

SOUTHERN YELLOW PINE FOR JOINERY

CLEAR—DENSE—TREATABLE



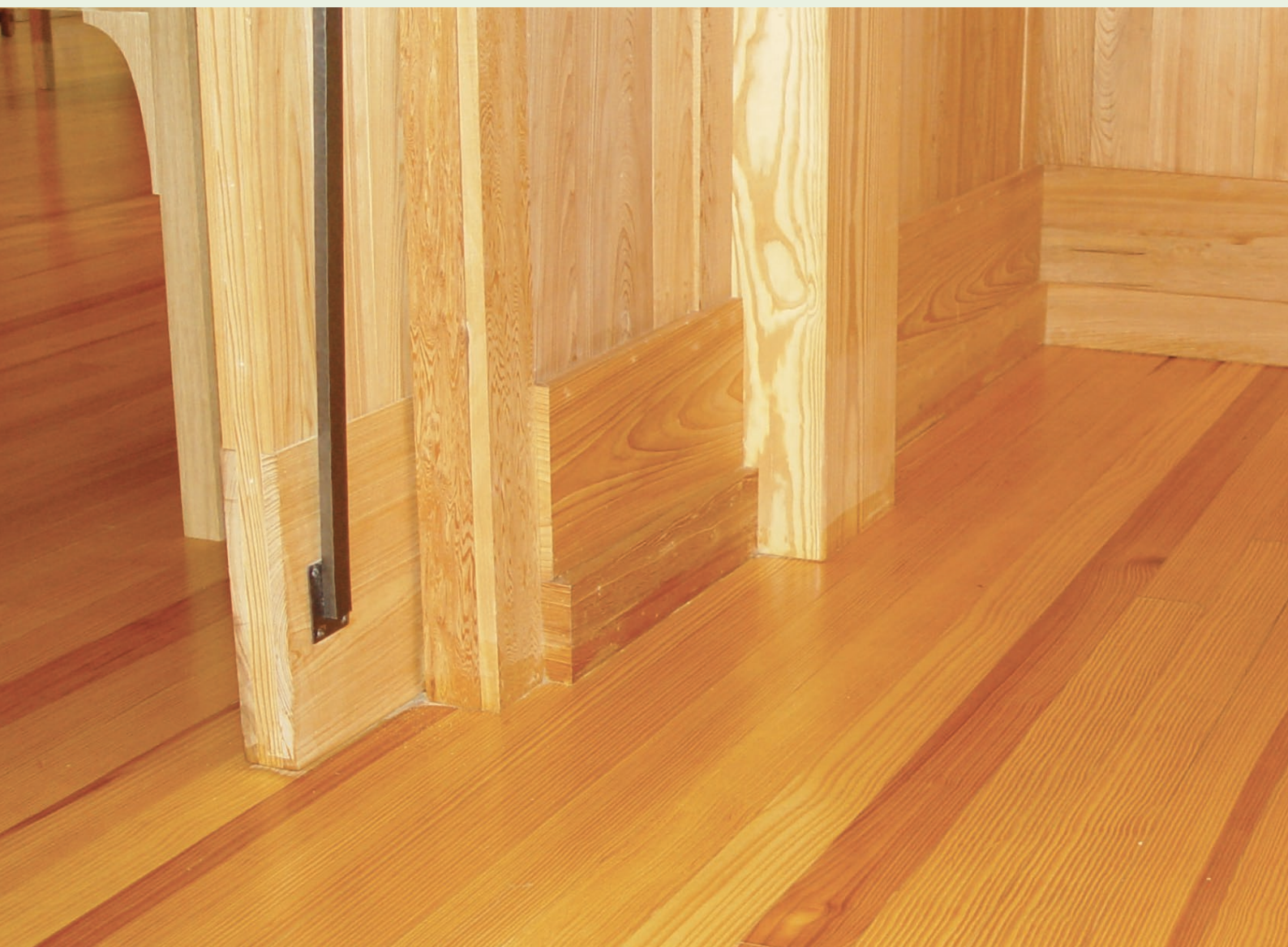
AmericanSoftwoods.com
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INTRODUCTION

Around the world, Southern Yellow Pine is widely used for joinery because of its attractive appearance. Available in exceptionally clear joinery grades, it has a distinctive grain pattern and is among the densest commercially available softwood species, offering superior impact-resistance. It is easy to work with, excellent value and widely available from sustainably managed forests. For external joinery, it takes preservative treatment well. In the final two pages of this publication, you can review a summary of TRADA Technology's independent tests providing evidence that Southern Yellow Pine is the strongest of the softwood species reviewed.

ABOUT SOUTHERN YELLOW PINE

Southern Yellow Pine is a collective term used to describe four principal species, loblolly, longleaf, shortleaf and slash pine, that are virtually indistinguishable from each other once harvested. All are native to the USA and grow mainly in a broad geographic region from eastern Texas to Virginia.



A SUSTAINABLY-MANAGED SOURCE

America's southern forests are among the largest and most accessible in the world. The growing stock of Southern Yellow Pine has more than doubled since the 1950s. By 2040 it will have increased in volume by about 20% to 120 billion cubic feet (3.4 billion cubic metres).¹

Increasingly, areas of Southern Yellow Pine forests are being certified by third-party auditing programmes, such as the Sustainable Forestry Initiative, American Tree Farm System and the Forest Stewardship Council. Contact your supplier for details.

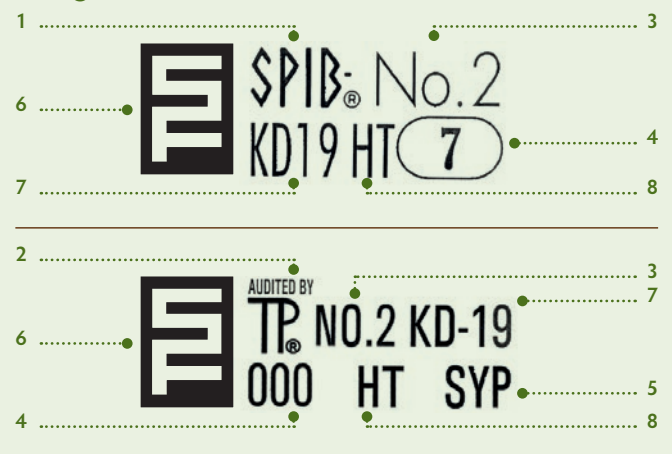
QUALITY ASSURANCE

The US timber industry operates a third-party quality assurance programme that requires each piece of Southern Yellow Pine to be clearly marked with its grade and other information relating to its production, such as the mill identification number and moisture content at the time of grading.

The grading and marking of the wood are monitored by third-party inspection bodies accredited by the American Lumber Standard Committee (ALSC). All products must be manufactured in accordance with US Product Standard PS20 published by the US Department of Commerce. Fig.1 shows examples of the grade marks on Southern Yellow Pine.



Fig.1 Examples of typical Southern Yellow Pine grade marks



1. Inspection Service: Southern Pine Inspection Bureau (SPIB)
2. Inspection Service: Timber Products Inspection, Inc. (TP)
3. Lumber Grade
4. Mill identification number
5. Lumber species
6. (optional) Logo denoting a member mill of Southern Forest Products Association (SFPA)
7. Moisture Content (MC): Kiln-dried (KD) to a maximum of 19%
8. Heat treated

Note: a number of organisations are accredited by ALSC to inspect or grade Southern Yellow Pine products in accordance with SPIB rules. In addition to the two listed above, these include: Northeastern Lumber Manufacturers Association (NELMA), West Coast Lumber Inspection Bureau (WCLIB), Western Wood Products Association (W/WPA) and California Lumber Inspection Service (CLIS).

1. Source: Forests of the South, Southern Group of State Foresters, southernforests.org

BENEFITS OF SOUTHERN YELLOW PINE

Clear face

Southern Yellow Pine is noted for its appearance. The wood has a distinctive colour and grain, its sapwood ranging from white to yellowish and heartwood from yellow to reddish-brown. The higher grades of joinery timber can be specified clear of knots. This is not just an aesthetic benefit but also provides the kind of fault-free substrate that other softwood species can only achieve through finger-jointing. Great for taking a coating on the exterior of a window or door; great for a translucent finish on the interior.

Workability

Although Southern Yellow Pine contains resin, it is moderately easy to work with machine or hand tools and readily accepts paints or stains. A sealer is recommended to prevent any potential resin bleed. It glues well and its high density provides excellent nail and screw-holding ability.

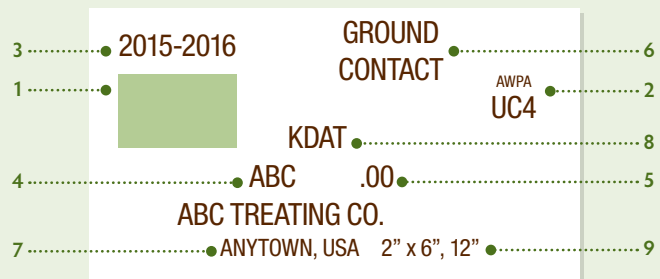


Treatability

Southern Yellow Pine has long been a preferred species when pressure treatment with preservative is required. Its unique cellular structure permits deep, uniform penetration of preservatives, providing predictable long-term durability as well as resistance to decay and insect attack. The latest generation of preservatives is approved for use by government agencies in the USA, UK and all major wood-using markets worldwide as safe for use in every construction environment, including contact with people, plants and pets. For more information, please refer to the booklet **Pressure-Treated Southern Yellow Pine**, available for download from the publications page of SouthernPineGlobal.com.

It is impossible to tell by visual inspection if wood has been treated correctly for its application. That is why the treated timber quality mark is so important. It provides assurance that any Southern Yellow Pine product is treated by a qualified treater under a quality-control programme audited by an independent inspection body accredited by the American Lumber Standard Committee (ALSC). The mark identifies the treater, the preservative used, the standard to which it was treated, its Use Category and the inspection body that confirmed its quality. An example of a Southern Yellow Pine treated timber quality mark is shown in Fig.2. This information can be ink-stamped on the wood, but appears more typically as a printed plastic tag stapled to the end of each piece of timber.

Fig. 2 Example of quality mark for treated Southern Yellow Pine – plastic tag or ink marked



1. Inspection body logo
2. Application Use Class (US Standards are the same as UK and EU Use Classes)
3. Year of treatment
4. Preservative type used for treatment, e.g. ACQ
5. Preservative retention achieved
6. End use application description
7. Treating company details
8. Air-dried (DRY or ADAT) or Kiln-Dried After Treatment (KDAT)
9. Dimensions and/or product class

SPECIFYING JOINERY GRADES

Prime

Rough sawn and kiln-dried to a maximum moisture content of 19%, this material measures 1½" x 4" (38mm x 100mm) and wider, to 4"x 4" (100mm x 100mm) and wider. Prime material can be remanufactured into thicker sizes, similar to dimension. It is also ideal for furniture, flooring, and joinery applications.

Sample photo

2"x 8" (50mm x 200mm)
Length: 10' (3.048m)



Saps

Rough sawn, and kiln-dried to a maximum moisture content of 19%, this material measures 7⁄8" x 3" (22mm x 76mm) and wider to 3" x 3" (76mm x 76mm) and wider. Saps are primarily used in re-saw and re-manufacturing operations to produce items for joinery, mouldings, furniture, panelling, and cladding.

Sample photo

1"x 4" (25mm x 100mm)
Length: 10' (3.048m)



Dressed No.1

This grade is recommended for general use and construction where high strength, stiffness, and good appearance are desired.

Sample photo

2"x 6" (50mm x 150mm)
Length: 10' (3.048m)



NOTE: Prior to shipment, the buyer and seller should establish what constitutes a complete grade description of this material.

TECHNICAL REPORT

Summary of results

TRADA Technology's report provides conclusive evidence that Southern Yellow Pine is the strongest softwood species. The testing programme demonstrates superior impact bending and surface hardness performance to other softwoods tested under the same laboratory conditions, with Southern Yellow Pine's excellent resistance to indentation making it ideal for furniture, flooring and other domestic applications.

The test results give a clear message to furniture and flooring manufacturers who may previously have used other types of timber with a lower impact resistance.

Background

American Softwoods, the international representative body of America's Southern Forest Products Association and Softwood Export Council, commissioned a series of independent tests to compare the performance of Southern Yellow Pine with other softwoods.

The tests were carried out by the Timber Research and Development Association (TRADA), a globally recognized authority on the specification and use of timber and wood products, based in the United Kingdom.

Objective

Southern Yellow Pine is widely acknowledged as a reliable timber for construction use and all external structures. The project's aim was to determine its suitability for internal use in terms of hardness, impact resistance and density for furniture, flooring, staircases, skirting boards, architraves, doors and windows.



Findings

Data analysis for the Janka hardness test showed that Southern Yellow Pine was "significantly stronger than the other species under test." It markedly outperformed the other softwood species' impact resistance, and was shown to be 51% denser than European Whitewood and 14% denser than New Zealand Radiata Pine, its nearest rival softwood species. Although Chilean Radiata Pine's hardness rating compared well on the tangential face, Southern Yellow Pine was found to be 80.8% harder than European Whitewood.

Research testing programme

The mechanical testing programme was undertaken by TRADA Technology in accordance with British Standard BS 373: 1986 "Methods of testing small clear specimens." Tests determining the density and movement characteristics were carried out on the following softwoods:

- Southern Yellow Pine (*Pinus spp*): SYP
- Chilean Radiata Pine (*Pinus radiata*): CRP
- European Redwood (*Pinus sylvestris*): ER
- Brazilian Elliotis Pine (*Pinus ellioti*): BEP
- European Whitewood (*Picea spp*): EW
- New Zealand Radiata Pine (*Pinus radiata*): NZRP



Test conditions

Stable conditions of 20 +/-2°C, 65 +/-5% relative humidity were monitored in the Test Hall with thermohygrograph and whirling hygrometer. The samples' weights and moisture contents were carefully scrutinized. A more detailed description of the test prerequisites is available on request from American Softwoods.

Procedures

1. Hardness

Janka test (radial and tangential surfaces)

A vice with five pieces of timber of similar type and cross-section was used. The hardness was defined as the resistance to indentation by a steel ball of 11.3mm diameter, giving a projected area of 100mm² at a depth of 5.65mm. Hardness was measured with a universal testing machine and printer, the load was calibrated and the Janka indentation jig set at a maximum movement of 5.65mm penetration. Growth rings were aligned to give radial and tangential surfaces.

Summary of test data for radial face

Species	Sample population (N)	Minimum Value (Newtons)	Maximum Value (Newtons)	Mean (Newtons)	Standard deviation
SYP	50	2240	5074	3160	615
NZRP	50	1720	4262	3098	473
CRP	50	1817	4789	2821	639
ER	50	1714	2964	2253	345
BEP	28	1311	2965	2007	557
EW	50	1249	2070	1613	208

Summary of test data for tangential face

Species	Sample population (N)	Minimum Value (Newtons)	Maximum Value (Newtons)	Mean (Newtons)	Standard deviation
SYP	50	2137	4742	3264	574
CRP	50	1942	4899	3208	700
NZRP	50	2024	4529	3173	471
ER	50	1679	3470	2549	378
BEP	28	1513	3600	2464	650
EW	50	1347	2690	1805	249

2. Impact bending

Modified Hatt-Turner test

(radial and tangential surfaces)

Specimens were assessed before testing to ensure they were straight-grained, free of defects and with growth rings aligned to give radial and tangential surfaces. The specimens were placed in spring-loaded yokes (radial face upwards) with the hammer dropped from increasing heights until failure. The initial drop height was 50.8mm and failure was assessed at the height where complete separation, or a deflection of 60mm or more, occurred.

Summary of impact bending data

Species	Sample population (N)	Minimum Value (Newtons)	Maximum Value (Newtons)	Mean (Newtons)	Standard deviation
SYP	47	0.457	1.880	0.820	0.211
CRP	51	0.457	1.422	0.719	0.185
BEP	23	0.457	1.067	0.671	0.163
ER	51	0.457	0.864	0.665	0.103
NZRP	47	0.229	0.914	0.662	0.142
EW	50	0.127	0.61	0.427	0.104

3. Density of samples

(Mass and volume)

To assess density from mass and volume, a standard balance with data acquisition was used, along with digital caliper and calibrated weight. The specimens tested were the same as those used for the hardness test. These were assessed for defects and checked to ensure they were conditioned. Mass was recorded to 0.01g and specimen dimensions to 0.01mm.

Average density of samples

Species	Average Density (kg/m ³)
Southern Yellow Pine	609
New Zealand Radiata Pine	531
European Redwood	509
Chilean Radiata Pine	505
Brazilian Elliotis Pine	433
European Whitewood	403



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The Southern Forest Products Association (SFPA) represents Southern Yellow Pine around the globe, managing a comprehensive marketing programme. Under the American Softwoods (AMSO) banner, SFPA joins with the Southeastern Lumber Manufacturers Association and other marketing partners to promote all U.S. softwood species in export markets.

The conditions under which timber is used and the quality of workmanship may vary widely. Neither the SFPA nor its members have knowledge of the quality of the workmanship or methods used on any project, and accordingly, do not warrant the design or performance of the timber in completed products.

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