

A typical 1" x 12"-16' may show some 14 red and black knots from one to two inches in diameter, some season checks and skip in dressing. Number 4 Common may contain wane, knotholes, some skip in dressing and limited amount of rot. Number 5 is the lowest recognized grade and admits all defects known in lumber provided the piece is of useable size and quality.

Many other species of lumber have three or four common grades; thus, for actual service, grades of the same designation in different species may not be comparable.

Factory lumber is graded according to the rules for all species published by the Association and is divided into two main categories - 5/4 (1-1/4") and Thicker Factory lumber and 4/4 (1") Factory lumber with four grades in the former and three in the latter. Dimension lumber is also graded according to the rules for all species published by the Association. Special grades for using White Fir as Roof Decking are also available.

## Distribution

White Fir, manufactured by a majority of mills in the Western States, is widely distributed throughout the United States and several foreign countries. Although it is obtainable in straight car lots, it can also be bought in mixed cars with the pines and others of the region's species. It is available to the consumer at many retail lumberyards and building material dealers.

For a list of White Fir manufacturers, grading rules or further information write to:

Western Wood Products Association  
Yeon Building  
Portland, Oregon 97204

Classified by the U.S. Forest Products Laboratory in Group 1 of four categories for box use, some 20 percent of White Fir is produced annually for this purpose. It is odorless and tasteless when dry.

White Fir trees grow to heights of from 150 to 275 feet at maturity with diameters of from 18 inches to four feet.

# White Fir

## facts about

White Fir lumber and lumber products have long been manufactured in substantial volume by mills of the Western United States. In recent years, however, the species has grown from a relatively minor item into one of the most important of all commercial softwoods.

White Fir is produced commercially throughout the 12 Western States. Current estimates place the standing sawtimber inventory at 237 billion board feet. Such a great backlog of stumpage, compared to its average annual harvest, gives a supply-production relationship which assures an adequate future supply. Accelerated progress in Tree Farming and other forest management methods, too, means the vast present stands of immature timber and young growth, not included in the sawlog inventory, will be ready for harvest when needed.

White Fir lumber is one of the most versatile of woods, used for residential and commercial building purposes and in industry as well. It is generally known as one of the 12 Western woods and is frequently sold in mixed cars together with an assortment of the pines and other species.

## Botanical Classification

White Fir lumber is generally manufactured from the following four species of the genus *Abies* (true firs):

*Abies amabilis* - found in north central Washington.

*Abies concolor* - found in southern Oregon, California, Nevada, Utah, Colorado, Arizona, New Mexico, southern Idaho and Wyoming.

*Abies grandis* - found in western Montana, northern Idaho and eastern and central Washington.

*Abies magnifica* - found in sections of California and Oregon.

These true firs normally grow in mixed stands with other commercial species although pure stands sometimes occur.

The White Fir tree was first discovered by the Scotch botanical explorer, David Douglas, who in 1831 collected specimens of *Abies grandis* along the Columbia River.

As a group, White Firs are evergreen trees with peculiarly conical, often very spire-like, dense crowns of heavily foliated branches. Mature trees vary in height from 150 to 275 feet and in diameter from 18 inches to nearly four feet. Bark ranges from smooth (in *amabilis*) to rough (in *concolor*) and varies in color from silver-grey to red-brown among the four species. Needles range from 1 inch to 3 inches long. Cones sometimes reach 7 inches in length.

## Properties

The lumber of White Fir is non-resinous and fine textured. Springwood is flat white in color and summerwood has a slight reddish-brown tinge. Contrast between heartwood and sapwood is so slight as to be not readily distinguishable.

At 12 percent moisture content, White Fir weighs 27 pounds per cubic foot, compared to the 23-41 pound variance among all softwoods.

Top quality paintability of smooth, well-manufactured White Fir leads to its use as siding. The wood is dimensionally stable and produced in a wide range of patterns.



Specific gravity at the same moisture content is 0.38, within the 0.31-0.58 range of all softwoods.

White Fir ranks with the several important softwoods of similar weight and density in bending strength, compression and stiffness. Volumetric shrinkage of wood is 4.9 percent when dried from a green state to 12-15 percent moisture content, or about midway in the 3.4-6.6 range of all softwoods.

Ability of White Fir to hold nails is comparable to woods of similar density. Because of its softness and uniform texture, nails of sufficient size to obtain desired holding power can be used with minimum hazard of splitting. Special sizes or types of nails are not necessary in fastening subflooring, sheathing or roofing to White Fir framing.

The wood has the necessary combination of softness, straightness of grain and uniformity of texture to permit easy working and shaping. It is easily dressed or sanded for painting or natural finishing. White Fir takes and holds paint and enamel well; its soft, uniform texture and lack of resin gives it high rank among softwoods.

The U.S. Forest Products Laboratory rates White Fir in the topmost group of all softwoods in ease of gluing based on glueability under varying conditions and with different glue types. The wood is also noted for its high insulation value. Although White Fir has a distinctive odor when wet, the odor completely disappears after seasoning and does not return even under re-wetting.

## Uses

White Fir is one of the most versatile softwoods in America. It is widely used in residential and light commercial construction, particularly for framing, and is extremely valuable to general industry as a general utility and specialty material.

## Siding

Because dry White Fir mills accurately, stays straight, is easily applied on the job site and constitutes an excellent paint base, it produces a top quality siding that lasts for the lifetime of the structure. White Fir siding is manufactured in a wide range of standard patterns to fit any architectural need.

## Sheathing and Subflooring

Because when dry it stays straight, has good insulating properties, works and nails easily and is light in weight, White Fir is particularly well adapted for use as sheathing and subflooring. In the usual frame structure, both are designed not only to give flat surfaces to which covering siding or flooring can be fastened but to contribute additional insulation and add overall structural strength to the building by providing stiffness. Wall panel tests at the Western Wood Products Association Research Laboratory show conclusively the strength element of sheathing in a sidewall is determined by the fastenings and not by the material

itself. Any of the common grades of White Fir, whether applied horizontally with let-in bracing, applied diagonally, or fastened with glue, nails or a combination of both, remained intact after the fastenings had failed.

## Framing

White Fir dimension is used extensively in residential construction as well as in other type structures. As a wall stud it has few equals because of its uniform manufacture and its dimensional stability. White Fir assures a straight, true wall and, when used as floor and ceiling joists, a level surface for floors and plaster base. Because of its light weight and soft texture, it is economical to handle and work on the job site.

## Roof Decking

White Fir decking is ideal for residential roofs and for flat built-up roofs on such structures as factory and office buildings. The numerous, excellent properties that make it so well suited for framing, sub-floors and concrete forms apply in combination to this use.

## Architectural Woodwork and Paneling

Owing to its extremely light color, White Fir has become a modern favorite for natural or tinted woodwork. It is readily and accurately milled to sharp detail and is easy to fit and work on the job. Its smooth surfaces and high dimensional stability assure continuing top grade appearance in use.

As paneling, White Fir in select (clear) grades has become increasingly popular with the use of lighter tones for interior wall coverings. The wood has also been adopted by many window and door plants because of its ease of milling, soft, uniform texture, adaptability to gluing and excellent painting properties.

## Concrete Forms

Lumber for concrete forms must be dimensionally stable, must nail easily, handle economically on the job and possess adequate strength. White Fir meets all these specifications in full measure. It

finds wide acceptance for concrete form use.

## Planking, Posts, Stringers and Timbers

There is an increasing use of White Fir for stringers, posts, beams and bridge plank. Most of the manufacturing mills have had excellent service records from White Fir timbers in railroad bridges and for timbers up to 12" x 12" in mill buildings.

For general heavy construction in all industries, White Fir performs long and well.

## Industrial Flooring

In stores, theatres and warehouses, where heavy foot and vehicle traffic is continuous, White Fir is well suited because of its uniform texture, ability to

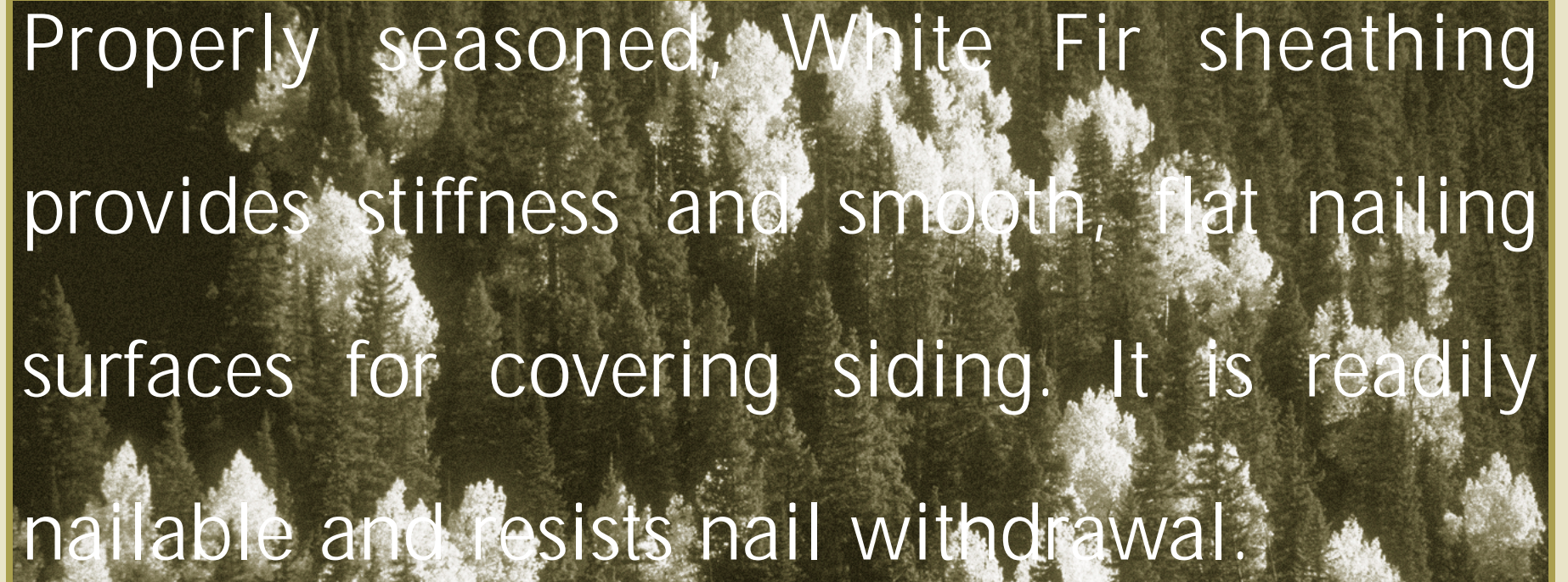
For industrial crating, White Fir is used in the shipment of ration boxes, shell cases, TNT and powder boxes and sheathed crates for all general purposes.

## Miscellaneous

Other uses for White Fir include furniture, casket shoo, pallet stock, car bracing and dunnage, laminated wood products and scores of utility and construction projects about the farm.

## Grading

Lumber manufactured from White Fir is graded under current published grading rules of the Western Wood Products Association and is separated into Select,



Properly seasoned, White Fir sheathing provides stiffness and smooth, flat nailing surfaces for covering siding. It is readily nailable and resists nail withdrawal.

The modern trend toward light colored wood walls has made White Fir a favorite for paneling. It's remarkably responsive to stain or paint finishes.

withstand slivering and resistance to abrasion. It is also an excellent flooring base where carpeting is used.

## Box Shook and Crating

White Fir is classified in Group 1 of four categories of woods adaptable for box shook and that rating is confirmed by its popularity. Box shook now requires close to 20 percent of total White Fir production.

In shook form, it is used for the boxing of fresh fruit and vegetables and for dried fruit containers and canned foods cases. White Fir properties for shook use include light color, bright appearance, freedom from stain, resin and odor, ease of working, ability to take nails without splitting and light weight.

Common, Framing, Factory (Shop) and Decking grades. Select grades are three in number - B & Better Select, C Select and D Select.

Common lumber includes five grades.\* Number 1 may contain all sound knotted stock with knots from one-half to two inches in diameter. Season checks, light stain or equivalent characteristics are also admissible. Number 2 Common is subject to the same general inspection but admissible characteristics are more numerous, larger or more pronounced.

Number 3 Common retains a smooth appearance but characteristics are still more pronounced than in No. 2.

\*Also available in "Select Merchantable," "Construction," "Standard," "Utility" and "Economy" grades when graded under WCLIB rules or WWPA alternate rules.