 1 above. **On concrete; place a layer of 6 mil poly down first during the acclimation process.**
- For some exotic species, extended acclimation time should be expected and planned for. Time is not the determining factor; moisture testing is required to confirm that product is acclimated. Use a meter that is species adjustable, E.g. Ligno-scanner SDM or mini-Ligno DX/C moisture meter. If using alternate meter check the meters specifications that meter can be used with the wood species that you are installing.
- Check the moisture content of multiple planks. It's recommended to randomly test 40 boards for up to the first 1,000 square feet, and an additional 4readings per 100 square feet thereafter, and average the results. The flooring's average moisture content must be within 4% of the subfloor for strip flooring (boards 2-1/4" or less) and 2% for plank flooring (3" or wider).
- Any unusually high or low moisture readings should be isolated and not installed in the floor.
- Keep a permanent record of all readings.

TEMPERATURE:

For best product performance, ensure the temperature in the home is between 60° and 80° F before, during, and after installation and for the life of the flooring.

RELATIVE HUMIDITY:

For best performance, flooring should be ideally conditioned, installed and maintained to consistent indoor temperatures of 60°- 80° F and relative humidity of 30% or above to 70% or below with a maximum fluctuation of 20%, before, during and after the installation and for the life of the flooring). Ideal interior environmental conditions will vary from region to region and jobsite to jobsite, the relative humidity figures on your project maybe higher or lower.

The key is to ensure that the change in relative humidity stays within a 20% range (e.g.30% to 50% or 35% to 55% etc…) and does not fluctuate beyond 20% for sustained periods, enough to affect the flooring. Home environments where the indoor Relative Humidity levels are below 30% or above 70% are not recommended.

Not following the written recommendations can negatively impact board performance and may result in excessive movement, squeaks, board gapping, board-edge cupping, cracks, twists, finish splits, flaking, chipping, fading and other related issues.

Any home that may have a sustained change in relative humidity greater than 20% fluctuation needs an HVAC system equipped with a humidifier or dehumidifier to regulate the interior environment within a 20% range of fluctuation. Installing wood in an environment that is not maintained can be detrimental to the flooring.

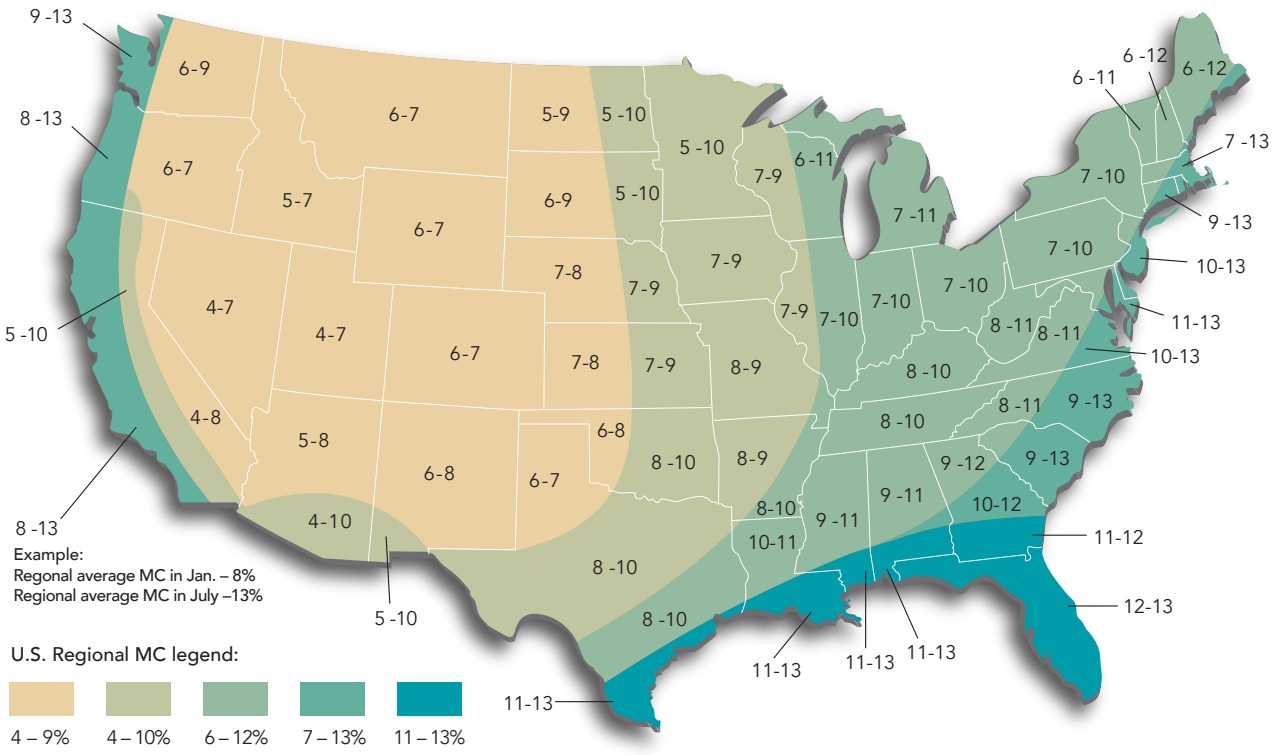
The map below can be used to calculate what the optimum baseline or average moisture content of interior wood products should be prior to installation for each state and region. The first number indicates the average moisture content of wood during the wintertime (months having lower humidity), and the second number indicates the average moisture content during the summer time or (months having higher humidity).

To calculate the optimal baseline or average wood moisture content in your state or region, add the high season number and low season number together then divide by two. Example: If your state or region has an expected low of 6% to a high of 12% moisture content, the average baseline moisture content of the wood before installation would be 9%. The goal is to acclimate the flooring to this average figure and then the installation can begin.

Very dry or humid regions of the country usually require extended conditioning to balance the new flooring to the environment it will service. The most reliable moisture-content numbers will be obtained using a species-specific moisture meter to determine the moisture content of the wood flooring.

The USDA moisture map is a helpful guide for installations. Without proper temperature, humidity and ventilation controls, actual moisture content in any location may differ significantly from these numbers. In all cases it is the installer or homeowner's responsibility to determine if the indoor environment, moisture content and jobsite conditions are suitable for wood floor installations.

Summer / Winter Moisture Map



The effects of Temperatures and Humidity on wood flooring

Wood products are sensitive to moisture, temperature and humidity. Refer to the chart below to better understand the best in-home environmental relationship between relative humidity (RH) and temperature and its effects on wood moisture content. Determine the current temperature and RH within your home with a hygrometer. Find the combination of temperature and RH in your area on the chart (temperature variations are listed on the left side of the chart, humidity variations are listed along the bottom).
Example: The target or ideal moisture content for wood products is shown in the shaded area to be within 6.1% to 9.4% Wood flooring will perform best when the interior environment is controlled to stay within a relative humidity range of 30% - 50% or 45% to 65%, for example, and a temperature range of 60° to 80° Fahrenheit. (In some geographical areas, the ideal humidity range might be higher or lower, 30% - 50% or 45% to 65% for example). It is critical to maintain the relative humidity in your home to not fluctuate more than 20% at any given time of the year. Wood flooring installed in areas with a wider variation in RH (fluctuation in RH of more than 20%) can negatively impact board performance and may result in excessive movement (expansion / contraction, squeaks, board gapping, board-edge cupping, finish splits and other related issues).

Moisture Content of Wood at Various Temperatures and Relative Humidity Readings

°F	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98
30	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.0
40	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.0
50	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.0
60	1.3	2.5	3.6	4.6	5.4	**6.2**	**7.0**	**7.8**	**8.6**	**9.4**	10.2	11.1	12.1	13.3	14.6	16.2	18.2	21.7	24.1	26.8
70	1.3	2.5	3.6	4.5	5.4	**6.2**	**6.0**	**7.7**	**8.5**	**9.2**	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9	26.6
80	1.3	2.4	3.5	4.4	5.3	**6.1**	**6.8**	**7.6**	**8.3**	**9.1**	9.9	10.8	11.7	12.0	14.2	15.7	17.7	20.2	23.6	26.3
90	1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3	26.0
100	1.2	2.3	3.3	4.2	5.0	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17.0	19.5	22.9	25.6

Relative Humidity (RH percent)

Chart taken from Wood Handbook: Wood as an engineering Material (Agriculture Handbook, 72).
Forest Products Laboratory, U.S. Department of Agriculture

CUTTING ALLOWANCE and MANUFACTURER TOLERANCE

CUTTING ALLOWANCE (cutting waste):

A 10' x 10' room has net 100 square feet (Sq. Ft.) the actual area that will have flooring, but more product is required to allow for cutting which generates unusable pieces.

Carefully measure the net square feet required, adding up multiple areas.

The table gives an approximate recommendation for cutting allowance:

Quantities are always rounded up to the nearest box.

Tip: If more than half a box is not available for spares we recommend ordering an extra box.

Please note: Actual cutting waste may be lower or higher based on room layout. E.g. multiple rooms vs. one large area and "pattern" being installed.

Net Area SqFt	Total with Cutting Allowance SqFt	% Applied
100	110	10
200	218	9
400	432	8
600	642	7
800	848	6
1000	1050	5
above 1000 SqFt add 5%		

Consider carefully before returning boxes. Keeping extra boxes is a great idea and inexpensive insurance against damage, if a repair is needed the product and batch will be the same, and you have options even if the product has been discontinued. Diagonal installations may require 5% extra material over and above the cutting and manufacturer tolerance allowance.

MANUFACTURER TOLERANCE:

Natural wood products may have different manufacturer tolerances depending on grade/type of wood and manufacturer tolerance of 5 – 20% may be allowed. Cutting allowance and manufacturing tolerance combined, is the waste factor.

Please refer to the Grade manufacture tolerance % below to help gauge how much extra material is required for your project.

WOOD GRADES:

Select Grade:

Select Grade has the most uniform color with no large knots and the longest average length of planks. Also referred to as First Grade.

Recommended manufacturer tolerance 5%-8%

Natural Grade:

Natural Grade will have some color variation, mineral coloring and small knots. It can also be referred to as #1 or 2nd grade. Note: This product contains shorter than average length boards; some are 2 feet or less in length.

Recommended manufacturer tolerance 8%-10%

Millrun Grade:

Millrun will have more color variation, mineral coloring and small knots. Mill Run Grade flooring is a mixed grade and will have a balanced mixture of boards that will include; select, natural and rustic grades.

Recommended waste factor for this grade is between 8%-10%

Character Grade:

Character grade consists of Natural and rustic grade material, it will have a natural appearance displaying the full characteristics of the hardwood species.

All color variations occurring naturally in the species are allowed. Characteristics may include; color variations from board to board due to a mix of natural heartwood and sapwood along with small to medium sized knots and mineral streaks.

Recommended manufacturer tolerance 10%-12%

Rustic Grade:

Rustic grade has larger tight knots and some open knots with the most pronounced variation in color. This grade may contain, but not is limited to defects including, splits, shake, and have shorter average lengths which all add to the flooring's distressed look. Rustic grade is also known as Tavern grade, Utility grade, # 3 grade and C grade. It's a great choice when character marks and contrasting appearance are desired.

Recommended manufacturer tolerance 15%-20%

Please Note: The waste factors on this page are offered as a helpful guide and are not intended to take the place of an installer's visual inspection, expertise or informed judgment.

If defects are greater than the waste factor indicated for your flooring, please contact your local store or call Customer Care at 1-800-366-4204.

In all cases the amount of waste can be reduced by using unsatisfactory planks by:

1. Cutting out affected area to create a satisfactory piece and using as starter / end pieces for rows.
2. Placing in areas that appearance does not matter.
3. Using planks in the case of width issues as the last row.

USER / OWNER / INSTALLER RESPONSIBILITIES:

Install in good lighting.

- Product installation constitutes acceptance. Visually inspect the product and determine acceptability before installation. Claims will not be accepted regarding visual defects after flooring has been installed. If any planks are unacceptable due to color, finish, milling or any other reason, it is your responsibility to determine to use them, hide them in areas like closets, trim off the imperfection, or not install them at all.
- You should plan on being present during your installation to ensure that all required procedures are completed and boards with visible defects are not installed. It is important to inspect individual boards and to frequently step back to observe the "whole picture" before installation is completed.
- A reasonable amount of installed flooring (up to 25% or 100 sq. ft. whichever is less) is enough to determine acceptance of quality.
- Retain a box label and keep on file with your receipt for future reference.

If quality issues are suspected stop the installation and call your local store or CUSTOMER CARE at 800-366-4204.

Our natural solid wood flooring is by nature beautiful and unique when installed correctly.
As a natural product wood expands and contracts with changes in relative humidity effecting its moisture content, and although manufactured to tight specifications, by the time it comes to installing, plank dimensions may have changed naturally during storage and the acclimation process. Depending on the type of wood these changes may not be uniform across all cuts, and this aspect becomes more apparent as the plank width gets greater, these are not manufacturing defects but normal for solid wood and should be expected. With this in mind, for all solid wood flooring racking out is a key aspect of installing the flooring. Experienced installers are aware of the nuances and have techniques for address what may at first seem to be issues with the flooring.

1) Width variation: During racking, pull from multiple boxes check for a tight fit, if the planks do not match width wise, begin a sorting process, like widths to like widths. If a board tapers use at the beginning or end of a row. If boards have multiple width and cannot be using in the same row, cut to same width and use in starter or finish rows.
2) Bowing: In most cases when nailing bowing can be eliminated during the nailing process, but for glue down more attention to the concern may result in extra culled boards, even when using straps to pull the boards together.
3) Cut the bowed boards into shorter pieces and use as starter or finish boards in a row, use in closets or other hidden areas.

Note: Check your starting line, it needs to be very straight a slight bow in the starting line can results in all the above concerns without any issue with the actual product.

Checks, knots and other features:

Although natural and included within certain grades, some boards may not meet your individual expectations.

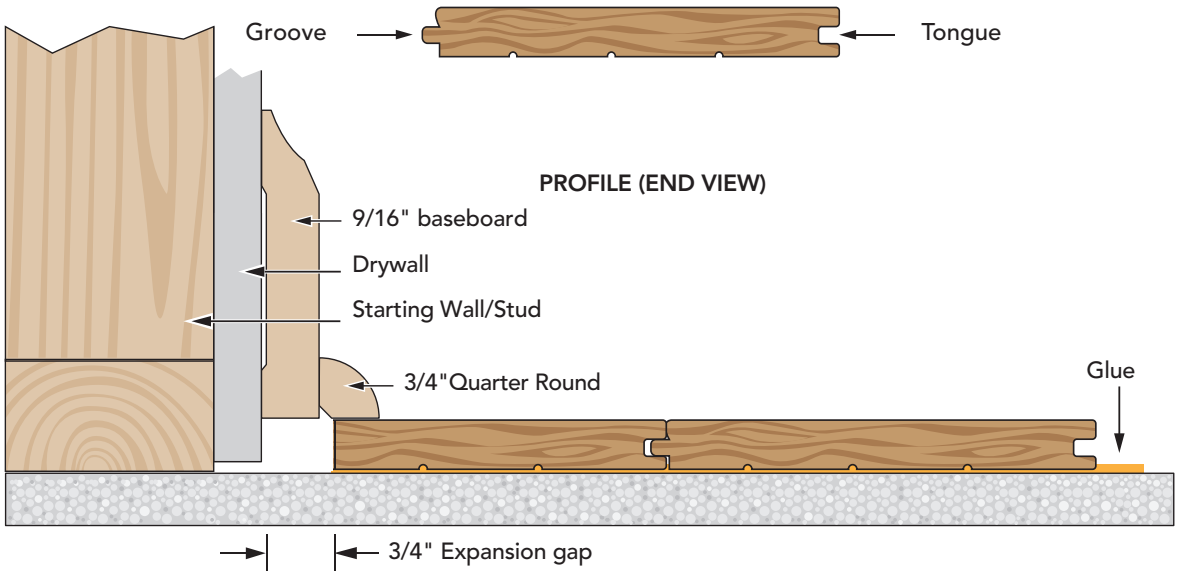
It is perfectly acceptable to cull these planks, depending on the "look" you want, but you may need to purchase additional material. to complete your project.

With this in mind manufacturers advise extra materials. Always check the grade of wood to determine how much extra material is required over and above the cutting allowance. If the amount used for culling is greater than the manufacturer allowance please do not hesitate to contact your store or customer care to resolve the concern.

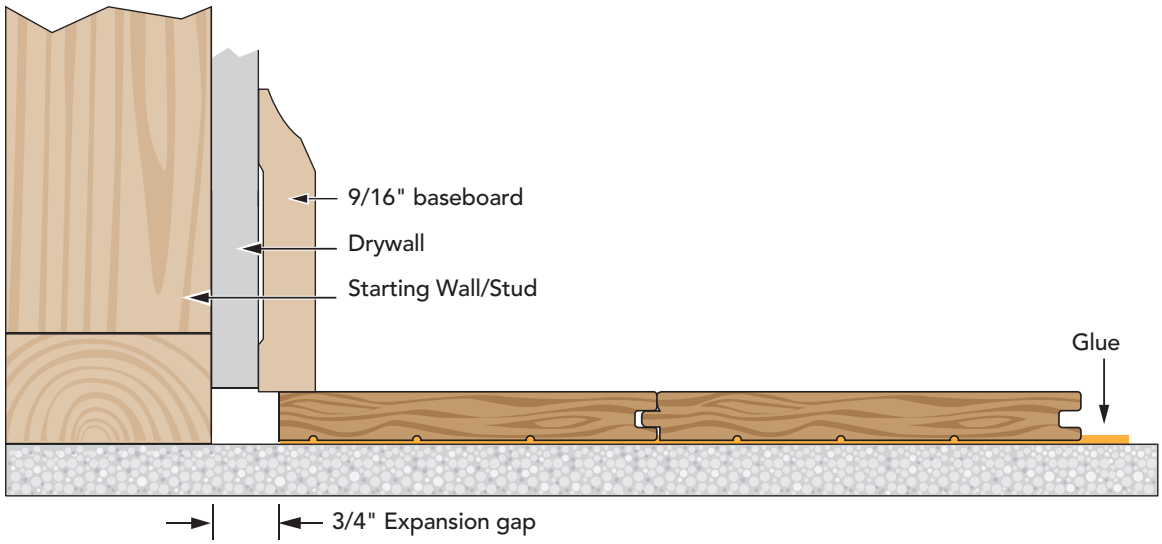
The use of putty, stains, wood blend sticks or markers to touch-up prefinished flooring before, during and after installation is considered normal practice.

EXPANSION SPACE:

A minimum gap of 3/4" is required between the flooring and all vertical obstructions (walls, door jambs, pipes, staircases, posts, fixtures, built-ins, etc.).



TYPICAL INSTALLATION



How to achieve required Expansion Gap using base board only

If the room has electric baseboard heaters, leave a minimum of 3/4" between the surface of the flooring and the bottom of the heaters, allowing heat to circulate properly.
NOTE: Gapping and buckling can develop if expansion space requirements are not followed.

RUN WIDTH AND LENGTH:

Nail down: No limit in run length or width.
Flooring must have room to expand and contract freely.

CABINETS / FIXED FIXTURES:

• Although not recommended, cabinets may be installed on top of this product.

SUNLIGHT:

Depending on the species, your flooring will naturally change color “patina” with prolonged exposure to sunlight. Use of window coverings, shades, or tinting your windows is recommended to slow this natural process.

SUBFLOORS NEED TO BE: CLEAN – FLAT – DRY:

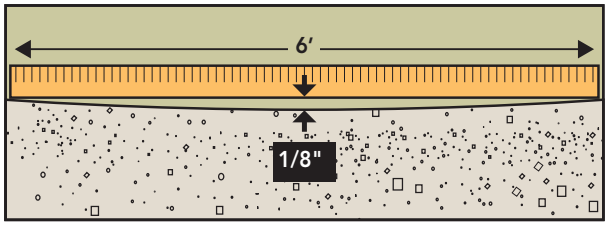
All substrates must be structurally sound and free from movement or deflection.

CLEAN:

Free from contaminants including but not limited to: oil, grease, parting compounds, chemical contaminants, sealing and curing agents, paint, drywall compound, old adhesives such as cutback, solvents, and loose or broken patching agents and other foreign materials that might prevent adhesive bond (refer to the adhesive technical data sheet / install guide).
Free from particles including but not limited to: dust, dirt, and grit.

FLAT:

Subfloors must be flat within 1/8" over 6', and 3/16" over a 10' span.
Improper substrate or flatness can result in gaps, locking mechanism failure and premature wear on surface.



DRY:

Follow product use limitations and adhesive manufacturers technical data sheets (TDS) / install guide.
Do not install this flooring over plywood underlayment attached to concrete, unless it is known that an appropriate moisture barrier has been installed (all applications).

WOOD SUBFLOOR PREPERATION:

- Screw down loose or squeaky sections of plywood and replace areas that are damaged.
- To address flatness concerns sand or plane high spots and fill the low spots with a material approved for use under wood flooring.
- Glue down applications – low, sagging areas of the subfloor should be cut out and replaced with the same thickness.
- Installers are responsible to use materials to ensure product performance.
- Substrates that are un-level /flat due to structural deficiencies should be repaired by a licensed contractor.
- Never apply plastic sheet over wood subfloors.

STRUCTURAL REQUIREMENTS:

Note that joist spacing determines minimum subfloor thickness.
Joist spacing 16" on center (OC) or less
– Plywood: Minimum of (5/8", 19/32") Oriented Strand Board (OSB): minimum (3/4", 23/32")
Advantech minimum (3/4", 23/32")
Joist spacing 16" up to 19.2" (OC)
– Plywood: Minimum of (3/4", 23/32") Oriented Strand Board (OSB): minimum of (3/4", 23/32")
Joist spacing over 19.2"up to maximum 24" (OC)
– Plywood: Minimum of (7/8") Oriented Strand Board (OSB): Minimum of (1") or two layers of subflooring or brace between truss/joists in accordance with local building codes.

MOISTURE TESTING:

Use a meter that is species / material adjustable. E.g. Ligno-scanner SDM or mini-Ligno DX/C moisture meter.

- **If using alternate meter check that meter can be used with the subfloor material in question.**
  Test sub-floor in multiple locations, with an appropriate wood moisture meter, it's recommended to test 20 locations for up to the first 1,000 square feet, and an additional 4 readings per 100 square feet thereafter, and average the results. Moisture readings must not exceed 12%.
- Higher readings indicate a moisture concern that needs to be addressed before installation can begin.
  Do not install this flooring over plywood underlayment attached to concrete, unless it is known that an appropriate moisture barrier has been installed.
- For your protection, documenting and saving the test results is recommended.

CONCRETE SUBFLOOR PREPERATION:

To address flatness concerns; Grind down high spots using a Diamond Grinder (Shroud and Vacuum) and fill in low spots with an appropriate Portland cement-based patch or self-leveler. Always check compatibility with the adhesive manufacturer).
***CAUTION: Follow OSHA guidelines (29 CFR 1926.1153) regarding silica dust hazards.**

MOISTURE TESTING (Glue down applications):

- The use of adhesives or sealer and adhesive systems with no moisture limits will eliminate the need for testing. E.g. Ultragrip 4 in 1, or MVP4 and approved adhesive. In the event of systems that have a moisture limit. Perform moisture tests regardless of age or grade of the concrete to determine moisture levels. A concrete slab shall be cured a minimum of 60 - 90 days before performing moisture tests. If concrete moisture levels exceed the adhesive manufacturer acceptable limits, do not install the floor.
- **Follow the moisture testing instructions, product limitations and procedural guidelines in the adhesive manufacturer's Technical Data Sheets / Manufacturer Guidelines. The test requirements and limits that apply will vary by product specified.**

- There are only two accepted moisture test methods:
  1) The Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes (ASTM F 2170
  2) The Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride (ASTM 1869).
- Note: The use of moisture meters, plastic sheet test and/or bond tests are not industry accepted quantitative test methods
- For your protection, documenting and saving the test results is recommended.
- Slabs must be free of hydrostatic pressure.

RECOMMENDED PATCHES/LEVELERS:
- Cement Patching- Bostik WebcreteR 95™
- Total Surface Self-Leveling- Bostik SL-175™ (plus Primer Pro)

Follow manufacturer's TDS / installation guide.

LIGHTWEIGHT ALTERNATIVE SUBFLOORS (Not approved):
Use over gypsum-based/underlayments is limited to dry, "above-grade" installations where the gypsum has dried hard (not dusty / powdery), with a minimum compressive strength > 2,500 psi for solid hardwood installations. Please refer to adhesive / sealer manufacturer recommendations.

EXISTING FLOORS:
This flooring can only be glued down to existing flooring that is properly prepped and approved by the adhesive manufacturer.

UNDERLAYMENT (Double Stick Applications Only):
Using approved underlayments, your local store can advise on best solution for your situation.

HELPFUL TOOLS: (as needed)

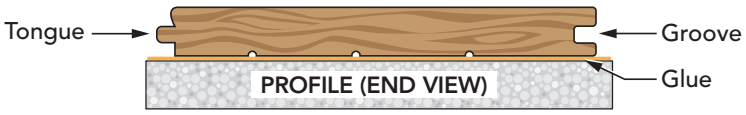
• Tape measure • Pencil • Chalk line • 6' level • Screed • Miter saw • Table saw • 60 tooth carbide tip saw blades • Jamb saw • Eye protection • Ear protection • Niosh dust mask • Knee pads • Gloves • Blue painters tape (2080) • PVA wood glue • Compressor with regulator • Air hose • Floor nailer • Brad / Stapler • Drill • Drill bit set • Hammer • Flat pry bar • Broom • Hygrometer (to monitor in-home humidity) • Species adjustable moisture meter (wood) • Calcium chloride moisture or (RH) Relative Humidity test (concrete) • Approved adhesive remover • Cloth rags • Color putty • Stain markers
• Speed square

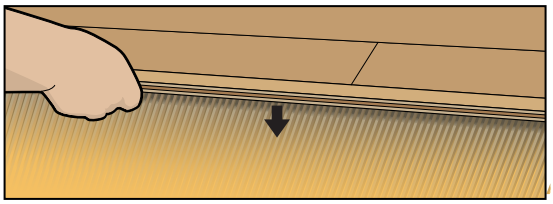
ADDITIONAL NOTES:

When moving furniture and heavy equipment, use luan board, plywood, or other similar covering to protect the floor.

Each project is unique and different. Installation advice or recommendations are given as a courtesy and not intended to take the place of an installer's visual inspection, expertise or informed judgment, which will override any advice or recommendations given in the Installation Guidelines. The end user / contractor on-site is ultimately responsible for ensuring that selected products are appropriate for local conditions and / or the final use of the product.

GLUE DOWN METHOD SOLID HARDWOOD FLOORING



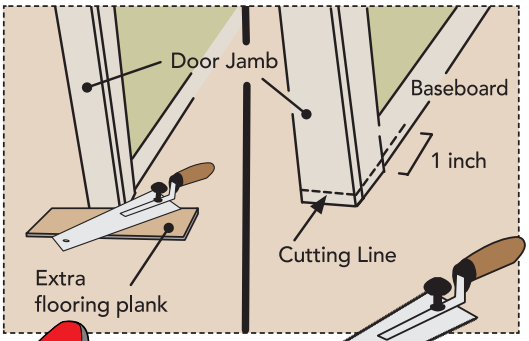


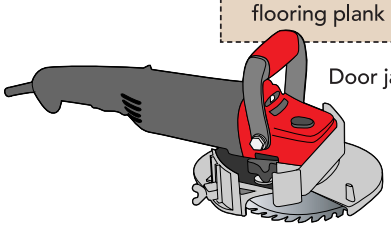
STEP 1. GETTING STARTED:

Remove any existing quarter round, shoe moldings, baseboards and doorway transitions.
Remove existing floor covering as required, check floor flatness per details on previous page and address any issues.
Check that all doors will swing open with adequate clearance over the new flooring prior to starting any work.

Important: Do not cut metal door frames before first confirming it does not violate local building and fire codes. Any metal doors must be addressed by a specialist to adjust.

Undercut all door casings and jambs with a jamb saw to allow the flooring to slide under the doorjamb. If a baseboard is still in place, extend the undercut about 1" beyond the door frame casing. To find the height to cut the jamb, lay a scrap piece of flooring next to the door frame and lay the saw blade on top. After cut, ensure the floor plus underlayment does not bind, always leave 1/16" clearance under the door jamb / casing for the floor to be able to move freely without vertical restriction. **Check for alarm or other low voltage wiring before cutting.** Ensure that appliances have proper clearance to accommodate the new flooring.





STEP 2. LAYOUT:

Determine which direction the planks will be installed. Without subfloor modification the flooring must be laid perpendicular to the subfloors joists.

If the flooring needs to be installed Parallel to the subfloor joists a second layer comprised of 15/32nd panels should be fastened to the subfloor using ring or screw shanked nails or proprietary screws long enough to only penetrate the existing subfloor and not penetrating the subfloor joists. Considerations are fireplaces, doors, cabinets, and transitions. For best appearance, full planks are desirable at the focal point and most cases it is the longest unbroken wall in the room.

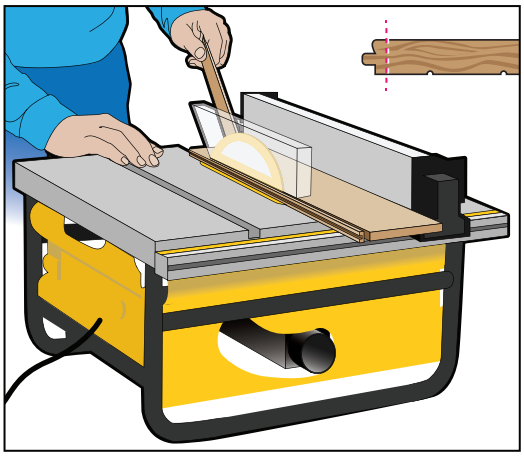
Installers: It is advisable to determine the installation layout and direction (North/South vs East/West) with the end user.

IMPORTANT: Mix materials from several cartons to ensure best overall color/shade appearance of the installed floor.

Preparation of planks for the starting row when needed: To avoid very narrow pieces at finish wall, measure the distance between the starting wall to the finish wall, then divide this number by the width of the flooring planks. The fraction is the width of the last plank.

E.g. for a 12' room:

Start – Finish = 144" – 1.5" (3/4" expansion x 2) = 132.5"
Width of Plank = 5"
132.5 ÷ 5 =28.5
28 full planks are required and last will be fraction x plank width
5" x 0.5 = 2.5"
If width of last plank is less than 2.5", balance by cutting (Rip) starting row of planks accordingly.



STEP 3. ESTABLISH A WORKING LINE

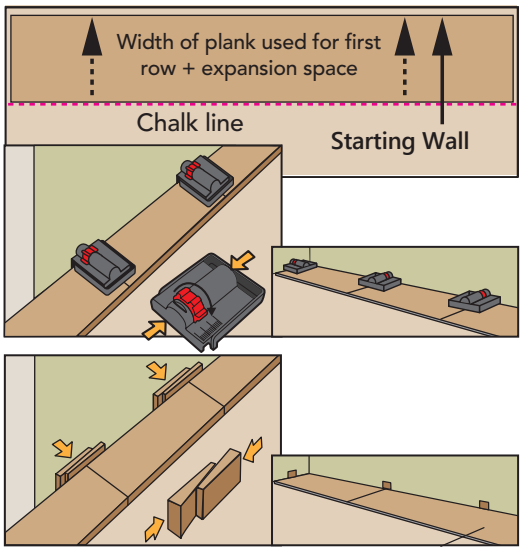
Start by snapping a chalk line parallel to your starting wall. The distance from the wall to the line will be the width of the plank used on first row plus the 3/4" expansion space.

Use wedged spacers for a 3/4" expansion gap between the flooring and the walls.

Be sure to keep a 3/4" gap around all vertical obstructions, e.g. newel posts, raised hearths, upright pipes or other fixtures.

Install the flooring with the tongue side facing away from the starting wall (use long straight planks for the first two rows).

Use wedged spacers to maintain minimum expansion gap between the flooring and the walls. Place spacers adjacent to each plank joint, and at the beginning and end of each row.

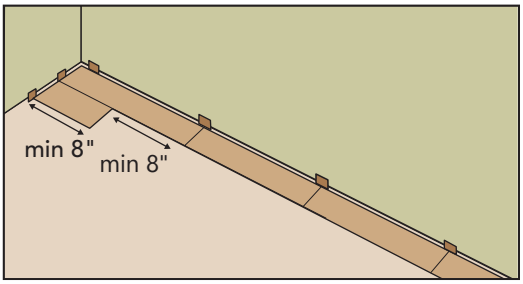


STEP 4. THE FIRST ROW:

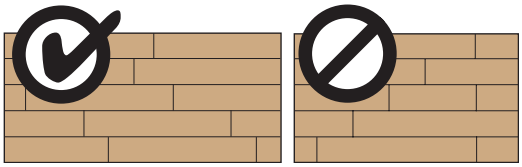
- Using an approved trowel and wood flooring adhesive, spread the glue between the wall and first chalk line.
- Working left to right, lay the first plank against the wall (adjust spacers to ensure row lines up with your working line) using full length planks (the groove edge should follow along the working line). Continue laying the first row until you reach the other wall.
  Note: See Step 6 for cutting the last plank in row to fit.
- Allow the first row to set up prior to installing additional rows. This prevents the first row from moving when balance of room is installed.

STEP 5. IMPORTANT:

When laying planks, avoid starting or ending rows with cuts (short side) less than 8" in length. Stagger the end joints from row to row, by at least 8" to ensure the structural integrity of your floor and a pleasing appearance.



Pay close attention to avoid “stair step” or “H-patterns” appearing in the flooring.

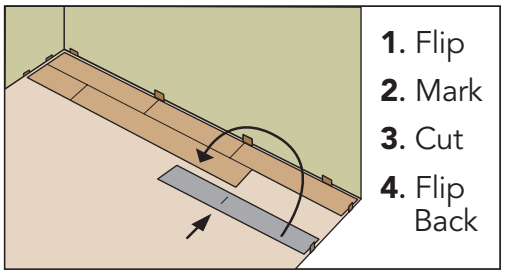


STEP 6. CUTTING END-OF-ROW BOARDS

The last board in each row must be cut to fit, while still maintaining a 3/4" expansion gap at the walls.

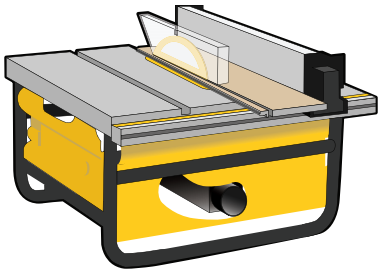
Here’s how:

1. Flip the plank over, end-to-end.
2. Lay the flipped board next to the row of planks and mark it on the face.
3. Cut the plank at the mark
4. Flip the plank back over and install as normal.



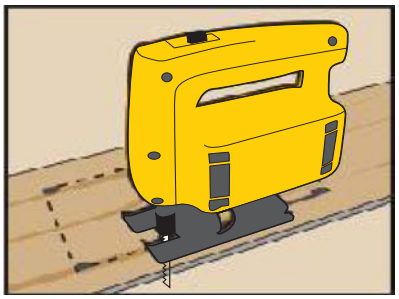
The best method for cutting Solid wood flooring is to use a power miter saw.

Power, table, circular and jig saws can also be used to cut this flooring product.



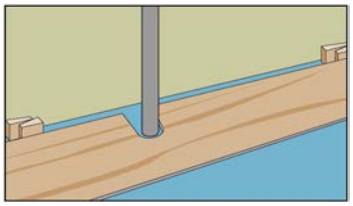
FITTING AROUND IRREGULAR SHAPED OBJECTS:

Make a template to fit around pipes or irregular shaped objects. Place the pattern upon the plank and trace. Cut along the trace lines using a jig saw, and install plank.
Note: Be sure to leave the recommended expansion space around all fixed objects, cabinetry and metal door jambs.

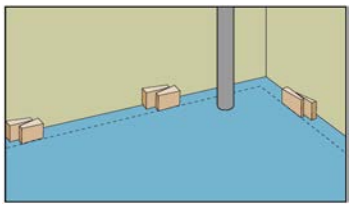


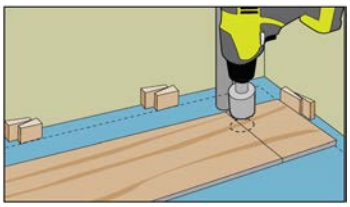
PIPES:

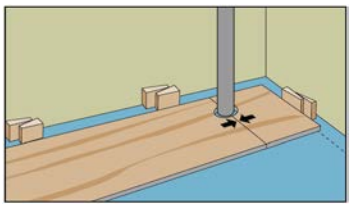
When a pipe is passing through the floor make a hole on the plank 3/4" greater than the radius of the pipe, cut the plank with a 45º angle towards the hole. The cut-off pieceedges are glued in the position again.



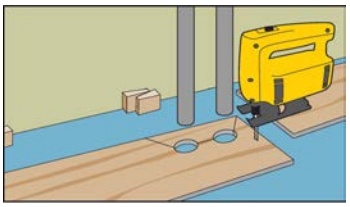
When there is single pipe on a wall, you can plan to have the end-joints meet at pipe, drill and install as shown.

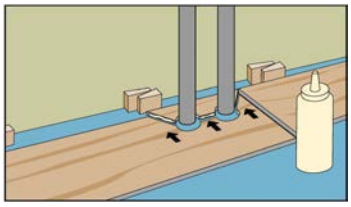




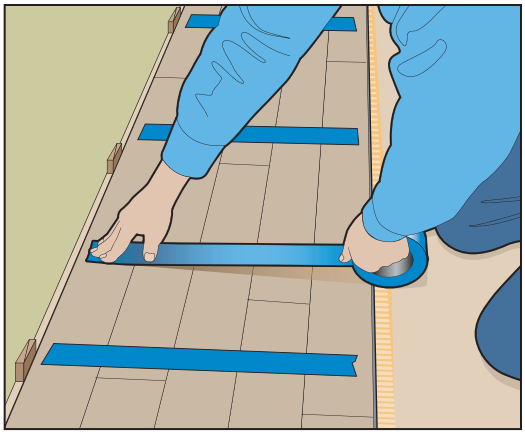


If there are multiple or larger pipes passing through the floor make hole(s) on the plank 13/4" greater than the radius of the pipes, cut the plank with a 45º angle towards the hole. The cut-off piece *edges* are glued in the position again.



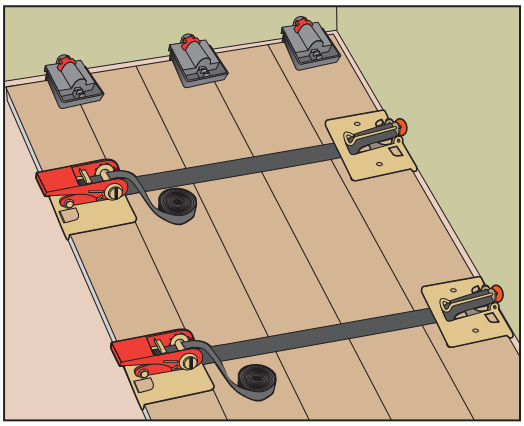


Measure out from your first completed row the width of 5 planks on each side of room (do not include the tongue), and pop another chalk line. This chalk line will run parallel to the first chalk line.



- Rack out 5 rows of flooring starting about an inch beyond this new chalk line. Be sure to pull from several flooring boxes at a time to mix color, while keeping proper seam stagger, loose lay/rack flooring install randomly.
- Using an approved trowel and wood flooring adhesive, spread the glue between the first completed row and second chalk line. (See adhesive recommendations below)
- Progressively lay-in the next rows by inserting the tongue into the groove of the previous row at a 30 degree angle, then drop board into adhesive. Avoid dragging or sliding boards together as this can trap or squeeze glue up in between the boards creating gaps. Continue working 5 rows together. The last board in each row will need to be cut to fit (**see Step 6.**). The balance of the cut board may be used to start a new row if is at least 12" long. A tapping block can be used to gently tap the boards into proper position. During installation, minimize end gaps by temporarily locking-in each completed row with spacers (scrap flooring works for this) placed at the beginning and end of each row, remove when glue has dried.
- As you install, apply #2080 blue painter's tape "stretched tightly across" plank surface perpendicular to the installed floor to hold the planks together until glue sets up.

Alternative method:



- In some instances flooring straps may be required to keep planks reasonably tight, care should be taken not to over tighten the floor, over-tightening may adversely affect the floor and can result in glue-bond failure, seam peaking, twisted boards, or out-of-square flooring board alignment. Weights may be required to ensure adequate contact with the subfloor prior to adhesive setup.
- Continue adding new chalk lines using the previous techniques. Spread adhesive and continue installing 5 rows at a time until job is complete. Tape planks together as needed to keep them from separating.
- Remove any wet adhesive that gets on the floor finish right away using mineral spirits or adhesive manufactures adhesive remover product.
- The last row may need to be "ripped-down" in width to fit (allow for expansion space). The last row should be glued and wedged with wood shims into place. Leave all spacers/shims in the expansion space until the adhesive has cured, then remove.

STEP 7. POST- INSTALLATION:

- Remove blue painters tape after 8 to 10 hours being on the flooring.
- After installation, refer to adhesive manufacturer's guidelines as to cure time and when foot traffic and furniture can go back onto your new flooring.
- Protect flooring before moving any heavy furniture or appliances.
- Fill in minor gaps with close matching filler.
- Check for adhesive on floor finish and remove with appropriate adhesive manufacture remover.

RECOMMENDED ADHESIVES:

- Lumber Liquidators recommends the use of Bostik™ adhesives and sealer/adhesive systems that are approved for use with solid wood flooring products for this application.
  Please check the manufacturers' Technical Data Sheets "TDS" and instructions to ensure the adhesive is approved for your type of installation and the details of subfloor prep, moisture and pH testing, approved substrates, trowel sizes, cure times, coverage and other important information.
- TDS sheets can be found at www.llflooring.com on the adhesive product pages.

STEP 8. TRANSITIONS

In areas where your new floor meets other types of flooring, such as carpet or tile, select an appropriate molding to get a professional looking and safe transition.

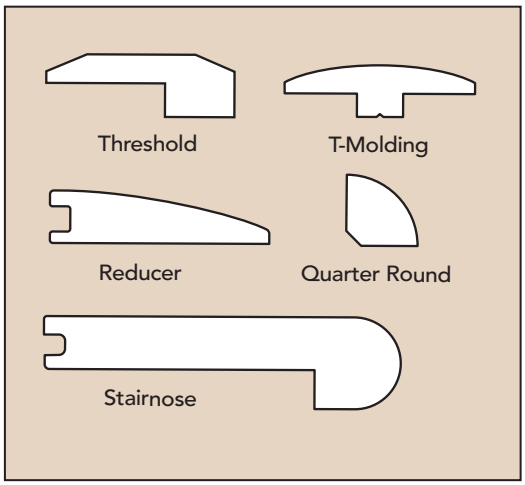
Threshold moldings transition from floor to carpet and are used at sliding doors, raised hearths, etc.

Reducer moldings transition from floors to hard surfaces that are lower than the floor, such as vinyl or VCT tile.

Stair-nose moldings must be used for all "floating" installations. Example: when the flooring meets at the top of a stairway "going down".

T-Moldings cover expansion spaces at doorways, and they transition from your new floor to other hard surfaces of similar height.

3/4" Quarter Round moldings are used to cover expansion spaces between the baseboards and the flooring.



REPAIRS:

Save extra planks from the initial order in the event that installed planks become damaged and repairs are needed. This will ensure lot number and shading compatibility.

HOME