OREGON LUMBER CO.

WORTHWOOD COLLECTION

INSTALLATION GUIDE

The longevity of hardwood flooring is directly related to proper installation and a lifetime commitment to appropriate care and maintenance.

PREFINISHED WORTHWOOD SOLID END GRAIN FLOORING

SPECIFICATIONS AND INSTALLATION INSTRUCTIONS

SPECIES: Douglas Fir, Hemlock, Alder, White Oak, and Mesquite @ 9/16″
CONSTRUCTION: Kiln Dried (7-10%) solid wood blocks turned on end and double edge wired with soft aluminum to form a flexible strip. Double edge grooved for spline application creating a Tongue and Groove flooring with increased stability. Splines included.
APPLICATION: Commercial or Residential
FINISH: Prefinished (WOCA Oil). Due to required trowel-fill after installation all ply-type and rustic grade Worthwood **are not** available in prefinished.
SURFACE TREATMENT: Sanded to 180-grit, 1 coat Woca Master Oil, 1 coat Woca High Solid Master Oil and burnished with a 3M very fine burnishing pad. Burnishing helps even the color, increase luster and through friction, harden the finish which prepares the flooring surface for the final fill and buff coat of Woca Master Oil / Sander Dust mix. (To be performed after installation.)
STRIP LENGTHS: 12″ – 34″
WIDTH OPTIONS: 2 ¾″, 3 ¼″, 3 ″, 4 ″
THICKNESS OPTIONS: ¾″ or 1″
ENDS: Precision square cut
BACKS: beveled for flush fit on face
LEED CONTRIBUTION:
MR 4 – Pre consumer content
MR 5- Within 500 miles of Portland, OR
MR 7 – When FSC is specified
IEQ 4.2 – Low VOC oil (WOCA) and adhesives
IEQ 4.4 –No added urea formaldehyde (End Grain Only)

INSTALLATION: Glue Down, Nail down or both.

ADHESIVE RECOMMENDATION:
Bostik "Best"
Franklin "811"

NAILING RECOMMENDATION: Use a standard flooring nailer or stapler with adjustments for floor thickness and nail depth. After spline is fully inserted into groove, nail or staple placement is at the point where the top of the spline and the flooring meet.

STORAGE: Temporarily, while the units are still wrapped on pallets, store anywhere clean and dry. The HVAC during storage may be on, intermittent, or off, providing the wrap is not removed.

ACCLIMATION IS A MUST: Although WORTHWOOD END GRAIN is kiln dried between 7% - 10% moisture content, it must be restacked for acclimating only after the HVAC is on long enough to consistently bring the space to occupancy temperature and humidity. Remove strips from the pallets and place 25 to 30 strips on edge parallel and gapped so that air can contact face and back. Next, place another 25 to 30 strips in the perpendicular direction on top of the first group also on edge and gapped. Continue cross hatch stacking upward as high as you can reach.

Repeat stacks as necessary.

Allow a minimum of four days for acclimation of ¾″ thick material. Acclimation time may increase depending on the thickness of the flooring, approximately 1 ½ days (36 hours) for each additional ¼″ of thickness. Example: ¾″ thick - acclimate a minimum of 4 days, 1″ thick – acclimate a minimum of 5 ½ days. To allow for variation in wood density it is recommended acclimation time be rounded up to the next full day. Example: 1″ thick – acclimate a minimum of 6 days.

DO NOT INSTALL OR ACCLIMATE UNLESS HEATING, AIR CONDITIONING, AND HUMIDITY CONTROL FACILITIES ARE IN FULL OPERATION AND ON LONG ENOUGH TO INSURE OCCUPANCY LEVELS OF TEMPERATURE AND HUMIDITY. FLOORS ARE OFTEN LAST TO INSTALL. AND PREMATURE

INSTALLATION CAN CAUSE UNECESSARY PROBLEMS REQUIRING REPAIR.
(1) ACCLIMATE, and (2) INSTALL ONLY AFTER HVAC IS ON LONG ENOUGH TO NORMALIZE BOTH TEMPERATURE AND HUMIDITY. OTHERWISE THERE IS GREAT RISK OF A DIMENSIONAL CHANGE AND FLOOR FAILURE. DO NOT INSTALL UNDER CONSTRUCTION CONDITIONS WHERE DOORS AND WINDOWS ARE OPEN AND HVAC IS INTERMITTENT.

After acclimation blocks may be loose. To eliminate cracks, carefully end tap blocks on the strip tight with a hammer or mallet and snip excess wire from ends. Alternately, drive the blocks tight against the angle iron Jig furnished on plywood.

CHECK HUMIDITY : Ambient air humidity should read between 35% and 50% assuming a 65° to 75° temperature. Measure humidity using a reliable hygrometer or sling psychrometer. If humidity is not in this range, postpone acclimation and installation until conditions are normal.

NOTE: After finishing the flooring, it is much more resistant to temperature and humidity changes. Even so, it is recommended that the conditions specified above be maintained and long periods without temperature and humidity control be avoided.

CHECK CONCRETE SUBFLOOR: Floor shall be depressed by masonry contractor to block depth when using 1" thick material. If cork specified for added resiliency allow for extra depth. For slabs on grade, a permanent and reliable waterproof membrane must be within or under the slab extending to all slab edges vertically above surface. Concrete slabs must be protected from outside moisture vapor. New slabs must be cured (at least 50 days old) and dry. Below grade installation not recommended unless conditions are equivalent to properly protected slab above grade.
Maximum moisture content of the slab must be less than 2 lb. retention if tested with calcium chloride.

RELATIVE HUMIDITY TESTING: ASTM F2170 (Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes).
a. Select test locations to provide information about moisture distribution across the entire concrete floor slab. Floor slabs on grade and below grade, include a test location within three feet of each exterior wall.
b. Perform three tests for the first 1,000 square feet and one test for every additional 1,000 square feet thereafter.
c. At least 48 hours before test is placed, concrete floor slabs should be at the same temperature and humidity that is expected during service conditions.
d. Use a rotary hammer-drill to drill holes in the concrete slab; 40% depth of slab is required for the holes when concrete is drying from one side and 20% when drying from both sides. Follow manufacturer's Instructions provided with test kits.
e. Allow 72 hours to achieve moisture equilibrium within the hole before making relative humidity measurements. Follow manufacturer's instructions provided with test kits.
f. ASTM F710 provides installation guidelines for acceptance of hardwood flooring using relative humidity testing. Typical limits for wood and wood-based products are 75% relative humidity. When getting readings over 75%, you must use a proper vapor retarder, based on the flooring manufacturer's recommendations, or wait for further concrete curing.

CHECK FOR SMOOTHNESS: Be sure concrete subfloor is smooth and level. Tolerance should not exceed ¼" (6.4mm) on a 10 foot (3m) straight edge in any direction. Check floor level with straight metal strip on edge. Double check edges and corners. Eliminate any washboard irregularity. All rough spots or gravel protruding must be ground smooth and low areas filled with leveling compound. If tolerance not as specified, floor contractor shall INSIST masonry contractor make necessary corrections.

DAMP PROOF SLAB (OPTIONAL): This step may be omitted if the concrete (or other substrate) is adequately protected from moisture either by its location above grade or by a permanent and reliable vapor barrier under the slab. If there is doubt concerning the effectiveness of the vapor barrier then either 1) substitute Bostik's "Ultra Set Hardwood Adhesive", which is a urethane formula requiring two applications, or 2) seal the slab with Franklin's Titebond #531 Moisture Control System.

SUBFLOOR: WORTHWOOD END GRAIN may be installed directly over concrete or over wood or over plywood subfloors which are level and well ventilated underneath. There must not be any cupped area or projecting nails. If WORTHWOOD END GRAIN is to be installed on existing synthetic floor, a 3/4" (19.05 mm) plywood underlayment should be thoroughly nailed. Over Gyp-crete

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(minimum 3,000 PSI), apply primer to insure proper adhesion.

EXPANSION VOID: A minimum of ½" expansion gap at perimeter is necessary for walls and columns ½" (12.7mm) to 1 ½" (38.1mm) wide. Place lumber or plywood strips on edge along walls and around columns uniformly equal to width of expansion joint. Install WORTHWOOD END GRAIN flush to strip. Use care applying adhesive near spacing strips. Any adhesive on the void spacing strips could make strip removal very difficult. Taping the side of the strip facing the flooring aids in strip removal. DO NOT remove void spacing strips before adhesive has cured. Be sure all spacing strips, mastic and debris are completely removed from the open void before installing a permanent filler. Cork is the recommended filler for the expansion gap. Allow for maximum expansion available. In aisle way or other narrow areas where WORTHWOOD END GRAIN meets carpet or other flooring, the expansion void may be omitted.

NOTE:
Please call Oregon Lumber Company with any concerns before continuing (1-800-824-5671). A small amount of time now can eliminate major problems later.

APPLY ADHESIVE:
Apply per Manufacturer's Recommendations
If using ¾" or 1" thick Solid End Grain.

Urethane Mastic recommendation:
Bostik Best or Franklin

Trowel recommendation:
3/16" (4.8mm) x ¼" (6.4mm) x 11/16" (17.5mm) on center. V-notch trowel.
Spread 50SF per gallon.

NAIL OR STAPLE: Be sure spline is fully inserted into the groove. Nail placement is critical: Too high may damage the flooring surface and too low may restrict the alignment and position of the next strip.

INSTALLATION RECOMMENDATION: Glue and nail down is the best option. The use of a urethane adhesive helps dampen floor noise. Nailing holds the flooring in place while the adhesive cures.

APPLY WORTHWOOD STRIPS (Parallel Pattern): Use snap lines to start and keep square. Place first strip in corner parallel and tight to temporary lumber filler (void spacer). Apply splines working 4 to 8 strips wide and alternating strip ends. Be sure flooring strip ends are lapped by the spline to ensure stability. (Do not allow a spline end to fall on a strip end.) Place adjoining strips close as possible to next strip to avoid crowding adhesive between strips. Stagger strip ends. Tap tight with a rubber mallet or flooring mallet. Strip edges, ends and the blocks within the strip must be tight before nailing or allowing the adhesive to cure. Be sure strips are flat prior to placement by flat tapping out any curl. All adhesive must be kept off exposed surfaces. Continue snap lines to maintain squareness. Working wall to wall and back, continue 4 to 8 strips wide linearly until the entire floor is installed.

CUTTING: Strip ends will be square as received. When you reach a wall or column and need shorter lengths, BE SURE YOUR END CUT IS EXACTLY SQUARE TO THE STRIP LENGTH. OCCASIONALLY SOME BLOCKS ARE SLIGHTLY ANGLED WITHIN THE STRIP AND REMOVING BLOCKS WITHOUT RECUTTING PERFECTLY SQUARE TO STRIP LENGTH CAN PUT ONE END OUT OF SQUARE CAUSING A SEPARATION.

ALLOW ADHESIVE TO CURE 48 HOURS. AFTER FULLY CURED, REMOVE VOID SPACING STRIPS LEAVING A UNIFORM GAP FOR EXPANSION AND FILL EXPANSION JOINT WITH CORK.

Be absolutely sure no liquids (paint, water, mud, etc.) contact the floor and avoid traffic until the surface is protected with the final coat of oil / filler mix, buffed and allowed to cure (approximately 36 hours).

CLEAN: Vacuum and sweep clean. Remove all sources of dust and other particles from ledges, radiators, etc. Tack with a slightly damp cloth. Allow to dry completely (overnight).

FINISH WITH FILL (BUFF) COAT

Warning: Oil soaked rags must be properly stored and disposed of as they can self-ignite!

➢**Keep a box of lint free painter's rags and a bucket of water handy. Also have a piece of cardboard available to rest tools and wet pads on. Never rest wet pads or naps on prefinished flooring.**

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➢**Do not walk in the oil with sneakers, put plastic shopping bags over your feet.**

➢**Once you start this process, you cannot stop until the floor is completely finished.**

➢ **Use painter's blue tape with orange core to protect existing door frames and base moldings if already installed.**

INSTRUCTIONS FOR APPLICATION OF FILL (BUFF) COAT

Note: all oils must be mixed thoroughly in their original containers before being transferred to another container. Stirring from the bottom upwards, be sure all

pigment is removed from the bottom of the container and dispersed evenly throughout the oil. This process must be repeated before every transfer of oil to another container.

Note: After mixing the oils thoroughly in their original containers, combining the WOCA (Master Oil only) into one container will help ensure a uniform color transfer. If a separate container is not available, dumping like oils back and forth from container to container is recommended.

➢**Shake well or thoroughly stir all oil before use. When using color oil, stir until all pigment is removed from the bottom of the container and dispersed evenly throughout the oil.**

➢**Put oil soaked rags into a bucket of water or a metal container with a lid as they can self-ignite.**

- **Mix slurry for fill / buff coat using oil and sander dust provided with order:** In a separate container add sander dust to approximately ¾ full. Slowly add oil while stirring continuously. Slurry should have the general consistency of mayonnaise. The mix

  should be approximately 25% oil to 75% sander dust. Percentages will vary with the type of oil. Slurry must be easily workable, yet not too thin. Consistency may be adjusted by either adding more oil or more sander dust. Be sure to leave enough free space in the container for adjustments.

- **Application:** After achieving the proper consistency, the slurry may be scooped onto the floor surface (approximately 1 tablespoon per square foot). Using a squeegee with a firm rubber blade, spread the slurry thinly and evenly at an approximate rate of 300 square feet per gallon. Add slurry as needed. Be sure sufficient pressure is applied on the squeegee to force the slurry into the seams. Remove as much excess slurry as possible with the squeegee before buffing it in using a white 3M (or similar colorfast) pad under a 175 rpm buffer. Be sure the entire floor surface receives even application. (No spot filling.) Remove all excess oil / oil filler mix. Change to a clean white pad possibly with a **WOCA Polishing Cloth** under the pad and continue buffing until an even sheen has been obtained and all excess oil, pigment and filler has been removed. Overlap work areas to ensure an even finish with no spray residue from previous passes. Repeat the process until floor is finished. **Be sure no excess oil / filler is left on the surface**.

- Let the **fill / buff coat** dry and harden for 12 - 18 hours.

- The Master Oil will usually pre-harden in 4-6 hours. The filled areas may take longer depending on their size and depth. After 12 - 18 hours, if an increased luster is desired, buff the floor surface with a lambs wool or similarly textured pad under an 800-2000 rpm buffer, Allow the oil to cure 24 hours before placing rugs and furniture on the floor.

- The oil must cure for 36 hours before any water or dirt comes into contact with the floor.

- **Allow 7 days for the filler to completely cure. Cure time will vary accordingly with the amount of filler. DO NOT vacuum or allow any water or dirt to come into contact with filled areas until fully cured.**

+ If you must quit the fill/buff process, pick a logical place to stop. Tape off adjoining planks if necessary and wipe up any excess oil/fill that may get on the unfilled portion of the floor or you will get a "shiny" spot when you continue the process.

Recommended Taping: Always tape on the seam between planks. Never tape on center or within the outer edges of any individual plank.

+ Continuation of the fill/buff coat should be lightly feathered in across the seam. Never

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stop in the middle of a floor as you will get overlap marks with different sheen levels.

+ Change pads as they become tacky or dirty. You can use both sides.

+ Once you get use to the amount of buffer time necessary to do a section, increase or decrease the work area to get a rotation going where you do not have any down time.

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