SOUTHERN PINE COUNCIL

a guide to

Southern Pine Porch Flooring

Southern Pine by Design | **Product Performance Facts**

The porch has withstood the test of time as an icon of American architecture, adding comfort, distinction and value. Today's home designs incorporate the porch as a natural extension of the family's living space.

Southern Pine flooring has enjoyed a long history in porch construction. As with indoor flooring material, the effect of moisture in contact with wood is a top concern when designing and building a porch.

Southern Pine, combined with the technology of wood preservation, is a superior porch flooring choice. With its built-in resistance to decay and termites, pressure-treated Southern Pine porch flooring, properly installed, will provide decades of satisfying service.

This brochure provides information related to material specification, handling and storage, installation, finishing, and general construction considerations for porch floors using preservatively treated Southern Pine.

For complete details about flooring products, treating standards and applications, consult the publications: *A Guide to Southern Pine Flooring* and *Pressure-Treated Southern Pine,* available from the Southern Pine Council.

Sizes, Grades and Patterns

The size, grade and pattern of flooring utilized in porches will depend upon the type of protection given to the structure. Porches without complete roof protection are generally constructed in the same manner as outdoor decks, incorporating a surface of either 2″x6″ nominal size or 5/4x6 radius-edge pressure-treated Southern Pine. A dimension (2x) lumber grade of No.1 provides optimum appearance. Radius-edge decking is available in Premium or Standard grades.

The recommendations outlined in this brochure refer to flooring for fully-covered porches. Porch flooring is similar in sizes, grades, and patterns as interior flooring.

Typically, nominal thicknesses are 1″ and 1-1/4″ (3/4″ and 1″ actual) with the tongue-and-groove pattern, available in widths of 4″ to 6″ nominal (3-1/8″ to 5-1/8″ actual). For appearance considerations, the grade of C&Better is most often specified for porch flooring applications.

Preservative Treatment Recommended for Porch Components

To combat the deteriorating effects of outdoor exposure, moisture, decay and termite attack, pressure treatment with a waterborne preservative is recommended for all wood components of the porch. These preservatives are odorless and paintable, offering superior protection to Southern Pine products in severe outdoor exposure conditions.

Standards developed by the American Wood Preservers' Association (AWPA) govern the use and specification of all wood preservatives used in pressure-treating processes. Most building codes require that wood in close proximity to the ground be pressure-treated to specific preservative retention levels, according to AWPA Standards. This requirement applies to flooring and floor joists within 18″ of exposed soil and structural materials such as columns, posts, girders and beams within 12″ of exposed soil. Pressure-treated Southern Pine lumber is treated to retention levels appropriate to its exposure condition, either for installation above ground or in ground contact. A label (typically an end-tag) or an ink stamp placed on the lumber will denote whether the lumber is treated for either above ground use or ground contact.

Generally, above-ground retention is adequate for porch flooring, floor joists and other components used above ground, while a higher preservative retention for ground contact is necessary for wood in direct contact with the soil, such as posts.

Moisture Content and Material Acclimation

Prior to pressure treatment, a package of Southern Pine T&G porch flooring is at a moisture content of 12% for the majority of pieces if specified, represented, and grade marked as kiln-dried (KD). Refer to important information under the section "Wood and Water Relationships." With a waterborne preservative, water is part of the pressure-treating process, greatly increasing the mositure content of the wood, often to a moisture content of 50% and higher.

For porch flooring, the specification of material that is kiln-dried-after-treatment (KDAT) is highly recommended. Redrying the treated material will return each piece to a workable moisture content, generally to 19% or less. The advantages of KDAT flooring material include enhanced dimensional stability, plus reduced tendencies to warp, twist, and cup.

The same basic rules for proper storage, handling, and shipping for interior flooring also apply here. Remember, the pressure treatment of wood *does not* prevent the normal passage of moisture in and out of lumber. KDAT Southern Pine flooring will react the same as untreated interior flooring when exposed to moisture prior to installation and finishing.

A period of acclimation should be given to both the porch framing components and the pressure-treated porch flooring. Upon completion of the porch framing, it is common for experienced builders to allow one to two weeks for the framing materials to reach an equilibrium moisture content (EMC) with the exterior conditions, prior to flooring installation. This practice will reduce potential problems of buckling or separation of the flooring if installed on the framing too soon.

Proper acclimation of the flooring begins with its delivery to the job site. The material should be unloaded in a dry place and stacked on stringers to permit adequate air circulation. A layer of polyethylene should be positioned directly under all packages of flooring to prevent moisture absorption from the ground. If the temporary storage area is not fully protected from precipitation, the flooring must be *loosely covered* for protection from moisture (4-mil polyethylene is commonly used), yet allowing adequate circulation of air within the package. If at all possible, do not store the flooring in an area that receives direct sunlight most of the day, or in an enclosed, heated space. These conditions can allow the flooring to equalize at a moisture content *too low* for its intended use.

Generally, one to two weeks is considered an adequate acclimation period for KDAT porch flooring. The average moisture content of wood materials used in exterior applications is 12% for most areas of the continental United States.

Porch Flooring Installation and Finishing

Reducing the opportunities for dimensional changes to the material due to moisture fluctuations is the key to long-term performance of the porch floor. Proper porch flooring installation actually involves applying the finish *prior* to installation.

Many builders begin with a coat of a water-repellent sealer on the top of all floor joists, providing added protection against joist expansion due to excessive collection of moisture.

For the porch flooring, begin with a coat of paintable water-repellent sealer to all four sides and the ends, followed by (after adequate drying time) a coat of high-quality, mildew-resistant oil-based primer for exterior use. Consider applying a coat of the final oil-based porch enamel to the tongue and grooves (also to the end of any piece that will be adjacent to the house) and installing it while the paint is still wet. This procedure not only assures an effective seal against moisture penetration, but also provides a good bond between floor boards.

Maximum recommended joist spacing for installing Southern Pine porch flooring is 16" on center. For a more solid feel, 12" on center is an option. Unlike interior flooring, T&G porch flooring is fastened directly to the floor joists. No additional nailing base is needed. Each piece of flooring is blind-nailed at every joist, using hot-dip galvanized 8d ring-shank nails. A minimum 1/2" expansion space is maintained between the flooring area and house (or wall) to allow for dimensional change. This space can be concealed with decorative exterior trim (also acclimated). Extend flooring beyond the porch front band joist to allow a 1" overhang.

Upon completion of the flooring installation, two coats of the oil-based porch enamel to the surface and exposed ends is recommended. Solid-color stains should *never* be used on a porch floor due to their low resin content.

To maintain the optimum performance of a porch following proper design, material specification, installation and finishing, a regular maintenance program should be undertaken. Inspection for water accumulation, integrity of the soil barrier, and any raised fasteners are just a few items to include in a periodic examination of the structure. Take necessary corrective action as soon as possible. Refinishing porch flooring can be expected every 3 to 5 years, depending upon weather conditions and the amount of exposure to direct sunlight.

Wood and Water Relationships

Wood is hygroscopic: It will absorb moisture and expand when exposed to high humidity and, conversely, expel moisture and shrink in low humidity environments, changing and balancing with its general surroundings. On average, wood will change 1% in dimension for every 4% change in its ambient moisture content. A door that periodically "sticks" is a good example of this expansion and contraction behavior.

Before it can be used for interior purposes, a majority of the water in wood must be removed. To achieve proper moisture content levels, Southern Pine lumber is kiln dried prior to its manufacture into flooring. A kiln is a closed system having temperature, humidity, and air flow controls that lower the wood's moisture content to desirable levels. Adjusting the heat, steam and air flow speed during the kiln-drying process conditions the wood for its intended use, while reducing defects such as splitting, warping, checking, and casehardening.

Moisture content is a measure of the weight of the water in wood, expressed as a percentage of the oven-dry wood. According to the SPIB grading rules, Southern Pine flooring must have a maximum moisture content of 15% for D and Better grades in 1″ and 1-1/4″ nominal thicknesses (3/4″ and 1″ actual thicknesses). However, if specified, represented, or grade marked as "kiln-dried" flooring, the maximum moisture content shall be 12% for 90% of the pieces, and 15% moisture content for the remainder. Refer to Paragraph 162 of the *SPIB Standard Grading Rules for Southern Pine Lumber** for more information.

Properly drying and conditioning Southern Pine in a kiln helps reduce warping, splits and checks.

Proper Storage and Handling

Moisture will damage flooring, even *treated* porch flooring! Careful adherence to some reasonable, time-tested practices during the distribution and delivery process from sawmill to distributor, to treater, to dealer, to the final installation site will prevent moisture problems and visual damage to the flooring. Proper storage and handling practices are paramount for assuring a Southern Pine floor's readiness and suitability for installation.

An appropriate storage site at the distributor or dealer would be a dry, enclosed building having a level floor, with flooring stored in a clean location. A wrapping of paper or plastic will further protect the flooring from moisture and dirt. Using a first in/first out (FIFO) inventory method will minimize flooring storage time and reduce exposure to excess dust and humidity. Flooring should *always* be delivered to the jobsite under dry weather conditions!

Once delivered from the mill to the dealer, Southern Pine flooring should be stored in a clean, dry, enclosed building.

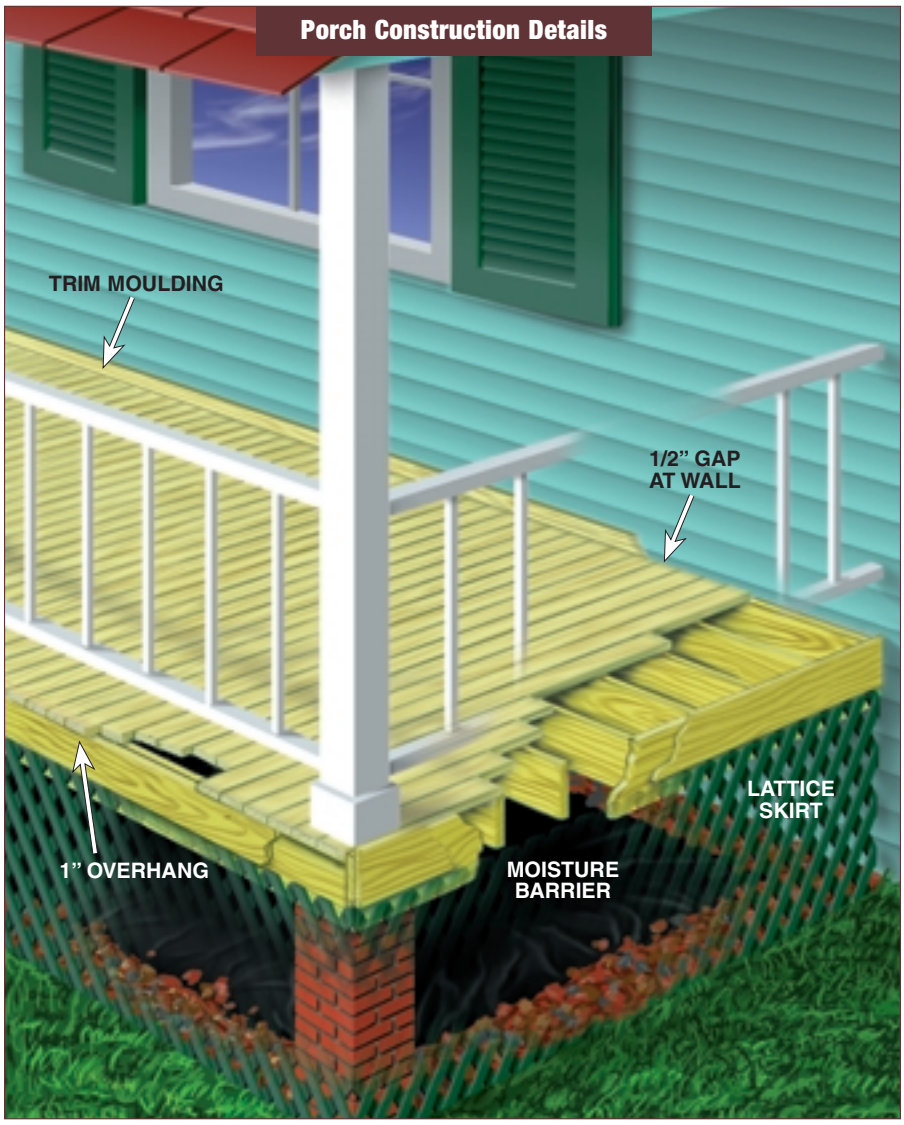
* *Standard Grading Rules for Southern Pine Lumber, 2002 Edition,* published by the Southern Pine Inspection Bureau. To obtain a copy, please contact SPIB; phone: 850/434-2611, Fax: 850/433-5594.

Porch Design Considerations

Attention to proper porch design is as important to the longevity of the structure as are the details of porch flooring specification and installation. Inadequate air circulation beneath the porch and trapped moisture between framing components will greatly reduce the serviceability and long-term appearance of the porch.

The following recommendations are key elements to the proper design and construction of a fully-covered porch:

- Slope the exposed soil underneath the porch away from the center to permit runoff of any water that may accumulate.
- To reduce the upward migration of moisture from the exposed soil underneath the porch, cover with a soil barrier (4-mil polyethylene is acceptable), leaving two feet of exposed soil inside the perimeter of the porch. Anchor edges of this barrier with gravel.
- Encourage air flow beneath the porch by using ornamental vents or lattice skirting.
- Slope the porch framing 1/4" per foot away from the house to permit adequate water runoff.
- Vent columns and newell posts at top and bottom.
- Check with your local building code department to be sure all code requirements are satisfied within your porch design.



Additional Information

The Southern Pine Council offers a wide variety of other helpful publications. A single copy is free upon request. Materials available and the cost per copy for quantities include:

A Guide to Southern Pine Flooring
(#705, $2)
product description, installation & finishing

Southern Pine Use Guide
(#200, $2)
grade descriptions, design values, specification guidelines

Pressure-Treated Southern Pine
(#300, $2)
retentions, standards, proper use and handling

Raised Floor Systems: Design & Construction Guide
(#411, $3)
advantages, site prep, footings, framing details

Answers to Questions About Pressure-Treated Wood
(#300, $FREE)
building tips, proper use and storage

For a listing of all publications and video programs, visit www.southernpine.com.

SPC Box 641700
Kenner, LA 70064-1700
(504) 443-4464
Fax (504) 443-6612
www.southernpine.com
e-mail: info@southernpine.com

SOUTHERN PINE COUNCIL

Southern Forest Products Association
P.O. Box 641700 Kenner, LA 70064-1700
504/443-4464 Fax 504/443-6612

Southeastern Lumber Manufacturers Association
P.O. Box 1788 Forest Park, GA 30298
404/361-1445 Fax 404/361-5963

www.southernpine.com

The content of this publication has been compiled by the Southern Forest Products Association (SFPA) on behalf of the Southern Pine Council (SPC) as a service to buyers, users, and specifiers of wood building materials. The council is a nonprofit trade promotional group supported by Southern Pine lumber manufacturers. One of the primary missions of the council is to provide information to those interested in the industry's products. SFPA and the Southeastern Lumber Manufacturers Association (SLMA) neither grade, test, manufacture, nor treat lumber products.

The technical information in this publication did not originate with SPC. Information pertaining to Southern Pine lumber grades, and moisture content requirement is based on the *Standard Grading Rules for Southern Pine Lumber, 2002 Edition*, published by the Southern Pine Inspection Bureau (SPIB). Information about pressure-treating methods and performance of treated lumber products is based on the approved Standards of the American Wood Preservers' Association (AWPA).

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