

Installation

PLEASE NOTE: Rustic Grade Flooring is designed to contain open wood character including knots and splits. Touching up the floor with maintenance products like fill sticks, markers, prefinished putty and stains can be part of your occasional maintenance. During installation it is important to inspect each board and select out boards with character that has opened or become loose. Anything installed must be approved for soundness and quality by the installer.

INSTALLER/OWNER RESPONSIBILITIES

Hardwood flooring is a product of nature and its inherent beauty stems from the fact that each piece is unique with no two pieces the same. Due to the fact that this flooring is a product of nature, the installer and/or owner, have the following responsibilities:

- 1) Understanding how the floor will look once installed – the installer and owner must meet prior to installation to review:
 - a. How was the floor chosen? Review the control samples, (the samples from which the floor was chosen), and compare to the actual flooring batch onsite prior to installation making sure it meets the owner's expectations as to:
 - i. Grade – is it the correct grade? Also grade from batch to batch may vary slightly so make sure the owner is happy with this batch of flooring you are about to install.
 - ii. Color/Graining - do certain dark/light pieces or wild grained need to be graded out to meet the owners expectations?
 - iii. Color Variation, Batch to Batch – inspect the production run of flooring you received and make sure it meets your expectations. Wood from different locales can have varying colors and grains and differ from the samples from which the floor was chosen. Tint colors may also vary slightly batch to batch. Make sure the owner will be happy with the batch they received.
 - iv. Color Change - do they understand how the wood will change color over time? The owner may have chosen their floor from samples that have aged so they need to understand in advance of installation the color change to be expected in this wood.
 - v. Finish issues – Is the gloss correct? Does the look of the finish meet the owner's expectations? Does the owner understand that the finish will scratch and wear and that care must be taken during the installation, move-in and in-use?

Congratulations! You have now made sure that the owner will not be disappointed once the flooring is installed, and they see it for the first time!! The person installing the floor is responsible for visual issues once the flooring is installed.

- 2) Installer responsibilities during installation:
 - a. Receive the floor & make sure it is as ordered and meets the owner's expectations.
 - b. Test the subfloor and relative humidity on site to make sure the flooring will perform satisfactorily on this installation.
 - c. Follow these Installation Instructions.
 - d. Grade out any pieces with visible defects and stop the installation should a

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reoccurring problem be found, (over the 5% allowed by industry practices). DO NOT INSTALL pieces with visible defects.

- 3) Keep a Permanent Job Record
- 4) Make sure the owner understands that wood and water, (as well as overly dry conditions), do not mix as wood flooring is a natural material and will shrink/cup/move when over-dried and will expand/swell, delaminate, warp and buckle/cup when over-wetted.
- 5) Make sure the owner understands how to maintain the floor. Give them a copy of the Maintenance Instructions & Product Warranty.

WARNING: Our flooring is well manufactured and is designed to perform within the typical residential environment. We are not responsible for site conditions, as we do not control them. Only you, the installer can test and correct for too dry or too wet site conditions prior to installation and only the consumer can assure that the inside environment can stay within that range. Note: Wood flooring installed in areas where the relative humidity is below 35% may cup, shrink in width/length, or crack and in these dry conditions a humidifier is necessary to bring relative humidity above 35%. Flooring installed on top of wet sub floors may crown (and then cup), swell (and then shrink), buckle, telegraph, crack/check, finish peel, or edge/tip raise. Flooring that is soaked from above will do the same. DO NOT INSTALL THIS FLOORING ON WET SUBFLOORS OR IN OVERLY DRY

CONDITIONS without first correcting any deficient conditions.

PRE-INSTALLATION JOBSITE REQUIREMENTS

Carefully examine the flooring prior to installation for moisture content, grade, color, finish and quality. Ensure adequate lighting for proper inspection and make sure you review all different lots of material before beginning. If flooring is not acceptable, contact your distributor immediately and arrange for replacement. We are not responsible for flooring installed with visible defects. Prior to installation of any flooring, the installer must ensure that the jobsite and subfloor meet the requirements of these instructions. We are not responsible for flooring failure resulting from unsatisfactory jobsite and/or subfloor conditions.

Hardwood flooring should be one of the last items installed for any new construction or remodel project. All work involving water or moisture should be completed before flooring installation. Warning – water and wood do not mix. Installing flooring onto a wet subfloor will likely cause cupping, and subsequent gapping.

Room temperature and humidity of installation area should be consistent with normal, year-round living conditions for at least a week before installation of wood flooring. Room temperature of 65-75°F and a humidity range of 35-65% is recommended. Warning - humidity levels below 35% will likely cause movement in the flooring, including gapping between pieces and possible cupping and checking in the face.

Solid wood floors, both unfinished and prefinished, MUST be equalized properly before installation. Please follow the recommendations later in this document for proper equalization instructions.

PRE-INSTALLATION SUBFLOOR REQUIREMENTS

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All Subfloor must be:

- Structurally sound
- Clean: Thoroughly swept and free of all debris (If being glued down, subfloor must be free from wax, grease, paint, sealers, & old adhesives etc., which can be removed by sanding)
- Level: Flat to 3/16" per 10-foot radius
- Dry and will remain dry: Subfloor must remain dry year-round. Moisture content of wood sub floors must not exceed 11%, concrete must not exceed 3.5 as measured with a Commercial Concrete Moisture Meter

Wood Sub Floors must be dry and well secured. Nail or screw every 6" along joists to avoid squeaking. If not level, sand down high spots and fill low spots with an underlayment patch. Must accept and hold both cleats or staples using a nail-down installation method.

Concrete Sub Floors must be fully cured, at least 60 days old, and should have minimum 6-mil polyfilm between concrete and ground. Subfloor should be flat and level within 3/16" on 10'. If necessary grind high spots down and level low spots with leveling compound.

Do not install on concrete unless YOU ARE SURE it stays dry year-round. All concrete should be tested for moisture and be below 3.5 moisture content as measured by Commercial Concrete Moisture Meter. Other concrete testing methods may be used including Calcium Chloride testing (result must be 3 lbs per 1000sf or less) and an in-situ RH probe (result must be 75% or less).

It is highly recommended, that if gluing down on concrete, (even if you believe it is dry), which is on or below grade, to install a moisture barrier first and then glue the wood flooring on top.

Remember, a concrete slab on /below grade that measures dry today may become moist in the future due to rising groundwater. Installing a moisture barrier now may be viewed as an insurance policy against concrete becoming wet in the future. This will lead to subsequent floor failure. The manufacturer is not responsible for site related moisture issues.

Ceramic tile, resilient tile and sheet vinyl covered Subfloors must be well-bonded to subfloor, in good condition, clean and level. *Do not sand existing vinyl floors, as they may contain asbestos.*

OSB PS2 rated underlayment (Please note some OSB type products will not hold the nail in place which can result in squeaky floors. This is not a flooring defect.)

Radiant heat: At this time all CHESAPEAKE Solid Wood Flooring is NOT WARRANTED for use over radiant heat

EQUALIZING YOUR WOOD FLOORING

Wood Floors, both unfinished and prefinished, MUST be equalized properly before installation. Please follow these recommendations for equalizing:

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Background to equalizing Wood Flooring

Wood is a natural porous material, which continues to “breathe” even after installation and finishing. Wood has a cellular structure, and much like a sponge, expands as it picks up moisture and shrinks when it releases moisture. It is this movement which can cause cracks, separation, cupping, swelling and lifting in your floor. All wood will eventually acclimate itself to its surroundings. This is known as reaching the equilibrium point.

The exact equilibrium point to be reached by all wood elements on a job site and can be accurately predicted by taking relative humidity and temperature readings at the site and then use the chart below to find the expected equilibrium moisture content. The numbers in the middle of the chart are the equilibrium, moisture content point that all wood elements will reach.

Equilibrium Moisture Content

Relative Humidity (%)																				
Temp	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98
30 F	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	26.9
40 F	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	26.9
50 F	1.4	2.6	3.6	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.3	11.2	12.3	13.4	14.8	16.4	18.4	20.9	24.3	26.9
60 F	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	20.7	24.1	26.8
70 F	1.6	2.5	3.5	4.5	5.4	6.2	6.9	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 F	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	12.9	14.2	15.7	17.7	20.2	23.6	26.0
90 F	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 F	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

From US Dept of Agriculture "Wood Handbook as an Engineering Material"

Wood flooring in service is usually exposed to both long-term (seasonal), and short-term (daily), changes in the relative humidity and temperature. Thus, wood is virtually always undergoing slight changes in moisture content even after installation. Different parts of the country have varying equilibrium points. And each area may vary greatly season to season. So a given equilibrium point in June may be different from one in December on the same site. In addition, a wide range of equilibrium points can be experienced between job sites in the same locale, determined by individual heating/cooling systems and/or specific site variables such as being next to a lake, etc.

The practical objective of equalizing your solid wood floor to the individual job site levels, prior to

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installation, is to minimize the amount of subsequent movement after installation. With no one equilibrium moisture content right for all situations, only your installer, with their critical knowledge of local conditions, used in conjunction with proper testing and planning, can establish the proper equilibrium point at which to install your wood flooring.

As manufacturers, we produce our solid wood flooring to industry standards of 6-9% moisture content. However, this may not be low/high enough for your installation. Therefore, it is imperative your installer follows these recommendations for equalizing wood flooring. Wood Flooring International shall not be responsible for any shrinkage/swelling or any other movement of the floor after installation as Wood Flooring International does not control any of the job-site variables – only the installer and end user do so.

Recommendations for equalizing Solid Wood Flooring:

Proper method to equalize solid wood flooring – your installer should:

1. Establish the job-site specific target equilibrium point the flooring should be installed at by taking into account all of the following variables:
 - Existing relative humidity and temperature
 - Planned or existing heating/cooling systems
 - Planned or existing dehumidifying or humidifying systems
 - Measure other existing wood/wood elements to see what equilibrium point they have reached.
 - Projected seasonal variations at the site and estimated average equilibrium point
2. Moisture meter the flooring upon job site arrival
3. If the flooring is too high in moisture content for the job-site, it must be allowed to dry out and shrink prior to installation. If it is too low, it must be allowed to pick up moisture. This can be accomplished by removing the flooring from its packaging and completely spreading out all of the individual pieces to allow good circulation around them, until such time as they fully equalize to the moisture content desired.

Tip – To speed up the equalizing process you can build piles of flooring by crisscrossing the pieces in an open stack and using fans to force air over/through the stack. Periodically take readings of the moisture content of the flooring as you monitor its movement towards the desired equilibrium point. By using a two-pin type moisture meter (with insulated pins) you can take reading at both the surface and the core of the flooring. This will enable you to tell the direction the moisture content in the flooring is moving, how quickly it is moving there and when it has reached the desired equilibrium point. Once the flooring has reached the target equilibrium point it is now ready to be installed.

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INSTALLATION TOOLS

For all installation methods:

- Tape measure
- Tapping block (or trimmed piece of flooring)
- Pencil
- Pry bar
- Chalk line
- Wood or plastic spacers (1/2")
- Crosscut power saw
- Hammer

PLEASE NOTE: Wood flooring in a wide plank solid construction is recommended having glue assisted nail down installation method : A full spread adhesive rated and warranted for installations of 3/4" x 5" Solid Plank wood Flooring, OR a full spread wood floor adhesive rated for a minimum of 5/8" flooring and a normal nailing schedule of 2-3" from the ends and 6-8" on center OR a normal nailing schedule of 2-3" from the ends and 4-6" on center with a flexible wood flooring adhesive gun type application using a 1/4" bead perpendicular to the wood every 8-10" on center. A moisture vapor retarder must be used beneath the adhesive if the adhesive is not rated for moisture vapor reduction

For the nail/staple and glue-down installation method, you'll also need:

- Flooring adhesive manufacturers - See Appended List for Recommended Brands (Note: Use only urethane or silane based adhesives – **DO NOT USE** water based mastics as they will cause this floor to fail)
- On concrete slabs, which are on/below grade, we recommend installing a moisture barrier first and then installing the wood floor on the vinyl or using the an Adhesive Brand Moisture Barrier System – See Appended List for Recommended Brands
- Trowel per flooring adhesive manufacturer's recommendations.

Acceptable Subfloor types:

- Plywood (at least 3/4" thick)
- OSB PS2 rated (at least 3/4" thick) – Note: some OSB type products will not hold the nail in place which can result in squeaky floors. This is a subfloor issue.
- Existing wood floor

STARTING YOUR INSTALLATION

Make sure subfloor is tested for moisture first and is properly prepared.

Since wood expands with any increase in moisture content, always leave at least a 5/8" expansion space between flooring and all walls and any other permanent vertical objects, (such as pipes and cabinets). This space will be covered up once you reapply base moldings around the room. Use

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wood or plastic spacers during installation to maintain this 5/8" expansion space.

When laying flooring, stagger end joints from row to row by at least 8". When cutting the last plank in a row to fit, you can use the cut-off end to begin the next row. If cut-off end is 8" in length or less, discard it and instead cut a new plank at a random length and use it to start the next row. Always begin each row from the same side of the room.

"Dry lay" the floor before permanently laying the floor. This will allow you to select the varying grains & colors and to arrange them in a harmonious pattern. It also allows you the opportunity to select out very dark/light pieces for use in hidden areas in order to create a more uniform floor. Remember, it is the installers' responsibility to set the expectations of what the finished floor will look like with the end user first and then to cull out pieces that do not meet those expectations.

To draw planks together, always use a tapping block, (a short piece of flooring), and hammer, as tapping the flooring itself will result in edge damage. When near a wall, you can use a pry bar to pry close the side and end joints. Take care not to damage edge of flooring.

Begin installation next to an outside wall. This is usually the straightest and best reference for establishing a straight working line. Establish this line by measuring an equal distance from the wall at both ends and snapping a chalk line. The distance you measure from the wall should be the width of a plank plus about 5/8" for expansion space. You may need to scribe cut the first row of planks to match the wall in order to make a straight working line if the wall is out of straight.

You may want to dry lay a few rows, (no nails), before starting installation to confirm your layout decision and working line.

STAPLE/NAIL DOWN INSTALLATION

Make sure subfloor is tested for moisture content first and is properly prepared. Use the appropriate air stapler/nailer and test a couple boards to make sure that stapling/nailing will not cause dimpling in the finished floor.

For the first and second starting rows: Lay first plank inside chalk line with grooved edge toward wall. Install entire first row in the same manner. Always leave at least a 5/8" expansion space between flooring and all walls and vertical objects (such as pipes and cabinets). Use wood or plastic spacers during

installation to maintain this expansion space. In order to affix these first rows, as it is difficult to get the nail gun in place next to the wall, you may wish to screw in the starter row and later replace the row using the appropriate glue, rather than face nailing the row leaving unsightly nail holes which must be putty filled to match the wood floor. Make sure the starting rows are straight and drawn tight.

Subsequent rows: Lay by using floor nailer/stapler to blind-nail top inside edge of tongue at a 45 degree angle. Nail each board every 6-8" and within 2" of each end. Remember to stagger end

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joints from row to row and use a tapping block to fit boards together. It may be necessary to face-nail in doorways or tight areas where the nailer/stapler can't fit, (or glue down in these areas and weight them while the mastic sets). The last two rows will need to be face-nailed, (or glued down), in the same manner as the first two rows.

WARNING – Stapling/nailing can cause dimpling on the face if stapled incorrectly. Always make sure to visually check the installed floor as you go to ensure that the stapling/nailing is not causing dimpling on the face. (Note: be sure to look at the face of the installed flooring at a low angle from a distance to see if dimpling is occurring as it is hard to see when directly above the floor.) If dimpling does occur, STOP and adjust the stapler/nailer shoe and angle/place of staple entry in order to avoid it. CHESAPEAKE is not responsible for dimpling.

STAPLE/NAIL DOWN AND GLUE INSTALLATION

Make sure subfloor is tested for moisture content first and is properly prepared.

Many adhesive manufacturers now offer Moisture Barrier Systems on which they provide a warranty that moisture will not pass through and damage your wood flooring - See Appended List for Recommended Brands

Flooring adhesive manufacturers: - See Appended List for Recommended Brands
(Note: **DO NOT USE** water based mastics)

DO NOT use water based adhesives! Follow adhesive instructions for proper trowel size and adhesive set time before beginning installation of flooring.

Once the spread adhesive has setup sufficiently per adhesive manufacturer's instructions, lay the first row of flooring with groove facing the wall, and continue laying flooring nailing each row once fit together. Always check your working lines to be sure the floor is still aligned.

When first section is finished, continue to spread adhesive and lay flooring row by row until installation is complete. Use a damp cloth to immediately remove any adhesive that gets on flooring surface.

Warning – **DO NOT** allow adhesives to dry on the finished flooring as it is very difficult to remove it once dried without damaging the flooring. For info on an adhesive remover - See Appended List for Recommended Brands

Always leave at least a 5/8" expansion space between flooring and all walls and vertical objects (such as pipes and cabinets). Use wood or plastic spacers during installation to maintain this expansion space.

Make sure the floor is clean from debris to avoid unwanted denting

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After Installation:

- If you decide to cover the floor , (to allow the other construction trades to continue working), in order to protect the floors prior to final cleanup and turnover to the owner, use rosin paper to cover the floors and only use 3M Blue Tape to hold the rosin paper to the floor. Do NOT USE plastic film or other non breathing type coverings as this can cause the floor to become damaged from humidity buildups. Also, only use the 3M Blue Tape as this tape is designed for use on finishes and other tapes may pull and damage the finish when removing it.
- Remove expansion spacers and reinstall base and/or quarter round moldings to cover the expansion space.
- It is suggested that you buff the floor with lamb's wool pads in order to "pull any splinters", remove any residues and handprints/foot prints, etc. Touch up with
- Install any transition pieces that may be needed (reducer, T-moldings, nosing, etc.).
- Do not allow foot traffic or heavy furniture on floor for 24 hours (if glue-down or floating).
- Dust mop or vacuum your floor to remove any dirt or debris.

CLEANING, MAINTENANCE, & REFINISHING

Do NOT wet mop the floor!

Do not ever use a steam cleaner!

Some popular cleaners are too acidic or basic and will damage the urethane coating.

Use a neutral recommended cleaner and wipe dry immediately.

The consumer must know and monitor the relative humidity and temperature frequently inside their home or space.

Normal maintenance includes touch-ups on wood character or grain that has opened or loosened using a fill stick and marker.

One of the most important parts of the installation is making sure the consumer knows how to properly maintain the floor. The homeowner should know and record the current relative humidity and temperature. The homeowner should also know the acceptable relative humidity and temperature range that is allowed for this product and required for the warranty. Area rugs, runners and walk-off mats are a floor's best friend. Sweep and vacuum (without a beater bar) regularly.

Please obtain a full copy of the Maintenance Instructions from you retailer and make sure the consumer has a copy.