



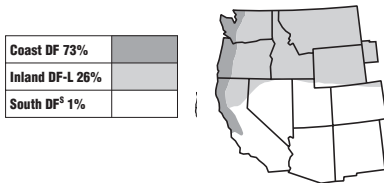
# Douglas Fir

*Pseudotsuga menziesii*



Douglas firs are among the tallest trees on the continent, second only to coastal redwoods. They average from 45 to 60 metres in height, from 600 to 1850 mm in diameter, and are found at elevations ranging from sea level to 1830 metres.

Douglas Fir Production by Region



Douglas fir growing west of the Cascade Crest to the Pacific Ocean in the states of Washington, Oregon, and northern California is known as coastal Douglas fir; identified by DF in the grade stamp.

East of the Cascade Crest in the northern "Inland Empire" region, Western Larch (*Larix occidentalis*) grows intermixed with Douglas fir. Because these two species are similar in appearance and properties, they are sometimes combined for structural applications. If combined they are marketed as Douglas fir-Larch, indicated by DF-L in the grade stamp.

A small volume of Douglas fir originates from Arizona, Colorado, Nevada, New Mexico, and Utah; these products are identified as Douglas fir South, indicated by DF(S) or DF<sup>S</sup> in the grade stamp.

Douglas fir grown in Canada is identified as Douglas fir North, indicated by DF(N) or DF<sup>N</sup> in the grade stamp.

*This publication supports products produced by companies that subscribe to the inspection and grading services of the member agencies of the Softwood Export Council (SEC), listed right. Please refer to the SEC website [www.softwood.org](http://www.softwood.org) for information on specific products from the member companies of these grading agencies. Also, please refer to the North American Wholesale Lumber Association (NAWLA) and Pacific Lumber Exporters' Association (PLEA) sections of the SEC site for information on exporting timber wholesalers and their products.*

**Note on Sizes:** Unless otherwise stated, metric measures throughout this text are soft conversions of actual, surfaced U.S. sizes (with 1 inch equaling 25.4 mm).

# Douglas Fir

*Pseudotsuga menziesii*

## Forestry, Inventory & Production

In the western region, approximately 55 million hectares are forested and home to more than 21 commercially important species for timber production. Of the 55 million forested hectares, 20.2 million are set aside — forever protected from harvesting through legislative, administrative or judicial withdrawal, in parks, scenic and habitat reserves, wilderness, and research areas.

*Pseudotsuga menziesii* is a distinct species and most often referred to as Douglas fir; however, other common names include Oregon, Oregon Pine, British Columbian Pine, Red Fir and even Douglas tree. By any name, Douglas fir accounts for about one fifth of North America's total softwood reserves.

On the commercial timberlands of the western region, there are approximately 14 million hectares of Douglas fir managed primarily in natural stands. These timberlands are governed by tough local and state laws related to harvesting and timberland management practices, reforestation requirements, protection for habitat, watersheds and soils, and biological diversity. In 1998, Douglas fir timber production totalled 17.5 million cubic metres.

**COVER:** West of the Cascade Mountains, Douglas fir dominates the forested landscapes often accounting for 90% or more of the trees in an area. Disturbance in the form of wildfires, volcanic eruptions, earthquakes and landslides have perpetuated these forests in Douglas fir for centuries. Today, foresters mimic the cycles of natural disturbance and renewal, managing commercial timberlands primarily in natural stands on long rotations for a variety of forest values.

## Grading Agencies

Softwood Export Council (SEC) member grading agencies include:



**Pacific Lumber Inspection Bureau (PLIB),** Export "R" List Grading & Dressing Rules for West Coast Softwood Lumber;



**Redwood Inspection Service (RIS),** a division of the California Redwood Association (CRA), Specifications for Grades of California Redwood Lumber;



**West Coast Lumber Inspection Bureau (WCLIB),** Standard Grading Rules for West Coast Lumber; and



**Western Wood Products Association (WWPA),** Western Lumber Grading Rules.

All of these grading agencies are accredited by the American Lumber Standard Committee, Inc. (ALSC), under the U.S. Department of Commerce. RIS, WCLIB and WWPA are also accredited rules-writing agencies and represent three, of only six, agencies in the U.S. whose grading rules are certified as conforming to the **American Softwood Lumber Standard PS-20**. This U.S. product standard provides a mechanism for timber to be of the size, grade and design values indicated by its labelling.

All four agencies are certified to provide grading and inspection services for structural products under the **National Grading Rule for Dimension Lumber (NGR)**. PLIB, WCLIB and WWPA are also accredited by the Canadian Lumber Standards Accreditation Board to provide grading inspection services under the **Standard Grading Rules for Canadian Lumber** published by the National Lumber Grades Authority (NLGA) of Canada.

## International Services

SEC member grading agencies are approved by the U.S. Department of Agriculture (USDA) Animal & Plant Health Inspection Service (APHIS) to issue **Heat Treatment Certification Using a Kiln Facility** as well as **Certificates of Debarking and Grub Hole Control**, as required by EU and other countries.

Upon request, they will provide **Inspection Certificates** that attest to the accuracy of the grades and tallies shipped by their member companies. If any disagreement should arise, all SEC member grading agencies are able to provide services anywhere in the world to help resolve disputes.

In addition, these agencies are approved to prepare documentation for individual companies in preparation for acquisition of the USDA **Phytosanitary Certificates** or other similar documents that may be required by specific destination countries.

All four agencies are accredited by ALSC to supervise NGR-based grading and grade marking services on structural products for Japan. Under the Japanese Ministry of Construction, these SEC agencies are approved to provide grading services for machine stress-rated timber products under **JAS 702** and for structural dimension timber under **JAS 600**. The Japanese government further grants approval to WWPA to certify qualifying mills to place **JAS grade marks** on structural products to be shipped directly to Japanese construction sites.

## Grade stamps

Because structural timber has assigned design values (numerical indications of strength and performance properties for engineering and construction), building codes and other regulatory entities require structural timber products be clearly marked with an approved, registered grade stamp.

Most grade stamps, except those for heavy members 127 mm x 127 mm and larger, contain the following five basic elements:



### 1. Certification Mark

The ALSC-certified grading agency's registered mark. Attests to quality control supervision.

### 2. Mill Identification

Reveals the manufacturing mill's identity. It may be a name or assigned mill number. Grading agencies may be contacted to identify an individual mill whenever necessary.

### 3. Grade Designation

Grade name, number or abbreviation.

### 4. Species Identification

Indicates species by individual species or species combination.

### 5. Moisture Content & How

**Seasoned** Indicates the moisture content/condition of seasoning when timber was surfaced at the mill (KD indicates kiln dried):

MC15 or KD15 — 15% maximum moisture content;

S-DRY or KD — 19% maximum moisture content;

S-GRN — over 19% moisture content (unseasoned).

To avoid marring the beauty of the wood, grade information for appearance products may be included in documentation rather than stamped directly onto a timber piece.

## Moisture Content

S-DRY can mean either kiln dried or air seasoned, while KD specifically means kiln dried. The meaning for "DRY" is defined by the grading rules.

In structural grades, DRY indicates a product was either kiln or air dried to a moisture content (MC) level of 19% or less prior to surfacing. Most species are seasoned below 19% MC before surfacing.

For international markets, Douglas fir framing timbers 38 mm and less in thickness are generally shipped after seasoning at the mill to a moisture content of 19% or less; indicated by S-DRY or KD. However, because Douglas fir has the ability to season well in position, framing products are sometimes shipped unseasoned (S-GRN) for use by local markets.

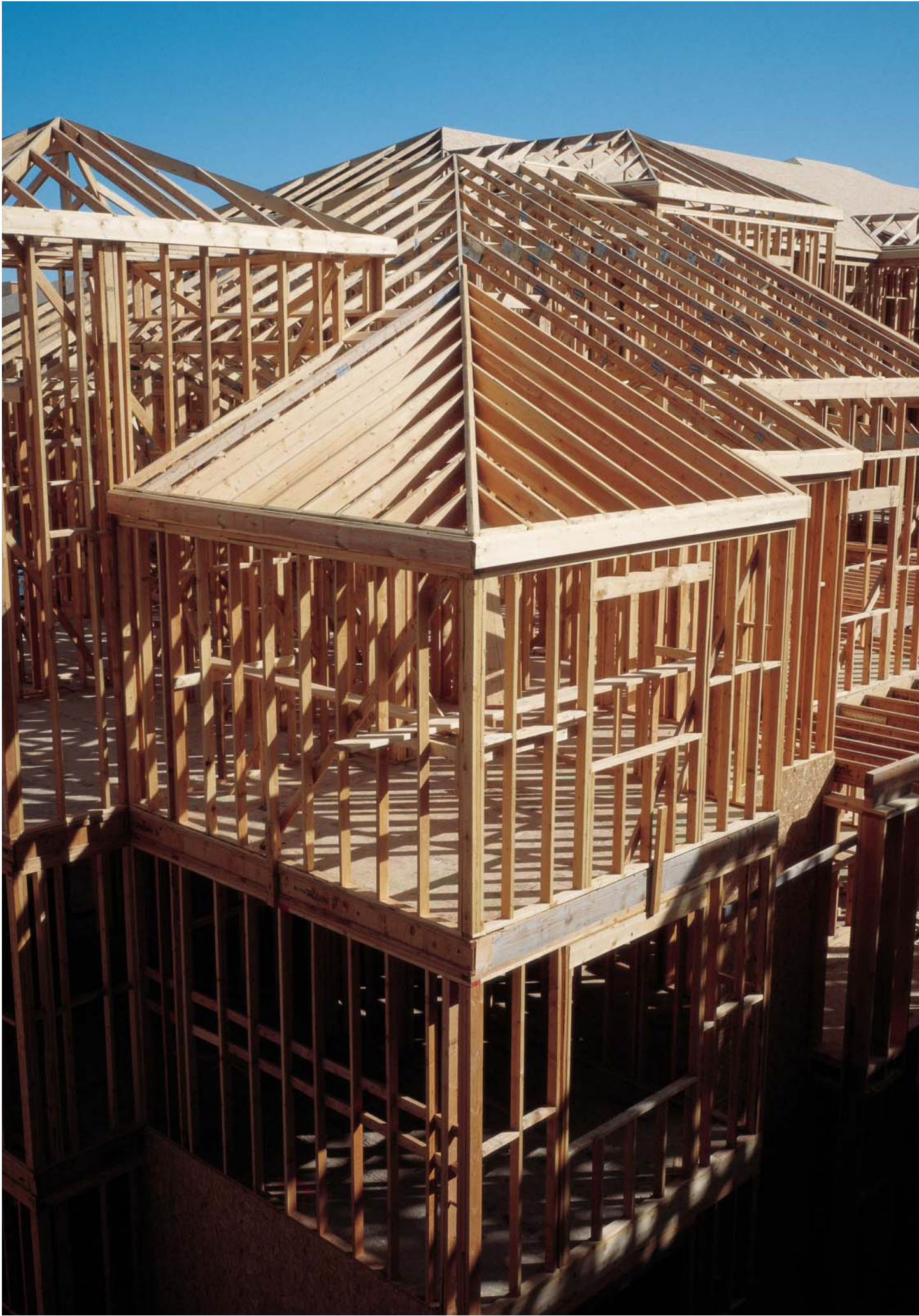
In clear and nearly clear appearance-grade products, i.e. the *Clears, Selects & Finish* grades, DRY is defined in grading rules as being a maximum of 15% MC, and under WWPA rules, 85% of these items will be shipped with a MC of 12% or less. In the appearance grades for knotty products, i.e. the *Board, Merchantable & Common* grades, DRY allows for a maximum of 19% MC.

For remanufacturing or glued products, Douglas fir is seasoned in temperature and humidity-controlled kilns or stacked and air dried until its MC reaches the appropriate level for an intended purpose, or as specified for individual grades, or through buyer/seller agreement.

## Products

Douglas fir is exceptionally versatile because it is both strong and of fine appearance. It is widely available in structural, appearance, remanufacturing, and industrial grades. International grades and sizes specific to the needs of destination countries are manufactured unseasoned or kiln dried (KD) and shipped under the supervision of RIS, PLIB, WCLIB and WWPA. Many products are available through buyer/seller agreements. Those products manufactured and graded specifically for export include, but are not limited to: **Baby Squares, J Grade, and Scantlings**.

# Products Graded for Structural Applications



## Structural Products

When architects and engineers look for the best in structural timber, their first choice is often Douglas fir. It is universally recognized for its superior strength-to-weight ratio, excellent nail holding, and its fastening capability. Superior performance is documented against wind, storms and earthquakes.

In strength properties, Douglas fir has the highest ratings of any western softwood for extreme fiber stress in bending; tension parallel-to-grain; horizontal shear; compression perpendicular-to-grain and compression parallel-to-grain.

It also has the highest modulus of elasticity (E) value of all North American softwood species. E is the ratio of the amount a piece of timber will deflect in proportion to an applied load. This reflection of stiffness is one of the most important considerations in the design of floors and other horizontal systems. Douglas fir is often selected for four- and five-storey timber frame buildings.

Because of its physical working properties, as well as the moderate durability of its heartwood, and its excellent dimensional stability, builders worldwide prefer Douglas fir for framing in residential, light commercial, multi-storey and industrial construction, and for structural formwork. Douglas fir products are also available preservative pressure treated for in-ground and ground-contact installations.

## U.S. Dimension Timber:

**Nominal sizes: 2" through 4" thick by 2" through 4" wide**

*(Surfaced Dry - 38 through 89 mm thick x 38 through 89 mm wide)*

*(Surfaced Green - 40 through 90 mm thick x 38 through 89 mm wide)*

*(Surfaced Green - 40 through 90 mm thick x 40 through 90 mm wide)*

**Structural Light Framing grades** - for highest-strength engineered systems, trusses and multi-storey projects.

**Light Framing grades** - for routine framing in walls, plates, sills, cripples, blocking, etc.

**Nominal sizes: 2" through 4" thick by 2" through 14" wide**

*(Surfaced Dry - 38 through 89 mm thick x 38 through 337 mm wide)*

*(Surfaced Green - 40 through 90 mm thick x 38 through 337 mm wide)*

*(Surfaced Green - 40 through 90 mm thick x 40 through 343 mm wide)*

**STUD grade:** Intended for vertical-use applications, ideal for wall framing.

**Nominal sizes: 2" to 4" thick by 5" and wider**

*(Surfaced Dry - 38 through 89 mm thick x 38 through 337 mm wide)*

*(Surfaced Green - 40 through 90 mm thick x 38 through 337 mm wide)*

*(Surfaced Green - 40 through 90 mm thick x 127 mm and wider)*

## Structural Joist and Plank grades -

Intended to fit engineering applications such as floor and ceiling joists, roof rafters, headers, beams, trusses and general framing.

## Special Dimension Timber

**Machine Stress-Rated (MSR) timber** - mechanically assessed for strength and connection capabilities, used for trusses and other engineered applications.

**Structural-Glued timber** - end- or finger-jointed; interchangeable with solid sawn dimension timber of the same grade and size; accepted for use under all U.S. Model Building Codes.

## Structural Decking/ Subflooring

**Nominal sizes: 2" through 4" thick x 4" and wider**

*(Surfaced "DRY or MC 15" only- 38 through 89 mm thick x 89 mm and wider)*

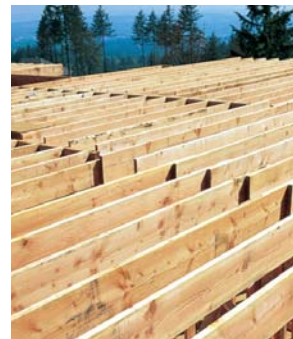
Primarily an industrial or commercial roof and flooring product. Also known as "roof decking." Not intended for outdoor, backyard decks. Standard patterns, in 38 mm, 64 mm and 89 mm tongue-and-groove widths, are available with "V" or rounded edges and other patterns to meet discriminating architectural requirements. Two grades available (WCLIB and WWPA Rules). Manufactured at 19% (S-DRY or KD) and 15% (MC15 or KD15). Factory floors, manufactured from Douglas fir decking, result in a smooth, even surface; resist cracking and splintering under heavy, continuous use.

## Large Sizes

Douglas fir is one of the few species available in large sizes from managed timberlands. While these products may be specified S-DRY, often they are shipped unseasoned, rough cut or surfaced on four sides (S4S). They are best known for their tough fiber, dense grain structure and strength. These "Heavy Timber" sections have the added benefit of excellent fire ratings that comply with U.S. and other countries' Model Building Codes.

**Beams & Stringers** - nominal 5" and thicker (125 mm nominal) with a width more than 2" (50 mm nominal) greater than thickness.

**Posts & Timbers** - nominal 5" x 5" nominal (125 x 125 mm nominal) and larger with a width not more than 2" (50 mm nominal) greater than thickness.



High-performance Douglas fir products are well suited for multi-storey framing systems and engineered applications.

A winner in the American Wood Design Awards 2000 competition, the simple frame of this barbecue facility at Champignon Garden in Tsukuba, Ibaraki, Japan, was constructed entirely of Douglas fir dimension lumber. Masayuki Akita + Quattro Architects & Planners.

Structural decking grades are available for exposed applications (primarily ceilings) and for use as floors or sub-floors.

Douglas fir offers a high degree of stiffness that is particularly desirable in floor and roof systems. The higher grades perform competitively with engineered products, but are much more economical.

**Opposite:** Douglas fir is the ideal species for the most demanding wood-frame projects, particularly in areas where earthquakes and hurricanes are severe.



## Appearance Grades

Designers appreciate the rich visual quality of Douglas fir and enjoy its beautiful response to fine craftsmanship and finishing. When sawn to expose its vertical grain, Douglas fir is particularly attractive. Substantial volumes of clear and nearly clear timber products are available in Douglas fir from the long-rotation commercial timberlands of the western region.

Appearance-grade products range from the exquisitely beautiful to the most utilitarian. Colour, grain pattern, texture, knot size, type and quantity, as well as quality of manufacturing are all key factors in determining the grade with allowable characteristics defined for each grade. Moisture content levels are carefully controlled in the highest grades to ensure products will meet the strict dimensional stability requirements of finish carpenters, furniture manufacturers and cabinetmakers.

Douglas fir's light rosey colour, which darkens over time when exposed to UV rays, is set off by its remarkably straight grain pattern. The tough fiber holds fasteners well and it machines to an exceptionally smooth, glossy surface. When dry, Douglas fir retains its shape and size without shrinking, swelling, cupping, warping, bowing or twisting, and generally won't check or show a raised grain.

Such characteristics make Douglas fir ideal for all types of trim and joinery applications: fascia, doors, millwork, window and door casings, mantels, stairs and baseboards. Products may be run-to-pattern. Douglas fir's handsome appearance is clearly visible in solid plank panelling and edge-glued veneers. In many cases, the grade of panelling products reflects the grade of the starting board material, adhering to similar restrictions for allowable characteristics.

Clear coatings, transparent lacquer, varnishes, oils, wax, bright or subdued stains, tints or paints and enamels are all appropriate finishes.

### Highest-quality grades include:

#### Export R-List Clears (R-List Rules)

No. 2 Clear & BTR

No. 3 Clear

No. 4 Clear

#### Selects (WWPA Rules)

B & BTR Select

C Select

D Select

#### Industrial Clears (WCLIB Rules)

B & Btr

C

D

#### Finish Grades (WWPA Rules)

Superior

Prime

E Finish

#### Finish Grades (WCLIB Rules)

C & BTR

D

These grades reflect clear and nearly clear Douglas fir timber products. The products are exquisitely beautiful and expensive, appreciated by discriminating buyers. They are well manufactured and carefully seasoned to desired moisture content levels, usually KD 15%. They may be specified in vertical or flat grain. When unspecified, a combination of vertical and flat grain is shipped. Products are recommended for interior trim, furniture, panelling, case goods and cabinetwork where the finest appearance is important.

Floors take an incredible beating and few softwood species are suitable. However, Douglas fir will hold a finish, maintain its appearance, remain level, and resist cracking, scuffing or splintering under extreme wear. Douglas fir flooring is available in 1x4" nominal (19 x 89 mm actual) in standard lengths that are 1220 mm and longer. Flooring is machined tongue-and-groove and may be finished in any grade; however, the grade specifically developed for flooring is *C & BTR FLOORING*. It may be specified vertical grain.

### General-purpose grades include:

#### Export R-List Merchantable

(Export R-List rules)

Select Merchantable

No.1 Merch

No.2 Merch

No.3 Merch

#### Commons (WWPA rules)

1 Common

2 Common

3 Common

4 Common

5 Common

#### Board grades (WCLIB rules)

Select Merchantable

Construction

Standard

Utility

Economy

General-purpose grades allow for a variety of knots, characteristics and imperfections. They are readily available in multiple widths and quality levels. Most are a nominal 1x thickness, surfaced to 3/4" (19 mm). Depending on the criteria of an installation, different grades are suitable for housing and light construction where wood is exposed in cornices, soffits and fascia; or for fences,



Clear, vertical grain Douglas fir is well suited to a variety of finishes.



Douglas fir is in demand for its ability to accept adhesives, hold fasteners tightly and resist the effects of scuffing, abrasion and jarring under movement.



The refined aesthetics of the highest grades in structural decking products, *Select Decking* or *Select Dex*, are revealed in this exposed ceiling. Doors are also Douglas fir.

**Opposite:** A pigmented stain was used on the Douglas fir glulam beams. Fireplace mantel and trim are also Douglas fir.

boxes and crating; or for general construction purposes and serviceability in sub-floors, roof and wall sheathing or concrete forms.

The highest grades, such as *Select Merch* and *No.1 & No.2 Merch*, *1 & 2 Common*, and *Construction* are quite refined with sound tight knots; intended for use where a fine appearance in a knotty material is desired, e.g. shelving or run-to-pattern for cladding and panelling. The lowest grades are used primarily in industrial and utility applications where economy is the basic requirement.

Please refer to SEC website ([www.softwood.org](http://www.softwood.org)) for information on standardized panelling and cladding patterns as well as information on selecting, specifying, installing and finishing solid wood panelling. The SEC publication, *Western Softwood Species & Grades*, provides photographs and detailed grade descriptions.



## Products for Industrial Applications

Industrial grades include, but are not limited to:

*Lam Stock*

(for glue-laminated beams)

*Stress-Rated Boards*

(with assigned design values)

*Mining Timbers*

*Scaffold Plank*

*Foundation Timber*

*Railroad Ties*

Douglas fir holds the respect of industrial users worldwide, repeatedly meeting their demands for high performance. Industrial products include both structural and non-structural grades intended for specific end uses.

Structural grades include mining timbers, scaffold plank and foundation timber. Truss fabrication and formwork, tunnelling, trestles, bridges, stadiums, warehouses, storage facilities and factories all depend on Douglas fir. The species is highly resistant to mechanical abrasion and chemical reaction, thus often used in the fabrication of vats, tanks, containers, flumes, conduits, and similar industrial components that call for an inert material with long life under rigorous service conditions.

Douglas fir is chosen for sound barrier walls along freeways and for highway guardrails. It's also found all across the railway tracks of North America. From rail car linings and track supports to railroad ties and cross planking, this western species, treated and untreated, provides long-lasting solutions to very tough jobs.

**Stress-Rated Boards** (nominal 1" Board products with assigned design values) are available in Douglas fir for use in light trusses, horizontal bracing, rafters, and box beams for factory built homes.

**Lam Stock**, nominal 2" (38 mm actual) and thinner by 3" (64 mm actual) and wider, is available in several grades. These grades are assessed for structural and visual characteristics. E-rated grades are mechanically tested for their exact long-span flatwise Modulus of Elasticity. Products are intended to be laid up longitudinally and bonded with adhesives. Structural laminations may be specified rough or surfaced, in various widths and thicknesses, and in unusual configurations to meet design criteria, e.g. engineered arches for churches, bridges and stadiums.

Today's engineered, stress-laminated timber bridges of preservative pressure-treated\* Douglas fir are strong, durable, cost-effective, time efficient to install, and often reduce the impact of construction on surrounding stream-side ecosystems.

Specialized non-structural grades include an enormous array of *Factory & Shop* products (described below), as well as pickets, lath, battens, stepping, and gutters.

## Products for Remanufacturing Applications

*Factory & Shop* grades include, but are not limited to:

*Moulding Stock*

(WWPA & WCLIB Rules)

*Shop Timber*

(WWPA & WCLIB Rules)

*Door Stock* (WCLIB Rules)

*Flush Door Stock* (WWPA Rules)

*Jamb & Head Stock* (WWPA Rules)

*Clears* (Export R-List Rules)

*Merchantable* (Export R-List Rules)

*Factory & Shop* grade products are produced primarily for remanufacturing into doors, windows, furniture, frames, moulding and boxes. They are especially well suited for cross cutting to obtain clear pieces for joinery and millwork applications. When hardness is desired, in addition to fine appearance, Douglas fir rivals many of the softer hardwoods in this arena. It is easily machined to a smooth surface texture, glues and holds fasteners well, and resists the effects of wear under conditions of movement and jarring.

Douglas fir *Factory & Shop*\*\* products are usually shipped in large quantities, mill-direct to remanufacturers. Many western sawmills can accommodate the special remanufacturing requirements of international customers through buyer/seller agreements.

\*Please refer the SEC website ([www.softwood.org](http://www.softwood.org)) to order the publication, **Wood That Works, Wood That Lasts** for information on preservative pressure-treated Douglas fir.

\*\*Please refer to the SEC publication, **Western Softwood Species & Grades**, for more detailed information on *Factory & Shop* grades.



Douglas fir's straight, uniform grain combined with high density yields exquisitely handsome, high-performance doors.



*Factory & Shop* products, the "economical clears" of softwood timber grades, are prized for doors, windows, shutters and a variety of cabinets, case goods and furniture.



Inba House in Chiba, Japan (here and opposite page) received Best of Residential Design of the Year in the American Wood Design Awards 2000 competition. Douglas fir was used for post-and-beam structural members, millwork and fittings. Architects: Takano Design Produce/Yasuyuki Takano+ Nobuo Aoto.



Balcony corner post of Douglas fir.



Modern stress-laminated, preservative pressure-treated Douglas fir bridges offer cost-effective solutions with low environmental impact.



Preservative pressure-treated Douglas fir pilings and boardwalks are ideal for fresh and salt-water installations.

**Structural Light Framing** grades include **SELECT STRUCTURAL, NO.1 & BTR, NO.1, NO.2, and NO.3.** Light Framing grades include **CONSTRUCTION, STANDARD, and UTILITY.** Stud grade applies only to **STUDS.** Structural Joists and Planks include **SELECT STRUCTURAL, NO.1 & BTR, NO.1, NO.2, and NO.3.** DF is the strongest of the western softwoods and marketed **S-GRN, S-DRY and KD** for framing applications.

**Figure 1:** *SELECT STRUCTURAL* is the highest *Structural Light Framing* grade — sound, firm, encased and pith knots are limited to 22 mm, tight and well spaced.

**Figure 2:** *STUD* grade, suitable for all load-bearing walls; places limitations on crook, wane and edge knots.

**Appearance grades are based on aesthetics. Highest quality appearance grades include the *Export R-List Clears (No.2 CLEAR & BTR, NO.3 & No.4 CLEAR);* the *Selects (B & BTR SELECT, C SELECT, and D SELECT);* and *Finish grades (SUPERIOR, PRIME, E and C & BTR and D).* General-purpose grades include: *Export R-List Merchantable (SELECT MERCH, NO.1, No.2 & No.3 MERCH);* the *Commons (1 to 5 COMMON);* and the *Board Grades (SELECT MERCHANTABLE, CONSTRUCTION, STANDARD, UTILITY and ECONOMY).***

**Figure 3:** *SUPERIOR* (WWPA) or *C & BTR* (WCLIB) is the highest grade in the *Finish* category of the appearance grades. Many pieces are absolutely clear. Used for interior trim and cabinetwork. Natural characteristics and manufacturing imperfections are restricted; products are kiln dried.

**Figure 4:** *SELECT MERCHANTABLE* is the highest grade among the *Board* grades for general-purpose boards of a knotty appearance. Intended for use in housing and general construction where finest appearance in a knotty product is desired.



Figure 1



Figure 2



Figure 3



Figure 4

Figure 5



Figure 6



Young bark is smooth, gray and thin. It turns brownish red and becomes thick and deeply fissured as the tree ages.

Sapwood is white to pale yellow while the heartwood is russet or orange-red; timber often has a slight rosey cast with distinct growth rings. Freshly milled timber has a resinous odour.

Special grades, sizes and lengths are available for international customers. Many mills are able to accommodate special manufacturing requirements and cut to exact customer specifications through buyer/seller agreements.

**Factory & Shop timber grades are intended to be ripped and/or crosscut to recover desirable pieces in standard sizes for remanufacturing purposes. Products are graded according to WWPA, WCLIB and Export R-List Rules with other options available through buyer/seller agreement. Products are carefully seasoned prior to surfacing. Examples of these two grades are shown in Figures 5 and 6.**

**Figure 5:** *NO.4 CLEAR* (Export Export R-List Rules) is recommended and widely used internationally as a multi-purpose remanufacturing product. Each piece is well manufactured. Irregularities on reverse face can be slightly in excess of those allowed on the face.

**Figure 6:** *6/4 RWL NO.1 SHOP* (WWPA Rules) reflects the grading principles behind typical U.S. factory-type timber. This grade will yield from 50% to 70% of *No.1 Door Cuttings*, except that pieces containing one or more *No.1 Door Cuttings* will permit one *No.2 Stile*. Not over two *Muntins* are included in any piece. The intended recovery of standard-sized pieces, which influences, along with allowable characteristics, the assigned grade, is indicated by lines on the photograph.



SOFTWOOD EXPORT COUNCIL

The Softwood Export Council (SEC) is a non-profit trade council of U.S. softwood grading agencies, industry trade associations, state export development agencies and others interested in the promotion of U.S. softwood products internationally.

International field offices and SEC representatives are located in Japan, Korea, China, Mexico, Spain and England. Details are provided on the SEC website.

The SEC website provides information on member organizations, services and companies as well as a directory of literature and supporting information on products. Most product support publications, many in multiple languages, may be ordered directly from SEC international field offices.

Softwood Export Council  
USA

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website: [www.softwood.org](http://www.softwood.org)