

Beams and Stringers as well as Posts and Timber grades include Select Structural, Construction, Standard and Utility. Light Framing lumber is divided into Select Structural, Construction, Standard, Utility, Economy, 1500f Industrial, and 1200f Industrial grades, giving the user a broad selection from which to choose.

Factory lumber is graded according to the rules for all species, and separated into Factory Select, No. 1 Shop, No. 2 Shop and No. 3 Shop in 5/4 and thicker and into Inch Factory Select and No. 1 and No. 2 Shop in 4/4.

### Distribution

Douglas Fir is manufactured by a large number of Western Woods Region sawmills and is widely distributed throughout the United States and foreign countries. Obtainable in straight car lots, it can also be purchased in mixed cars together with an assortment of the Western Pines and other species of the Region.

For the consumer, it may be secured at most retail lumberyards. For list of Douglas Fir manufacturers, complete grading rules or further information, write:

Western Wood Products Association  
Yeon Building  
Portland, Oregon 97204

Douglas Fir is one of the nation's finest structural materials. Its permanence, strength, dimensional stability and high nail-holding tenacity have led to its use in warehouses, factory buildings, bridges and other structures subject to heavy stresses.

Straightness, stiffness, load-bearing capacity and nail-holding power of Douglas Fir of the Western Woods Region make it a favorable framing material.

# Douglas Fir

facts about

Douglas Fir, a distinctive North American tree growing in all states from the Rocky Mountains to the Pacific Ocean, is probably used for more lumber and lumber product purposes than any other individual species grown on the American Continent.

The total Douglas Fir sawtimber stand in the Western Woods Region is estimated at 609 billion board feet. Douglas Fir lumber is used for all purposes to which lumber is normally put - for residential building, light and heavy construction, woodwork, boxes and crates, industrial usage, poles, ties and in the manufacture of specialty products. It is one of the volume woods of the Western Woods Region.

### Botanical Classification

Douglas Fir was discovered and classified by botanist David Douglas in 1826. Botanically, it is not a true fir but a species distinct in itself known as *Pseudotsuga taxifolia*. In the Western Woods Region, Douglas Fir trees are found at elevations of 1500 feet and higher, they grow to maximum diameters of more than seven feet and heights of 200 feet.

While Douglas Fir grows most frequently in pure stands, it is often intermingled with other species of the Region - Idaho White Pine, Ponderosa Pine, Sugar Pine, Western Larch, White Fir, Lodge Pole Pine, Engelmann Spruce, Western Hemlock, Incense Cedar and Western Red Cedar. In the Inland Empire area (eastern Washington, northern Idaho, western Montana and northeastern Oregon), where Douglas Fir is logged and manufactured with Larch, many mills combine the two into a common product known as Fir and Larch or Larch-Douglas Fir.

Foliage on mature Douglas Fir trees is usually a deep yellow-green; needles are 3/4 inch to 1-1/2 inches long. Bark is ridged, deeply furrowed and a very dark gray-brown in color. Cones vary from 1-1/2 to 4-1/2 inches long and are a cinnamon or reddish-brown.

The Douglas Fir is a prolific seed producer. Individual trees favorably located bear seeds nearly every season. Seeds average 44,000 per pound with an average germination of 50 percent.

### Properties

Douglas Fir is straight grained and moderately heavy. Although classed as a resinous wood, the amount of resin is limited. The sapwood ring is almost pure white and very narrow. Heartwood is orange-red and the color contrast between springwood and summerwood is quite distinct. The wood weighs 31 pounds per cubic foot and specific gravity is 0.44 at 12 percent moisture content. Pound for pound, Douglas Fir is one of the strongest of the softwoods. Its load bearing capacity equals many mild steels and, of course, it is considerably lighter in weight. Its strength makes it the nation's first-line wood for structural purposes.

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Because it is moderately heavy, Douglas Fir will shrink more in drying than most woods of lighter weight. Volumetric shrinkage when dried from a green state down to 12-15 percent moisture content is 5.4 percent, compared to the softwood range of 3.4-6.6 percent. With a moisture content compatible with surrounding conditions, Douglas Fir will stay in place well and undergo a minimum of shrinkage and swelling. Douglas Fir ranks approximately midway among all commercial softwoods in nail-holding ability. Safe resistance to withdrawal of eight-penny nails driven perpendicular to the grain into seasoned stock is 28 pounds per lineal inch of length, while other softwoods range from 17 to 39 pounds. Blunt-pointed or ordinary common nails are recommended because Douglas Fir, of relatively high specific gravity, tends to split more readily than softer textured woods.

The wood works readily with machine tools, and, if tools are in good condition, easily by hand.

For a successful, lasting paint finish on Douglas Fir, the wood should have a moisture content of from 12 to 15 percent, or as close to the prevailing humidity as possible. Care should be exercised in selection of the priming coat. White lead or aluminum paint is recommended.

Douglas Fir sapwood can be treated very readily. Heartwood, due to its density, does not easily absorb preservatives but depth of penetration secured is sufficient for most practical purposes. Where greater penetration is desired, incising is usually done.

Douglas Fir has an exceptionally long use life even under conditions favoring decay; heartwood is rated in the upper bracket by the Forest Products Laboratory for durability under decay-fostering conditions. In glueability, it is rated in Group 2, next to the top.

## Uses

Combining raw strength with delightful grain configuration, Douglas Fir is suitable for the heaviest of structural work to the finest of high-grade finish purposes and for the many utility uses in between.

Douglas Fir, carefully manufactured, seasoned and graded, may be used economically and successfully throughout residential and light commercial construction. Used in accordance with its properties and with proper installation, it will give many years of satisfactory performance.

Its most popular use in home construction is in framing - for posts, beams, joists, studs and rafters - comprising the bones of the house. Properly seasoned, it stays straight and, with its strength, stiffness and nail-holding ability, provides superior dollar-for-dollar value in this most important feature of the structure.

For sheathing and subflooring, second to framing in structural importance, Douglas Fir provides stiffness, straightness, nail-holding power, and low shrinkage and expansion coefficients. The same properties apply to concrete forms, a bi-purpose item used to mold

concrete and then applied to the building as sheathing or subflooring.

Siding of properly dried Douglas Fir presents an attractive appearance and meets the durability records of virtually every other wood species commonly used in contemporary house building. For interior paneling, trim and cabinetwork, it renders efficient, long-lasting service with a minimum of maintenance. Paneling in clear grades is particularly desirable for present-day modern styles.

Douglas Fir is one of the most popular and serviceable softwood floorings known. Finished naturally or painted, it is highly suitable for a variety of installations and is widely used under linoleum or carpeting.

## Heavy Construction

Douglas Fir stands unsurpassed for heavy structural timbers. It is one of the strongest woods per pound of weight in the softwood field. Where strength is the primary factor, Douglas Fir meets all requirements, and its straightness, ease of fabrication and availability in a wide range of sizes and stress grades furnish bonus qualities.

For posts, beams, stringers, joists, bracing, flooring and decking, rafters, roof decking, and for the many different members that make up trusses for factory and warehouse roofs, it is the perfect heavy-duty wood.

It is also the first-choice wood material for railroad use - ties, bridges, trestles, buildings, general maintenance and rolling equipment including car lining, siding, decking and nailing posts. Nail-holding ability, dimensional stability under stress, decay resistance and sheer toughness, account for its long history of high performance in the railroad field. Mine timbers and planking constitute another major use for Douglas Fir. Growing in and around western mining areas, it is available near use sites at marked transportation cost economies, too.

## Miscellaneous

Because of its strength, economy, finish appearance and availability, Douglas Fir finds nearly as many

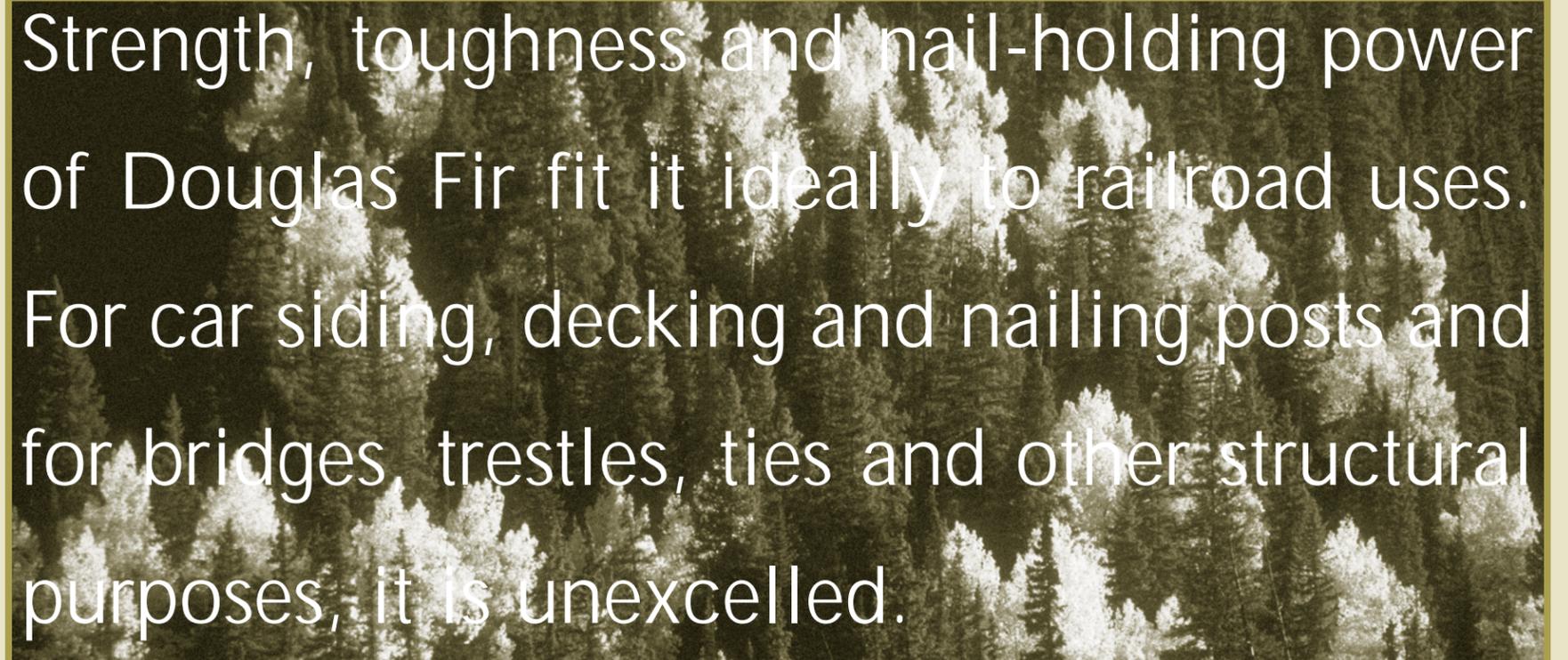
miscellaneous uses as there are for lumber of all species. It is excellent for all of the many odd jobs about the farm requiring stout material. For barn cornices, siding, boards and battens, chicken houses and feeders, cribbing, barn flooring, flumes, pens, gates and fences, chutes, granaries, troughs, hog houses and sheds, it furnishes the rugged durability necessary to hard farm usage.

As stock for fabrication into finished articles it is successfully used for cabinets, doors, door frames, windows and window frames, interior trim, ironing boards, gates and fences, mouldings, furniture, ladders, lattice work, swings, toy stock and many other wood

a limited number of small knots, small pitch pockets or their equivalents, but no serious combination of any.

C Select is much like B & Better Select but admissible characteristics may be more numerous or larger. D Select includes all stock between C Select and Common grades and admits fairly marked defects if the piece retains good appearance.

There are five grades of Common lumber in Douglas Fir. Number 1 includes sound tight knotted stock with the size of the knot the determining factor. Light pitch, small pitch pockets, light stain, season checks or equivalent characteristics are admissible. Number 2 is subject to the same general inspection as No. 1 but



Strength, toughness and nail-holding power of Douglas Fir fit it ideally to railroad uses. For car siding, decking and nailing posts and for bridges, trestles, ties and other structural purposes, it is unexcelled.

Properly seasoned Douglas Fir forms a dimensionally stable, paintable siding that will last for years. It is available from Western Woods Region mills in bevel or drop design in a wide range of patterns.

specialty products.

For crating, the high nail-holding ability and exceptional strength make Douglas Fir a primary material. It is also manufactured into box shoo for foodstuffs and general use.

## Grading

Lumber manufactured from Douglas Fir is graded under current published grading rules of the Western Wood Products Association and is separated into Select, Common, Framing and Factory grades.

Select grades are three in number - B & Better Select, C Select and D Select. Much of the B & Better Select is entirely clear. Admissible minor characteristics include

admissible characteristics are larger or more pronounced. Number 3 takes in part of the lower product of the log and the characteristics are more pronounced than in No. 2.

The characteristics of No. 4 are much the same as No. 3 but in more extensive combination or in greater degree. Number 5 is the lowest recognized grade and admits all defects known in lumber provided the piece is of usable size and quality.

Framing grades for joists and planks include Select Structural, Construction, Standard, Utility and Economy.