

Engineered Hardwood Flooring

Installation Instructions

READ ALL OF THESE INSTRUCTIONS THOROUGHLY BEFORE BEGINNING INSTALLATION. IN ADDITION TO THESE INSTRUCTIONS, WE RECOMMEND THAT THE INSTALLER FOLLOW ALL INSTALLATION GUIDELINES SET FORTH BY THE NATIONAL WOOD FLOORING ASSOCIATION (WWW.NWFA.ORG). WHERE THESE INSTRUCTIONS DIFFER FROM NWFA GUIDELINES, THIS DOCUMENT TAKES PRECEDENCE.

For Tongue and Groove Engineered Hardwood Flooring

Tongue and Groove Engineered Hardwood Flooring can be installed over most properly prepared subfloors and are engineered to be dimensionally stable, making them suitable for installation on all grade levels where general conditions meet requirements as outlined in this instruction and that all specific installation instructions are followed carefully.

Caution: Wood Dust

Cutting, sanding or machining wood products produces *wood dust*. While wood products are not hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200), the International Agency for Research on Cancer (IARC) and the State of California have classified *wood dust* as a human carcinogen.

PROPOSITION 65 WARNING: This product produces *wood dust* when cut, sanded or machined. Wood dust is considered a carcinogen by the State of California.

Precautionary Measures: Airborne wood dust can cause respiratory, skin and eye irritation. Power tools should be equipped with a dust collector. Use an appropriate NIOSH-designated dust mask. Avoid dust contact with skin and eyes.

First Aid Measures in case of irritations: In case of irritation flush eyes with water. If needed seek medical attention. If dermatitis occurs, seek medical attention.

WARNING! DO NOT MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVES OR OTHER ADHESIVES.

Previously installed *resilient floor covering products* and the asphaltic or cutback adhesives used to install them may contain either asbestos fibers and/or crystalline silica. The products in this carton DO NOT contain asbestos or crystalline silica. Avoid creating dust. Inhalation of asbestos or crystalline 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 is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content and may govern the removal and disposal of material. 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.

INSTALLER / OWNER RESPONSIBILITY:

It is the responsibility of the installer and owner to ensure that job site environmental, sub-floor and subsurface conditions involved meet or exceed all requirements as outlined in installation instructions prior to installation. Manufacturer declines all responsibility for product performance or installation failure due to sub-floor, substrate or environmental deficiencies or jobsite conditions.

It is the Installer and Owner's responsibility to inspect the flooring for

proper color, grade, visible manufacturing defects, damage, or otherwise unsatisfactory appearance. **Do not install damaged or visibly unsatisfactory material. Installing a plank constitutes acceptance of its appearance. Warranties DO NOT cover materials with visible defects once they are installed.** Contact your local retailer, distributor immediately after identifying a visible problem. Purchase an additional 5% of flooring to allow for cuts and an additional 10% if installing diagonally. Wood is a natural product and contains characteristics such as variations in color, tone and graining. Flooring is manufactured in accordance with industry standards, which allows manufacturing and natural defect tolerances up to 5% of the total installation. Installer should work from several cartons at the same time to ensure good color and shade blend. Installer should not install undesirable pieces.

All work involving water or moisture (plumbing, masonry, painting, plastering) must be completed prior to flooring being delivered. Building envelope must be complete and exterior doors and windows installed. Exterior grading and gutter downspouts should be completed and permanent HVAC systems in operation for 14 days prior to flooring being delivered to job site. Measures should be taken to protect floors from other trade work. **Do not cover floors with plastic, red rosin, felt or wax paper or previously used cardboard. Instead use a breathable material such as clean, dry, plain uncoated cardboard or Kraft paper. Inks from printed cardboard could damage the hardwood floor** The floor should be thoroughly cleaned before covering to remove grit and debris that would damage the finish. The floor must be completely covered to eliminate uneven ambering from exposure to UV light.

Manufacturer requires Engineered Hardwood products acclimate for 48 hours prior to installation. Store the sealed cartons in the installation area to adjust to room temperature and then install directly out of freshly opened cartons. **Do not open cartons prior to installation.** Acclimation allows flooring to achieve equilibrium moisture content (EMC) with the installation environment. All wood continually expands and contracts until it reaches moisture equilibrium with the environment in which it's installed. As with all wood flooring, expansion and contraction will be minimized if climate control is consistently maintained year round. This is especially important with tropical species, because denser woods experience more significant shrinkage in low moisture / low humidity environments.

Room temperature should be 60 – 80 Fahrenheit, with relative humidity between 35 – 55%. These environmental conditions are specified as pre-installation requirements and must be maintained for the life of the product. Manufacturer warranties do not cover natural expansion and contraction which results in separation between planks, or damage caused by excessively low or high humidity. Seasonal gapping is not considered a manufacturing defect.

Do not install this Engineered Hardwood Floor in full bathrooms nor powder rooms.

If installing over radiant heat, read the "Radian Heat Systems" section in this instruction before finalizing product selection or beginning installation. Careful adherence to these guidelines is required for a successful and fully warranted installation. Certain wood species and plank sizes are not warranted for installation over any type of radiant heat. Manufacturer does not offer a warranty on ANY flooring installed over electric radiant heat systems. Only hydronic (water) systems may be approved. In wood flooring installations over radiant heat, moderate surface checking, cracking (especially at the ends of boards and around knots), shrinkage, gapping between planks, and slight cupping are all to be expected and do not constitute a product defect.

WARRANTY NOTE: Installer should provide owner with one carton end label from product installed for warranty purposes. Owner should retain carton end label and copy of invoice with product style name and style number for their records. Excess flooring should be retained and stored for future repairs in the event planks are ever damaged.

The use of stain, filler or putty for correction is considered a normal practice and a routine part of installation.

TOOLS: BASIC TOOLS AND ACCESSORIES:

Broom, Terry Cloth Towels, Putty Knife,
Coordinating transition strips or molding, Mineral Spirits
Coordinating stain, Filler or putty, Chalk line
Hand or Electric Jam Saw, Power Circular saw or Miter Saw
Thick felt or rubber pads, wood / Concrete Moisture meter or both,
Safety Glasses, ½ inch wood spacers, Straight Edge, Table Saw
Tape measure, Carpenter's Square, pry Bar or Trim Puller,
Utility Knife, Pencil, Pull Bar, 15 Lb. Saturated Felt,
Floating Floor Glue (for Floating Installation)
Uniclic Tapping Block, 3M Blue #2080EL Tape Plastic Scraper,
Urethane Adhesive (for Glue Down and Nail/Staple + Glue Installation)
Moisture Membrane, Hardwood Flooring Cleaner or Oil Soap and Oil
Refresher

If tape is needed (we recommend avoiding its use if possible), use ONLY 3M Advanced Delicate Surfaces 2080EL Tape, and be sure to remove any tape within 20 minutes of application. Leaving tape on for more than 20 minutes or using the wrong type of tape will damage the finish. Never tape protective covering directly to the floor – only tape it to itself.

For Floating Installation: Use Performance Accessories Underlayments or products that meet or exceed these products' specifications. **The use of accessories other than Performance Accessories might cause damage to the Engineered Hardwood Flooring. Therefore, we recommend products specifically designed and tested for use with Engineered Hardwood Flooring.**

For Direct Glue Installation: It's important to check Adhesive Manufacture for correct Adhesive and Trowel according the subfloor and flooring products. When installing on concrete subfloors, trowels should be replaced every 3000 ft. Never use a water based adhesive to install Engineered Hardwood Flooring.

STORAGE AND HANDLING:

Flooring should be delivered and stored at the jobsite for 48 hours prior to installation to allow the product to acclimate from prior transport or storage conditions. Flooring should be stored with at least a four inch air space under cartons. Do not open cartons but remove any plastic wrap that may have been used to ship the material. This is especially important if you live in a very humid or dry climate.

PRE-INSTALLATION & JOB SITE CONDITIONS

SUBFLOOR REQUIREMENTS:

The following subfloor recommendations are intended to complement the installation of hardwood flooring as an interior finish. Hardwood flooring is not a structural component. These recommendations are not intended to supersede federal, state or local building codes, but as with many other interior finish products, may require modifying existing structural components for a successful installation.

NOTE: When joist spacing exceeds the traditional 16 on center, it's recommended that you apply a thin bead of Tongue & Groove glue to the bottom side of the groove to lock the tongue and groove profile in place. This will reduce the potential for movement of the tongue and groove, which may contribute to squeaking or crackle. When using this new method of installation, you may continue to choose to staple or nail down the hardwood depending on your preference. Using T&G glue with the staple or cleat reduces movement as the subfloor deflects.

SUBFLOOR PREPARATION RECOMMENDATIONS FOR ALL INSTALLATIONS:

Engineered Hardwood Floors may be installed over any structurally sound subfloor that is flat, clean and dry on all grade levels. Do not install in full bathrooms or powder rooms.
All subfloors should be:

- **CLEAN** – Subfloor must be clean and free of dirt, curing compounds, drywall mud, wax, paint, oil, sealers, adhesives and other debris. These may be removed mechanically.
- **FLAT** – Within 3/16" in 10' radius (5 mm in 3 m) and/or 1/8" in 6' radius (3 mm in 2 m). Sand high areas or joints. Fill low areas with a high compressive strength (min. 3,000 psi) Portland base compound.
- **DRY** – Select the appropriate moisture indicator test specifically designed for use with wood or concrete subfloors. Test and record moisture content results.
- **STRUCTURALLY SOUND** – Nail or screw any areas that are loose or squeak. Wood panels should exhibit an adequate fastening pattern, glued/screwed or nailed as that system requires, using an acceptable nailing pattern. Typical: 6" (15 cm) along bearing edges and 12" (31 cm) along intermediate supports. Flatten edge swell as necessary. Replace any water-damaged, swollen or delaminated subflooring or underlayment.

Building codes establish requirements for structural support components of flooring systems which may not provide adequate rigidity and support for proper installation and performance of a hardwood floor. Whenever possible, install flooring perpendicular to the floor joists for maximum stability.

NOTE: Avoid subfloors with excessive vertical movement or deflection because subfloor movement will telegraph through to the finished installation. Indications of excessive deflection are uneven finish wear, fastener release, squeaking, compromised or damaged locking systems, sectional contours such as bowing or dipping in floors and uneven flooring material. Nail or screw subfloor panels to secure boards with excessive vertical movement or deflection. If the subfloor has excessive vertical movement (deflection) before installation of the flooring, it is likely it will do so after installation of the flooring is complete. Our warranties DO NOT cover any problems caused by inadequate substructures or improper installation of said substructures.

Subfloor moisture check

Note: To increase reliability, moisture testing should be performed after the HVAC system has been in operation for a minimum of 14 days. Excess moisture on any flooring substrate if not identified and corrected prior to installation will cause floor covering failure. **Warranties DO NOT cover products installed over improperly prepared subfloors, substrates or environmental related deficiencies. DO NOT INSTALL FLOORING IF MOISTURE TESTS RESULTS EXCEED RECOMMENDED LIMITS.**

Acceptable conditions for above, on and below grade applications are:

Concrete Subfloor Moisture Content

On and below grade applications are susceptible to moisture and should be tested for moisture prior to installation in several locations within the installation area. Installer should record moisture test results in the space provided on the last page of this document and leave with the owner as part of their records. Acceptable conditions for above, on and below grade applications on concrete are:

Less than 3 lbs./1000 sq. ft./24 hrs. Calcium Chloride Test (ASTM F1869)

or

Less than 75% RH Levels in Concrete Using In-situ Probes (ASTM F 2170-02)

or

No greater than 5% on a Tramex Concrete Moisture Encounter meter or equivalent concrete moisture meter.

NOTE:

New concrete slabs require a minimum of 60 days drying time before covering them with a wood floor. (Must be fully cured) Although initial moisture tests may indicate a dry slab, the moisture content of slabs may increase due to seasonal fluctuation or weather patterns. New construction should have a minimum 10 mil poly membrane between the ground and concrete.

Wood Subfloor Moisture Content

Test both wood subfloor and wood flooring for moisture content using a reliable pin type moisture meter. The subfloor material must not exceed 10% moisture content. The difference between the moisture content of the wood subfloor and the hardwood flooring must not exceed 2%.

If subfloor moisture readings exceed recommended levels for concrete or wood, steps **MUST** be taken to reduce subfloor moisture. Steps could include waiting for subfloors to dry to acceptable levels or using an appropriate moisture barrier such as Urethane Moisture Membrane.

NOTE: Basements and crawl spaces must be dry. Use of a 6 mil black polyethylene membrane is required to cover 100% of the crawl space earth. Crawl space clearance from ground to underside of joist should be no less than 18" and perimeter vent spacing should be equal to 1.5% of the total square footage of the crawl space area to provide cross ventilation.

To correct any subfloor conditions concerning moisture, either wait until the subfloor dries to meet specifications or use an appropriate moisture barrier.

Concrete Subfloor

Lightweight concrete

To test for lightweight or acoustical concrete, scrape a coin or key across the surface of the subfloor. If the surface powders easily or has a dry density of 100 pounds or less per cubic foot, Engineered Hardwood flooring should be installed as floating only. Only engineered flooring 4 plies or thicker may be installed as floating.

Wood Subfloors

NOTE: As with many other interior finish products, modification of existing structural components may be required for a successful installation.

Solid Wood Subfloors - Direct Glue or Floating Installations

- Minimum 3/4" (19 mm) thick with a maximum width of 6" (15 cm) installed at a 45° angle to the floor joists.
- Group 1 dense softwood (Pine, Larch, Douglas fir, etc.) No. 2 common, kiln dried with all board ends bearing on joists.
- For direct glue-down applications add 3/8" (9.5 mm) approved floor panel underlayment.

Existing Wood Flooring – Direct Glue or Floating Installations

- Existing engineered flooring must be well bonded/fastened. When gluing over existing wood flooring, the surface finish must be abraded or removed to allow adequate adhesive bond.
- Existing solid hardwood flooring that exceeds 6" (15 mm) in width must be covered with 3/8" (9.5 mm) approved underlayment and fastened as required. **Do not install over solid or engineered flooring attached directly to concrete.**

Wood subfloors should be well nailed or secured with screws. Nails should be ring shank and screws need to be counter sunk. The wood subfloor needs to be structurally sound (meaning subfloors without loose boards, vinyl or tile).

If sub-floor panels are a single layer, less than 3/4" thick, add another single cross layer for strength and stability (minimum 3/8" thick for a total 1 1/8" thickness).

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

When installing parallel to the floor joists it may be necessary to increase rigidity of the structural subfloor system by installing an additional minimum of 3/8" (9.5 mm) approved underlayment floor panel.

Approved underlayment floor panels should meet or exceed the following:

- **Plywood:** Must be minimum CDX grade (exposure 1) and meet US Voluntary Product Standard PS1 performance standard or Canadian performance standard CAN/CSA 0325-0-92. The preferred thickness is 3/4" (19 mm) as a subfloor [minimum 5/8" (16 mm)] or 3/8" (9.5 mm) as floor panel underlayment.
- **Oriented Strand Board (OSB):** Conforming to US Voluntary Product Standard PS2 or Canadian performance standard CAN/CSA 0325-0-92 construction sheathing. Check underside of panel for codes. When used as a subfloor, the panels must be tongue and groove and installed sealed side down. Minimum thickness to be 23/32" (18 mm) thick when used as a subfloor or 3/8" (9.5 mm) as floor panel underlayment.
- **Wafer board and Chipboard:** Conforming to US Voluntary Product Standard PS2 or Canadian performance standard CAN/CSA 0325-0-92. Must be 3/4" (19 mm) thick when used as a subfloor and 3/8" (9.5 mm) thick when used as floor panel underlayment.
- **Particleboard:** Must be a minimum 40-lb. density, stamped underlayment grade and 3/4" (19 mm) thick. **(Floating installation only)**

Sub-floors other than wood or concrete:

Note: Perimeter glued resilient vinyl and rubber tiles are unacceptable underlayments and must be removed.

Terrazzo, Vinyl, Resilient Tile, Cork and Linoleum or hard surfaces that are dry, structurally sound and level are suitable as a sub-floor. As above, the surface must be sound, tight and free of paint, oil, existing adhesives, wax, grease and dirt. Terrazzo and ceramic tile must be scuffed to assure adhesion.

Warning! Do not sand existing resilient tile, sheet flooring, backing, or felt linings. These products may contain asbestos fibers that are not readily identifiable. Inhalation of asbestos dust can cause asbestosis or other serious bodily harm. Check with local, state and federal laws for handling hazardous material before attempting the removal of these floors.

Direct Glue Installation: Make sure the floor covering materials are well bonded to the subfloor/underlayment with full spread adhesive and no more than two layers thick, not to exceed 3/16" (5 mm).

With approved wood/wood composite subfloors, if vinyl or tiles are loose, broken, or in poor condition, install a 3/8" (9.5 mm) approved subfloor panel directly over the flooring materials.

Clean the flooring materials as necessary to remove waxes, sealers or cleaning residues to allow a good adhesive bond.

Cork floor sealers and surface treatments must be removed.

Always check for adequate adhesive bond prior to beginning direct glue installation.

Radiant Heat Subfloors

Note:

The following products are NOT WARRANTED in installations over radiant heat:

- All Hickory products, regardless of plank dimensions
- All products with plank widths greater than 9" and wood wear layer greater than 4mm.

The following products ARE WARRANTED for use over hydronic radiant heat:

- European Oak, White Oak, Red Oak, Ash or Walnut with plank width not greater than 9", wear layer not greater than 4mm.

Please contact the Retailer and Distributor for clarification if the product you plan to install is not described above.

It is important to follow these guidelines strictly. Failure to follow these guidelines may produce unsatisfactory results and void the warranty.

In all installations over radiant heat, the warranty will be void if any of the following requirements and instructions are not adhered to:

- **The Radiant heat system must be HYDRONIC (using warm water). Manufacture do not cover warranty for Engineered Hardwood Floor installed over Electric Radiant Floor.**
- The heat system must be designed for wood flooring and have an outside temperature sensor and in-floor direct contact temperature sensors. The system controller must be designed for wood flooring and have a temperature control mechanism that will not allow the surface temperature of the subfloor to exceed 82°F.
- The system must be kept on and within 15°F of normal operating temperature AT ALL TIMES.
- For concrete subfloors, conduct and document Calcium Chloride Tests per ASTM F1869. Test results must not exceed 2.0 lbs. per 1000 square feet per 24 hours.
- For wood subfloors, use a pin type meter to document the moisture content of the subfloor. Moisture readings should not exceed 10% in any location and readings for the subfloor must be within 2% of the flooring at the time of installation.
- Relative humidity at the jobsite must be maintained between 35% and 55% at all times. Failure to maintain proper humidity levels will void all warranties.
- The radiant heat system must be on and operating at normal output a minimum of 14 days prior to the start of the installation.
- Wood flooring must be delivered to the jobsite and acclimated to room temperature in sealed cartons 48 hours prior to the start of the installation.
- Temperature in the installation area must be controlled between 60°F and 80°F at all times.
- Maximum surface temperature of the wood flooring can never exceed 82°F.
- Excessive heat, rapid heating, and/or failure to maintain humidity levels between 35% and 55% may cause cracking, cupping and other forms of failure and will void the warranty.
- NOTE: in wood flooring installations over radiant heat, moderate surface checking, cracking (especially at the ends of boards and around knots), shrinkage, gapping between planks, and slight cupping are all to be expected and do not constitute a product defect.

Once these instructions and requirements are met, continue the installation by following the instructions for your specific installation method.

Multi Width Installation

Installing planks of multiple widths requires special consideration. Multi Width products arrive in the same carton so measure material needs as you normally would.

Always start installation with the widest plank width and install in descending widths (example 7"-5" -3", 7"- 5"-3").

Do not try to "mix" widths within a row.

Before You Start

- Plan your layout and determine the direction of the installation in the room. Planks installed parallel to windows accent the hardwood best.
- Blending of Cartons: To achieve a uniform installation appearance, preselect and set aside hardwood planks that blend best with all trims and moldings. Install these planks next to best blended moldings.
- Remove all wall mounted moldings such as base and quarter round.
- Be attentive to staggering the ends of the boards at least 4"-6" (10-15 cm) when possible, in adjacent rows.
- The floating floor underlayment already has double-sided tape for ease of taping the precut overlapping seams. If a non-adhesive underlayment is used, tape all seams.
- Do not install in areas of high moisture such as bathrooms and powder rooms.

- Undercut door trim, jambs and casings to the thickness of the flooring plus any adhesives or underlayments you plan to use.
- All wood flooring expands and contracts with changes in humidity. It is essential to install the floor leaving adequate expansion space between ALL sides of the flooring and ALL vertical obstructions, including door trim, jambs, studs, plumbing, cabinets, etc. This space will be covered with base molding. **Failure to provide adequate expansion space in any single location can cause damage to the entire floor.**
- **Minimum expansion space for 9/16" – 3/4" thick flooring is 5/8"**

FLOATING INSTALLATION

NOTE: Only Engineered Hardwood Flooring with 4" or more width is approved for floating installations.

Engineered Wood Flooring can be installed as a floating floor system over almost all types of subfloors including Plywood, OSB, Existing Wood Floor, Vinyl, Vinyl Tile, and Ceramic Tile provided they are clean, flat, dry and structurally sound, meeting the requirements outlined above under 'Subfloor Conditions.

For Floating Floors, you will need the General Tools and Accessories, plus:

- Tongue and Groove Glue: Franklin Titebond III or Equivalent PVA adhesive
- Underlayment Pad: ~1/8" thick Two-in-One pad (pad plus vapor barrier) or ~1/8" thick pad with 6 mil polyfilm sheeting
- Masking Tape (if needed – not recommended): 3M Advanced Delicate Surfaces 2080EL Tape

Floating the Floor

1. If installing over underlayment pad plus a separate layer of polyfilm, install the 6 mil polyfilm first, taping all seams with waterproof tape, and then install the pad. Roll out the first run of pad from wall to wall parallel to the starter wall. On the installed pad mark two points toward each end of the starting wall and chalk a line the full length of the wall through the marks. This is the starter line.
2. Lay the first row of flooring using only long boards. The first flooring board and the last flooring board in this row should be a minimum of 12" long and cut to provide the appropriate expansion space on each end. Apply a 1/8" continuous bead of T&G glue on the bottom side of the groove of each end joint. Align the tongue side of the starter row along the chalk line and engage the end joints together. Use shims along the long wall and at both ends of the row to keep the floor in place and maintain the right expansion space.
3. Lay the second and third row of flooring boards. End joints should be separated by a minimum of 8" from the adjacent row. Spread a 1/8" bead of T&G glue along the bottom side of the long groove and each end joint groove on the second row of flooring. Engage the groove side of the second row with the tongue of the starter row. Engage the end joints at the same time, aligning them and cutting at the end of each row to allow for appropriate expansion space. Continue this procedure for the third row. These three rows must be aligned straight to ensure that the rest of the installation remains straight.
4. Continue using the same procedure. If boards do not easily engage together, use a tapping block or pull-bar. Use masking tape as needed to keep the boards together and rows straight. **Remove all tape within 20 minutes of application. Use only the 3M Advanced Delicate Surfaces 2080EL Tape.**
5. Avoid working on top of the installed flooring to prevent breakage of the glue joint.
6. Complete the installation by reinstalling or installing new base moldings.
7. Do not allow foot traffic on the floor for 24 hours after installation is complete.

Warranty for separation of planks is the responsibility of the installer.

Staple or Nail Down Instructions

STAPLE OR NAIL DOWN INSTALLATIONS

NOTE:

Staple or Nail down installation is not recommended for planks wider than 6". Engineered hardwood floor planks wider than 6" is recommended to follow the "Nail/Staple + Glue Installation Instructions" . For planks wider than 7.5" must be installed with Nail/Staple + Glue installation method, Nail/Staple planks wider than 7.5" wide planks without a full spread adhesive will void all warranties.

Engineered wood flooring products that are 5/16" thick are not approved for staple or nail down installation. The recommended method of installation is direct glue down only.

IMPORTANT NOTICE: We recommend fastening the **SOLID CORE (3 layers with Solid Wood Core) Engineered Hardwood Flooring Products on approved subfloors with STAPLES ONLY.** The use of Cleats/Nails can decrease installation constancy and fastening strength. Insufficient fastening strength could result in floor movement and will void the warranty.

Engineered hardwood floors may be installed over wood sub-floors using staples or flooring cleats, with the exception of Luan, Parquet or Masonite. When installing engineered wood planks or strips by nailing or stapling it is necessary to use the type of flooring stapler or nailer made for the thickness of the engineered wood flooring that is being installed.

Note: In addition to the ground cover in the crawlspace, a 6-mil polyethylene layer or a 15lb felt or rosin paper **must** be installed over the subfloor prior to the installation of the engineered wood flooring in order to reduce squeaks and noises created by the opposing floors.

Installing 6-mil Polyethylene

Install the polyethylene parallel to the direction of the flooring and allow a 3" overhang at the perimeter. Make sure each run of polyethylene overlaps the previous run by 6" or more.

Layout the job

Measure out from the ends of your starting wall, 2 ¾" when installing 2 ¼" strip flooring or 3 ½" when installing 3" planks and mark both ends. Where possible lay the flooring at 90° angles to the floor joists. Make a chalk line along the starting wall using the marks you made.

Beginning installation

Note: Expansion space is required along the perimeter of room(s) of intended installation; expansion space is dictated by the thickness of the product, for example, ¾" thick floor requires ¾" expansion space, ½" thick floor requires ½" expansion space; ¾" thick floors require 5/8" expansion space.

Place the planks with the tongue facing away from the wall and along your chalk line. Use brads or small finishing nails to secure the first starter row along the wall edge 1" to 2" from the ends and every 4" to 6" along the side. Counter sink the nails and fill with the wood filler that blends with the flooring installed. Place the nails in a dark grain spot in the board. The base or shoe molding will cover the nails when installed after completion of the installation.

Blind nail at a 45 degree angle through the tongues. It will be easier IF YOU PRE-DRILL THE HOLES IN THE TONGUES. Nail 1" to 2" from the ends and every 4" to 6" along the sides. It will be necessary to blind nail the next 2 rows. A brad nailer with 1" to 1 3/8" brads can also be used to blind nail and no pre-drilling is needed.

Continue the installation using an engineered wood-flooring stapler, using recommended staples or nails. Nail or staple the flooring 1" to 2" from the ends and every 4" to 6" along the edge tongues.

Recommended Pneumatic Floor Stapler

When stapling, use a 20 gauge, 1" staple or 18 gauge, 1" or longer staple on products up to 3" wide and ½" thick. When installing a 5" wide product or wider, use an 18 gauge 1-1/4" staple or longer. (**Note: you must use an appropriate adapter for the thickness of the wood on some flooring staplers**). Also note: ¾" thick engineered planks should be nailed or stapled using a ¾" solid wood flooring nailer or stapler of

any brand using the recommended size staple or cleat for ¾" solid wood installations and the nailing schedule which is 1" to 3" from the ends and 4" to 6" in the field. This will help insure a satisfactory installation. It is recommended to initially set the compressor at 80 to 85 PSI and adjust the pressure as needed in order to properly set the fastener and keep the staples from going through or breaking the tongues. Improper stapling techniques can cause squeaks in the floor. Adjustments may be necessary to provide adequate penetration of the nail or staple into the nail bed. You want it flush in the nail pocket. Use a scrap piece of flooring material to set tools properly before installation.

Final Touches

Install the proper trim molding at the doorways to achieve the transition and along the walls to cover the edges of any gaps along the wall due to irregularity.

Complete the job by using the wood filler that coordinates with the installed engineered flooring to fill any gapping along the joints or areas where brad nails were used in the trim or the flooring. Clean the finished floor with Hardwood & Laminate Cleaner.

Nail/Staple + Glue Installation Instructions

NOTE:

Engineered hardwood floor planks wider than 6" is recommended to follow the " Nail/Staple + Glue Installation Instructions" . For planks wider than 7.5" must be installed with Nail/Staple + Glue installation method, Nail/Staple planks wider than 7.5" wide planks without a full spread adhesive will void all warranties.

Engineered Wood Flooring can be nailed/stapled + glued to plywood, OSB and existing wood flooring meeting the requirements outlined above under 'Subfloor Conditions.'

For Nail/Staple + Glue Installations, you will need the General Tools and Accessories, plus:

Premium Wood Flooring Adhesive: Franklin 771, 811, or 821, Bostik GreenForce, BEST, or VaporLock, or Bona R851, Apac/Mapei 999/985

Adhesive Remover recommended by the manufacturer of the adhesive selected
Adhesive Trowel recommended by the manufacturer of the adhesive selected

Nailing/Stapling + Gluing the Floor:

1. Measure out from the starting wall the width of one flooring plank plus the appropriate expansion space for that thickness of flooring. Mark two points toward each end of the starting wall and snap a chalk line along the full length of the wall through the marks.
2. Trowel spread the adhesive on the subfloor along the chalk line wide enough to allow the first row of flooring to be installed, being careful not to cover the line. Follow the adhesive manufacturer's recommendations for wet lay times before proceeding to the next step.
3. Lay the tongue side of the first row of flooring along the chalk line. Face nail (top nail) the first row of flooring in place. Place the fasteners approximately 3/4" from the wall side (groove side) of the board every 4" to 6". Once the face nails are set, use 6-d finish nails or the pneumatic finish nailer to blind/edge nail along the tongue of the first row, every 4" to 6" and every 2" to 3" from every end joint. Check to make sure the first row is still straight along the chalk line before proceeding.
4. Trowel spread enough adhesive to install 2-3 more rows.
5. Install the second row by sliding the groove side on to the tongue of the first row. Blind/edge nail it in to place, with fasteners every 4" to 6" and 2" to 3" from each end joint. Stagger end joints by at least 18".
6. Continue nailing and gluing 2-3 rows at a time in this manner across the room. Avoid creating "H" patterns (where an end joint is adjacent to another end joint in the second to last row installed). Use cut ends to start the subsequent row, discarding any pieces shorter than 12" .
7. Most adhesives require that the installer clean the adhesive off the flooring boards during the installation. Follow the adhesive manufacturer's recommendations for this procedure
8. Trim the last row of flooring to maintain the minimum expansion space at the far wall.
9. At the far (finish) wall, it may be necessary to face-nail the last 2-3 rows due to the angle of the stapler/nailer. The last row or two of flooring may need to be pulled together using a pulling bar.
10. Complete the installation by reinstalling or installing new base moldings.
11. Do not allow foot traffic on the floor for 24 hours after installation is complete.

GLUE DOWN INSTALLATION GUIDELINES

Engineered Flooring can be glued down to concrete, plywood, OSB, underlayment grade particleboard, and existing wood floors meeting the requirements outlined above under General Conditions/Subfloor Conditions. Engineered Flooring can also be glued to other surfaces such as well-adhered sheet vinyl, vinyl tile, ceramic, etc., but the performance of the adhesive is the responsibility of the adhesive manufacturer and careful adherence to the adhesive manufacturer's installation instructions for that particular subfloor surface is crucial. Engineered Flooring Manufacture does not warrant the adhesive bond between the subfloor and the wood flooring.

For Glue Down Installations, you will need the General Tools and Accessories, plus:

- Premium Wood Flooring Adhesive: Franklin 771, 811, or 821, Bostik GreenForce, BEST, or VaporLock, or Bona R851, Apac/Mapei 999/985
- Adhesive Remover recommended by the manufacturer of the adhesive selected
- Adhesive Trowel recommended by the manufacturer of the adhesive selected
- Masking Tape (if needed – not recommended): 3M Advanced Delicate Surfaces 2080EL Tape

Getting Started Gluing Down the Floor

1. Measure out from the starting wall the width of one flooring plank plus the appropriate expansion space for that thickness of flooring. Mark two points toward each end of the starting wall and snap a chalk line along the full length of the wall through the marks. Install backer boards as guides along the wall side of the chalk line. Anchor the backer boards in place with screws or finish nails. Over concrete subfloors, anchor the backer boards with concrete screws or concrete nails. These boards will be removed later.
2. Lay the first row of flooring, but do not glue into place. Align the tongue side of the flooring boards against the backer board. Use cut ends to start the subsequent row, discarding any pieces shorter than 12". Dry lay the next two rows of flooring in place, sliding the tongue into the groove. End joints should be staggered by at least 18". Pull the rows of flooring boards away from the backer board approximately 24" to allow for the glue to be spread.
3. Trowel spread the adhesive on the subfloor along the backer board wide enough to allow the first three rows of flooring to be installed. Follow the adhesive manufacturer's recommendations for wet lay times before proceeding to the next step.
4. Install the first row of flooring, pressing the tongue to the backer board. Slide the tongue of the next row of flooring into the groove of the first row and continue until the first three rows are done.
5. If tape is needed to hold boards together, **use ONLY 3M Advanced Delicate Surfaces 2080EL Tape, and be sure to remove any tape within 20 minutes of application.**
6. Trowel spread adhesive and continue the installation across the room. Trim the last row of flooring to maintain the minimum expansion space at the far wall. Be careful not to move the installed flooring out of position. Some flooring boards may need to be tapped or pulled into place with a tapping block or pull bar.
7. Most adhesives require that the installer clean the adhesive off the flooring boards during the installation. Follow the adhesive manufacturer's recommendations for this procedure.
8. Once the room is finished, remove the backer boards at the starter row.
9. Dry lay the first row of flooring to replace the backer board. Trowel spread the adhesive on the back of the flooring boards (not on the subfloor) and install the flooring, sliding the groove onto the tongue of the already installed starter row. Doorways and other openings may require installation of the flooring the same way. Slide the flooring boards under the previously cut door trims and casings.
10. Complete the installation by reinstalling or installing new base moldings.
11. Do not allow foot traffic on the floor for 24 hours after installation is complete.

Final Touches

Install the proper trim molding at the doorways to achieve the transition and along the walls to cover the edges of any gaps along the wall due to irregularity.

Complete the job by using the wood filler that coordinates with the installed engineered flooring for minor corrections or areas where brad nails were used in the trim or the flooring. Clean with hardwood floor cleaners for floors coated with Urethane finish and clean the floor with Woca Oil Cleaning system for floors coated with UV Oil or Natural Oil.

Trim excess underlayment (floating installation only) and install or re-install any transition pieces, reducer strips, T-moldings, thresholds, bases and/or quarter round moldings. Trims and moldings should be nailed into the wall, not the floor.

To prevent surface damage, avoid rolling heavy furniture and appliances on the floor. Use plywood, hardboard or appliance lifts if necessary. Use protective castors/castor cups or felt pads on the legs of furniture to prevent damage to the flooring. **If the floor is to be covered, the floor should be thoroughly cleaned prior to covering to prevent grit damage to the finish. Do not cover with plastic, red rosin, felt or wax paper or previously used cardboard. Instead use a breathable material such as clean, dry, plain uncoated cardboard or Kraft paper. Inks from printed cardboard could damage the hardwood floor.** A common reinforced builder's paper is a good choice. Any covering should be taped, using a low-adhesion tape to base or shoe moldings. Avoid taping to finished flooring. When taping paper or sheets together, tape them to each other, not to the floor. The floor must be completely covered to eliminate uneven ambering from exposure to UV light.

Pre-installation Subfloor Moisture Testing:

Installer should use this section to record moisture content readings and provide to the owner for their records

| Wood Subfloor | |
|---------------------------|--|
| Moisture Content: | _____ % Moisture Content of Subfloor |
| | _____ % Moisture Content of Hardwood |
| | _____ % Difference between subfloor & flooring |
| Concrete Subfloor | |
| Test Method Used: | _____ Calcium Chloride (ASTM F1869) |
| | _____ RH (ASTM F2170-02)1869 |
| | _____ Electronic Meter (Tramex or equivalent) |
| Moisture Readings: | |
| | |
| | |

Care & MAINTENANCE

Engineered Hardwood Floors are coated with different types of finishes. Different coatings require different maintenance procedures. The cleaning / maintenance products recommended for one coating may damage a floor finished with another type of coating. Before cleaning your floor, confirm what type of coating it has. The types of coatings are Urethane, UV Oil and Oxidative Oil finish.

General Care – for all coating types

- Sweep regularly, with a soft bristle broom. Vacuums with a beater bar or power rotary brush head can damage a wood floor and should never be used.
- Clean up spills and standing water as soon as possible. With Oil finished floors, water left for prolonged periods may cause water-spotting.
- Use felt protectors under heavy pieces of furniture and chairs.
- Use protective mats at all exterior entrances. Do not use mats or area rug cushions constructed of rubber or PVC. Instead use urethane backed products.
- Spiked heels or shoes can severely damage your floor.
- Replace hard plastic, metal casters or wheels on furniture with soft rubber casters or by using a protective mat under the casters.
- Never wet-mop your floor, with water or any other cleaning agent, be sure to thoroughly ring out the applicator or mop prior to applying it to the floor. A damp mop is fine as long as the moisture

is limited to an amount that will evaporate almost immediately. Moisture that is allowed to seep into the seams between the planks may cause damage to your flooring.

- The sun's UV rays can change the color of your floor.
- Keep animal nails trimmed.
- Protect your floor when using a dolly for moving furniture or appliances. Never slide or roll heavy furniture or appliances across the floor.
- Never use steam cleaners on your wood floors. This will force moisture into the wood and cause damage to your flooring.
- Use protective window coverings to protect hardwood floors from excessive heat during periods of direct sunlight.
- **Hardwoods react to sunlight**
Hardwood contains certain types of acids in their cellular structure. With exposure to sunlight these acids begin to amber. The color change is referred to as patina. The wood will reach its own natural warmth and patina level and stop ambering. The amount of patina is directly related to the species, amount of acids and the level of sunlight. The entire floor will reach the same patina level over time. This is often noticed after a rug is removed and the floor is noticeably different in color underneath. If you remove the rug and expose the entire floor to the same amount of light, it will even out over time and become uniform in color.
- **Hardwood flooring will scratch and dent**
With today's active lifestyles it is important to note that hardwood flooring can, and will, scratch and dent. See Tips & Warnings for protecting your hardwood floor. In order to prevent excessive abuse the use of strategically placed mats and area rugs as well as floor protectors on chair and table legs are a must.

Cleaning

Floor Coated with Urethane

Clean the floor regularly with Bona Hardwood Floor Cleaner or Basic Coatings Qqueaky Commercial Floor Cleaner. Do not use waxes, oils, oil soaps, or petroleum-base cleaners under any circumstances.

Floor Coated with UV Oil and Oxidative Oil

Immediately after installation and for regular cleaning, mop with WOCA Soap Natural or WOCA Soap White. (Check Floor Item Specification for Natural or White). These are concentrates that are mixed with water. They not only clean, but also help keep the floor nourished and better protected/sealed by leaving a thin layer of coconut and soy fats. Frequent cleaning with WOCA Soap (up to once weekly) will extend the time before re-oiling becomes necessary and will help prevent against staining and water-spotting. REMEMBER - FREQUENT USE OF WOCA SOAP IS THE MOST IMPORTANT KEY TO MAINTAINING UV OIL and Oxidative OIL COATED FLOOR.

- When cleaning, use a cotton mop (not micro-fiber). Use a second rinse bucket of clean water to remove dirt from the mop before re-soaking it in the cleaning solution. Change the rinse bucket water frequently.
- For convenient spot cleaning, use WOCA Soap & Spray Natural or Soap & Spray White (Check Floor Item Specification for Natural or White), which are pre-mixed with water for immediate use.
- For more difficult stains, use WOCA Spot Remover. If a mop or rag does not remove the spot, try scrubbing gently with a 3M 4100 Super Polish WhitePad.
- Two to four times a year, depending on traffic, clean with WOCA Oil Refresher Natural or WOCA Oil Refresher White (Check Floor Item Specification for Natural or White). This will introduce a small amount of oil to freshen the finish and extend the time before a re-oiling becomes necessary. If water is not beading on the floor or the floor seems to scuff easily, these are signs that more frequent Refresher is needed. If the finish is getting hazy, you may be using the Refresher too frequently. Reduce the frequency and use Soap instead.
- Light scratches are best repaired by hand rubbing WOCA Master Floor Oil Natural or WOCA Master Floor Oil White, or a Master Color Oil on the affected area using a cloth. If necessary, first clean the area to be repaired with WOCA Wood Cleaner. Be sure the area is dry before applying oil.

Leave the oil to absorb for a short period of time before thoroughly buffing and removing the oil from the surrounding area.

- Sweep or vacuum frequently. Oil finishes soak into the wood, protecting from within rather than forming a barrier above, so the natural wood texture is felt at the surface. Debris left on the floor can get ground into the grain by foot traffic and become more difficult to remove.

Important Notice:

- Never use ammonia, vinegar, petroleum-based cleaners, wax, polish, household dust treatment chemicals, abrasive cleaners, scrubbing pads, furniture cleaners, or any other non-WOCA brand product to clean your oil-finished floor.
- Avoid mopping the floor with just water. Always use WOCA Soap or Oil Refresher.
- Avoid using a micro-fiber mop, which over time may gradually remove oil from the floor.
- WOCA Wood Cleaner is not intended for regular cleaning. It is an aggressive cleaner that strips some of the oil from the floor. Other than using it for small repairs as described above, do not use WOCA Wood Cleaner unless you are preparing the floor for a new coat of oil.

For Commercial Floors

- For commercial floors that require frequent cleaning, use WOCA Master Soap. The Master Soap is formulated to allow virtually daily cleaning without leaving behind residue, which may cause excessive buildup over time.
- On commercial floors, apply WOCA Oil Refresher or WOCA Oil Refresher White three to four times a year.

See the WOCA website (www.woodcareusa.com) for more details and instructional videos.

Limited Warranty

Limited Lifetime Structural Warranty

Manufacture warrants to the original buyer that the floor will be free of manufacturing defects in milling and lamination for the lifetime of the product when the floor is used under normal residential and commercial conditions.

Finish Warranties

Manufacture covers finish warranties only for products that cleaned and maintained per the guidelines set forth for the coating type. For items finished with Oil and UV Oil finishes, that maintenance may require re-application of oil by a flooring professional during the period of this warranty, and the need for such re-application does not constitute a product failure. The frequency of the maintenance required to maintain a wood floor finished with Oil or UV Oil may vary significantly from one setting to the next depending on foot traffic. Floors finished with Oil or UV Oil used in a commercial setting may require frequent re-oiling. With Oil and UV-Oil finished floors, water and other liquids left for prolonged periods without being wiped up may cause spotting, which is normal and will not be considered a product defect. Gloss reduction is not considered wear through and is not covered under this warranty.

Residential Finish Warranty

Manufacture warrants that, under normal residential conditions and with proper cleaning and maintenance as prescribed for the applicable coating type, the finish on the flooring products will not wear through to raw wood in any single area for 10 years from the date of purchase, will not wear through to raw wood over an area consisting of 10% or more of the total installed area for a period of 20 years from the date of purchase, and will not wear through to raw wood over an area consisting of 20% or more of the total installed area for a period of 35 years from the date of purchase.

Light Commercial Warranty

Manufacture warrants that, under normal Light Commercial conditions and with proper maintenance as prescribed for the applicable coating type, the finish on the flooring products will not wear through to raw wood in any single area for 3 years from the date of purchase. Light Commercial areas are defined as public or commercial spaces with light to moderate traffic and infrequent liquid spills, and do not include food

preparation, food service or public dining areas, areas where people form lines such as in front of cash registers, areas where furniture is frequently moved such as auditoriums, or high traffic areas such as classrooms and near elevator doors.

These warranties are given only to the original retail purchaser of the flooring. No warranties are transferable. Manufacture reserves the right to verify and inspect any and all warranty claims. Warranty claims may be investigated and inspected by company personnel and/or NWFA Certified Hardwood Flooring Inspectors at our option. Some defect claims may require the removal of samples for analysis. Responsibility for replacement costs of materials will be determined after cause and analysis is made. Manufacture will repair and/or replace any material deemed defective at our option. In the event that the defective flooring is unable to be repaired in a reasonable number of attempts, the original purchaser will be reimbursed for the purchase price of the flooring for the defective portion of the floor.

Customer Responsibilities:

- Customer must retain the original sales receipt.
- Customer must follow the Installation, Care & Maintenance Instructions applicable to the product installed.
- Customer must follow proper maintenance and floor care procedures, using proper maintenance and cleaning products as prescribed for the applicable coating type. See the Installation Instructions to identify the correct coating and cleaning/maintenance regimen. If there is any doubt about the coating type, Customer must contact Retailer and Distributor for confirmation before any cleaning or maintenance is performed.
- Always maintain proper humidity control 35% to 55% and ambient temperatures of 60 – 80 F.
- Hardwood flooring is a natural product. Wood expands and contracts according to humidity and moisture conditions. It is very important that engineered wood flooring be thoroughly acclimated to a controlled environment before it is installed.

Installer Responsibilities:

- Carefully follow the Installation Instructions.
- Verify that the flooring has been properly acclimated.
- Verify that installation and/or site conditions are adequate for the installation in accordance with the Installation Instructions and ensure that humidity and temperature conditions are maintained during acclimation and installation.
- Verify that the subfloor is clean, dry, flat, and structurally sound per the requirements listed in the Installation Instructions.
- Check the flooring for manufacturing defects and/or visible damage. Verify prior to installation that any hardwood flooring that will be installed has been manufactured within acceptable tolerances and is visually satisfactory to the end-user. When in doubt, do not install.

Warranty Disclaimers - Things not covered

- Wood flooring installed in full bathrooms with a shower or tub
- Damage caused by fire, flooding and other natural disasters and/or Acts of God
- Damage caused by negligence, accidents, misuse or abuse
- Damage caused by vacuum cleaner beater bar or hard heads
- Damage caused by appliances, furniture, and casters
- Damage caused by cutting from sharp objects
- Damage to the coating caused by tape or other adhesive products
- Reduction in gloss, scratches, or indentation due to sand, pebbles or other abrasives, debris, pets, insects, construction traffic, or failure to maintain the floor as required
- Color, shade, or texture variations between samples, printed color photography or replacement flooring and original flooring material
- Changes in color due to exposure to air, sunlight and age
- Noises (squeaks, etc.) associated with anything other than the mis-manufacture of the flooring

- Naturally occurring wood characteristics such as variation in grain, mineral streaks, and knots
- Deficiencies related to subfloor/floor joist assemblies, subfloor preparation materials and fasteners including but not limited to uneven subfloor surfaces, floor deflection, voids in the subfloor, or excessive moisture in the subfloor
- Natural expansion and contraction resulting in separation between boards or damage caused by excessive high or low humidity
- Minor cracks or separations between the flooring boards caused by expansion and contraction due to seasonal changes
- Cupping or crowning in the flooring boards due to excessive subfloor moisture or low humidity
- Products designated as "clearance," "blowout," "close-out," "non-standard," and/or products sold "As-Is"
- Construction or installation-related damage
- Floors damaged or adhesive breakdown caused by subfloor moisture or water damage, including without limitation to broken or leaking water pipes, flooding, wet mopping spills or weather conditions
- Installation defects including installations made in violation of applicable state or local housing or building codes, or contrary to the Installation Instructions

Color Disclaimer:

There are color and pattern variations in all wood. This is characteristic of a living tree. All wood will go through natural color changes from the effects of oxidation and ultraviolet light. In some species such as American Cherry, Walnut, Thermo-treated Oak and some exotics this color change is more pronounced. This is not a product defect and is not covered by the warranty.

Radiant Heat:

Only approved products are warranted for over radiant heat system. The warranty will be void if any of the requirements in the 'Radiant Heat' section of the Installation Instructions are not fully met. NOTE: in wood flooring installations over radiant heat, moderate surface checking, cracking (especially at the ends of boards and around knots), shrinkage, gapping between planks, and slight cupping are all to be expected and do not constitute a product defect.

Warranty Exclusions:

It is the responsibility of the installer to inspect the flooring for manufacturing defects and/or visible damage prior to installation. Manufacture accepts no responsibility for liabilities, claims, or expenses, including labor costs, where flooring with visible defects has been installed. No retailers, distributors or employees have the authority to alter the obligations, limitations, or exclusions under any of the warranties. Manufacture excludes and will not be liable for or pay incidental, consequential or special damages under any warranties. This means any loss, expense, or damage other than to the flooring itself that may result from a defect in the flooring. These limited warranties constitute the only express warranties for the product purchased. To the extent permitted by law and for all non-consumer products, all warranties other than these limited warranties express or implied, including any warranty merchantability or fitness for a particular purpose, are disclaimed. If any implied warranty arises under state law, any and all implied warranties (including any warranty of merchantability and fitness for a particular purpose) are limited in duration to the duration of this written warranty, to the extent allowed by law. Some jurisdictions do not allow exclusion or limitations of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply. These warranties give the customer specific legal rights, and the customer may also have other rights that vary from jurisdiction to jurisdiction.