Keys to Wood Flooring Performance

Hardwood Flooring is a product produced from kiln-dried lumber and like all kiln-dried products, hardwood flooring requires special care in storage, handling, and installation. NOFMA members' wood flooring is manufactured according to strict standards in efforts to ensure a better finished product from manufacture to installation to finish and beyond. In terms of moisture, NOFMA requires all hardwood flooring be manufactured at 6-9% moisture content with a 5% allowance for pieces outside that range, up to 12%, and to fit a "GO, NO-GO" NOFMA flooring gauge.

For further details about NOFMA's moisture standards please read Behavior of Flooring: Moisture.

<u>To insure that the moisture content is maintained</u>:

*Wood flooring should not be exposed to rain, snow or excessive moisture conditions during transport or loading and unloading of the shipping vehicle. If these excessive moisture conditions are present, the flooring should be covered with a tarpaulin during shipment and loaded or unloaded in a protective, covered area.

*Before delivery check the job site. The flooring should not be exposed to high humidity or moisture once delivered. Prior to delivery of the wood flooring:

(1) surface drainage should be directed away from the building;

(2) the building should be "dried-in" with the roof on and outside windows and doors in place;

(3) all concrete, masonry, sheetrock, and framing members should be thoroughly dry;

(4) basements and crawl spaces must be dry and well ventilated;

(5) in joist construction, outside cross ventilation through vents or other openings in the foundation walls must be provided with no dead air areas;

(6) a ground cover of 6 mil polyethylene film is essential as a moisture retarder and should be in place over 100% of the earth in the crawlspace;

(7) the interior environment at the jobsite must be at or near occupancy levels;

(8) in warm months the building must be well ventilated, and during winter months heating should be maintained near occupancy levels at least five days prior to delivery of the wood flooring and until sanding and finishing are completed.

THE FOLLOWING STEPS ARE ESSENTIAL

1. Check for these conditions and if they exist correct them before delivering flooring: water or excess moisture underneath or in the house; green or wet subfloors or joists. Check for moisture retarder of 6 mil polyethylene over the earth in crawl spaces.
2. Plywood subfloor, or board subfloor and joists, should be clean, straight and thoroughly dry. Subfloor boards should be 6" wide or less, laid diagonally and spaced approximately 1/4" - 3/8" apart. Plywood subfloor panels should be spaced and nailed according to the manufacturers recommendations.
3. PROPER NAILING OF THE SUBFLOOR & FLOORING IS ESSENTIAL. Floors and/or subfloors not properly nailed may become loose, squeak and buckle. (See Nail Schedule below.) Gluing plywood to joists with an approved construction adhesive strengthens the subfloor and helps maintain a quiet subfloor system. (See page 3)
4. SUBFLOORS - with 3/4" strip flooring use either kiln-dried boards of NO. 1 or NO. 2 Common Pine or other dense, Group 1 Softwoods suitable for subfloors over wood joists, or exterior plywood. If plywood, 5/8" (19/32") or 3/4" (23/32") performance rated products are preferred. Also, 3/4" (23/32") OSB is a comparable substrate. With 1/2" thick strip flooring use a 3/4" (23/32") subfloor. Nailing flooring strips 8" - 10" apart is the preferred nailing schedule. Flooring strips (no matter what length) should contain a MINIMUM of 2 nails. Nail all pieces within 1" - 3" of the ends.
5. INSULATE OVER HEATING PLANT & UN-INSULATED HEAT DUCTS. Use a double layer of 15 lb. or a single layer of 30 lb. asphalt felt or building paper; OR 1/2" standard insulation board between joists. Over a heating plant the insulation used should be non-flammable.
6. Provide adequate expansion space next to all vertical surfaces, otherwise buckled floors may result.

NAILING SCHEDULE

NOFMA Hardwood Flooring Must be installed over a proper subfloor.*

Tongue & Groove Flooring is blind nailed on the Tongue Edge with face nailing required on starting runs (1-2) and finishing runs (2-4).

Square Edge Flooring is face nailed.

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

* (Use 1 1/2" fasteners with 3/4" plywood subfloor on a concrete slab. A concrete slab with screeds 12" o.c. does not always require a subfloor.)

SIZE FLOORING	SIZE NAIL TO BE USED	SPACING
3/4" thick T & G Strip x 1 1/2", 2 1/4" through 3 1/4" Plank 4" - 8"	 2" barbed flooring cleat,* 7d or 8d flooring nail, or 2" 15 gauge staples with 1/2" crowns* 2" barbed flooring cleat,* 7d or 8d flooring nail, or 2" 15 gauge staples with 1/2" crowns*	10" - 12" apart 8" - 10" preferred 8" apart
Blind nail along the length of strip/plank and near the ends (1"-3"). Minimum of 2 nails per strip/plank. (Plank flooring may require face nailing and/or screws for additional fastening) **Follow Manufacturer's Instructions for installation of Plank Flooring.** **Widths 4" and over must be installed on a proper subfloor.**		
SIZE FLOORING	**SIZE NAIL TO BE USED**	**SPACING**
1/2" thick T & G STRIP x 1 1/2" & 2" 3/8" thick T&G STRIP x 1 1/2" & 2"	 1 1/2" barbed flooring cleat, 5d screw, cut steel, or wire casing nail 1 1/4" barbed flooring cleat, 4d bright wire casing nail	 10" apart 8" apart
Must install over proper subfloor		
SIZE FLOORING	**SIZE NAIL TO BE USED**	**SPACING**
5/16" SQUARE-EDGE (Not Tongue & Grooved) x 1 1/2" & 2" x 1 1/3"	 1" 15 gauge fully barbed flooring brad 1" 15 gauge barbed flooring brad	 2 nails every 7" 1 nail every 5" on alternate sides of strip.
Follow Manufacturer's Instruction for installing Square Edge Flooring. **Must install over a subfloor**		
(Do not mix types of fasteners when blind nailing the field, except near walls where hand nailing is required.)		