

SOFTWOODS
of the
WESTERN U.S.A.



SOFTWOOD EXPORT COUNCIL

WESTERN SOFTWOODS

Softwoods are lighter in weight than hardwoods, flexible, strong and dimensionally stable. Their relatively simple cell structure of long, uniform, tightly packed fibres accounts for their very high-strength-to-weight ratios. While ideal as a structural and engineering material, western softwoods are equally well suited for remanufacturing purposes, industrial applications and for end uses where beauty is the primary concern.

The ideal climate, soil and temperatures of the western U.S.A. contribute to the region's ability to yield abundant supplies of commercially valuable softwood timber products. Strict environ-



mental laws govern harvesting and reforestation procedures, and provide additional protection for watersheds, biological diversity, and habitat for threatened/endangered species.

Timber products from several of the more than 21 commercially important western softwoods often are grouped together into species combinations known as "Marketing Categories." These pre-determined categories allow species with similar appearance or performance properties to be grouped together, simplifying engineering, specification and the distribution of appropriate products into their specific markets. While western species may be ordered individually or by marketing category for high-end interior and furniture applications, individual species should be specified on the order. The list, "Western Softwood Species & Combinations," on page 10 provides a convenient guide to ordering western species either way.

SOFTWOOD EXPORT COUNCIL

This publication offers a sampling of western softwood species provided by the member companies of the following member agencies of the Softwood Export Council (SEC). Member agencies and their grading rules 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), *Standard 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 agencies are accredited by the American Lumber Standard Committee, Inc. (ALSC), under the U.S. Department of Commerce, to provide mill supervisory, lumber grading and inspection services under their own and each other's grading rules as well as the rules of other specified ALSC-certified agencies. All provide 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 Canadian Lumber Grades Authority (NLGA) of Canada.

Visit the Softwood Export Council website (www.softwood.org) for additional information on SEC member agencies and the products and services of individual exporting member mills.

GRADES AND APPLICATIONS

Timber grades fall into three basic classifications: 1) appearance grades that address aesthetic qualities rather than strength properties; 2) industrial use and remanufacturing grades; and 3) structural grades for construction purposes. All species are available in a range of grades that identify each product for its intended end use. The symbols below which appear in the code bar to the right of each wood photograph identify the different categories of grades used for each species.



APPEARANCE GRADES

Timber products graded for appearance have many applications where aesthetic appeal is more important than strength. Any load-carrying capacity in appearance products is not considered in assigning the grades, except in a specific category for stress-rated boards. All western species are available in appearance grades and, as such, are generally shipped as individual species; however, various combinations of species (as shown on page 10) may be used to simplify purchasing. Western species include varied textures and grain patterns and are available in a full range of products from the clear and premium grades to the most economical. Some naturally durable species resist rot and weather to a natural, silver-gray patina when used in exterior installations. Applications for appearance grades include panelling, cladding, shelving, flooring, furniture and decorative installations.



REMANUFACTURING AND INDUSTRIAL GRADES

The timber products in this category are milled from a variety of species but primarily Douglas fir, Hem-Fir, and the Ponderosa and Sugar pines. Timber in the Factory & Shop remanufacturing grades is intended to be re-cut into small specific sizes for use in the manufacturing of other products. These species are easily machined, have good nail and screw-holding properties, and finish well. Remanufacturing applications include cabinets, fine furniture, windows, doors, flooring, moulding, specialty items, pencils and woodenware. Applications for industrial grades include foundry patterns, crates, boxes, pallets, stakes and construction forms.



STRUCTURAL GRADES

Douglas fir-Larch, Hem-Fir and Spruce-Pine-Fir^s species combinations are manufactured in light framing, structural-light framing, and structural joist and plank grades and sizes. In the U.S., these products, nominal sizes 2" to 4" (38 x 89 mm) thick by 2" (38 mm) and wider, are referred to as dimension lumber. Larger sizes are known as heavy timbers. Beams & Stringers are 5" (114 mm) and thicker with width more than 2" (51mm) greater than thickness. Posts & Timbers are 5" x 5" (114 x 114 mm) and larger with width not more than 2" (51 mm) greater than thickness. All of these structural grades and sizes have assigned engineering values. Common applications include framing, engineered systems, laminated beams, concrete forming, scaffolding, beams, columns, etc.

Special structural grades and sizes, specific to the needs of destination countries, are manufactured and shipped by U.S. mills under the supervision of RIS, PLIB, WCLIB and WWPA. Products may be shipped unseasoned or kiln dried. A variety of international products commonly referred to as Baby Squares, J-Grade and Scantlings are available through buyer-seller agreements.



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are often harvested, manufactured and marketed individually and together in species combinations. Similar appearance characteristics or physical properties allow some species to be used interchangeably in the marketplace. Please refer to the list on page 10 for clarification.

DOUGLAS FIR

Pseudotsuga menziesii

One of the strongest softwoods, Douglas fir is often the preferred species for structural purposes. Sapwood is white to pale yellow; heartwood is russet with high contrast between springwood and summerwood. Straight grained and moderately hard, it is appropriate for engineered applications and laminated timbers, but also widely used for doors, cabinets, millwork and pallets, boxes, ladders or flooring. Marketed and sold separately or as Douglas fir-Larch.



WESTERN LARCH

Larix occidentalis

Distinct among commercial softwoods for its fine, uniform, straight grain, Western larch is one of the harder, stronger and heavier softwoods. Heartwood is russet or reddish brown; sapwood is straw brown. Tough fibred and somewhat oily in appearance, it is used principally as structural framing timber and when rotary cut, for veneer and plywood sheathing. Usually marketed and sold as Douglas fir-Larch.



WESTERN HEMLOCK

Tsuga heterophylla

Western hemlock is among the harder, stronger western softwoods. It is used for framing and architectural members and is a prime species for mouldings, millwork and panelling. Whitish to light yellow-brown springwood, summerwood frequently has a purplish or reddish-brown tinge, heartwood not distinct. Small black streaks often appear in the wood. It is marketed and sold separately and in the Hem-Fir species combination.



Western pines readily accept pigmented stains, combining elegantly with other materials in traditional and contemporary settings.



CALIFORNIA RED FIR

Abies magnifica

A true fir, moderately strong and lightweight. The timber is often slightly more reddish than other true firs. Springwood is pinkish white to light brown; summerwood gradually changes to reddish brown or lavender. Heartwood is indistinct. Relatively straight grained and easy to work. Used for framing, finish and industrial applications. Marketed and sold in the Hem-Fir species combination.



NOBLE FIR

Abies procera

One of the true firs, Noble fir is valued for its light colour and uniform, straight grain. Springwood is creamy white to light brown; summerwood gradually changes to reddish brown or lavender tinged. Heartwood is indistinct. Easy to work and ideal as finish material for panelling and doors. Sometimes sold separately but usually marketed and sold as Hem-Fir for framing, finish and remanufacturing applications.



WHITE FIR / GRAND FIR

Abies concolor / Abies grandis

The true firs are often used interchangeably. All are moderately strong and lightweight. Springwood, creamy white to light brown; summerwood gradually changes to reddish brown or lavender tinged. The heartwood is indistinct. Relatively straight grained and easy to work. Usually marketed and sold as Hem-Fir for structural, finish and industrial applications including boxes, decorative and utility items.



Whitened Ponderosa pine panels the walls and ceiling. Also used for cabinets, windows and storage areas. Because Ponderosa pine resists jarring under movement, it is a preferred species for drawers and windows.



ALPINE FIR (SUBALPINE FIR)

Abies lasiocarpa

A true fir, somewhat strong and lightweight. Springwood is creamy white to light brown; summerwood gradually changes to reddish brown or is lavender tinged. Heartwood is indistinct. Relatively straight grained and easy to work. Usually marketed and sold in the Western Woods species combination for applications where beauty is more important than strength.



ENGELMANN SPRUCE

Picea engelmannii

Among the lightest in weight of the commercially important softwoods, strong in relation to weight. It is nearly white with a reddish tinge; medium to fine textured and straight grained, works easily, and is odourless and tasteless. Used for framing, wall panelling and sometimes joinery. Relatively small, uniformly distributed knots add to its appeal. Structural framing grades are marketed and sold in the Spruce-Pine-Fir (South) species combination; appearance grades are often marketed in the ES-LP combination.



SITKA SPRUCE

Picea sitchensis

The creamy white to light yellow sapwood of Sitka spruce blends gradually into its pinkish-yellow to light-brown heartwood. The wood is classed moderate in many of its properties, including weight and hardness. The clear, straight-grained wood is valued for high quality pianos, stringed instruments, joinery and boats. It is also used for light framing in structural applications. It is marketed and sold separately or in the Spruce-Pine-Fir (South) species combination.



Hem-Fir species perform admirably for doors, mouldings and trim. Far right, Sugar pine selected for cabinets and panelling.



PONDEROSA PINE

Pinus ponderosa

Ponderosa's soft texture and light colour distinguish it from the Southern pines. Sapwood is nearly white to pale yellow; heartwood is yellowish to light reddish brown. Pleasant pine odour and slightly resinous; moderately strong and straight grained. Favoured for all kinds of joinery including window frames, doors and architraves, and is used for shelving, panelling and furniture. Marketed and sold separately or in the Western Woods species combination.



LOGEPOLE PINE

Pinus contorta

Lodgepole pine is the strongest of the Western pines. It has relatively straight grain, white to yellow sapwood and light, reddish-brown heartwood. Relatively easy to work, it machines to a satin-like finish. Knots will not bleed through paint. It is used for interior panelling, joinery, structural timber and poles. In the structural sizes and grades, Lodgepole is included in the Spruce-Pine-Fir (South) species combination. It is also marketed and sold separately or with Engelmann spruce in an ES-LP combination.



SUGAR PINE

Pinus lambertiana

Tallest of the pines, Sugar pine is moderately strong and soft with fairly uniform texture. Sapwood is creamy white, heartwood darkens to a light brown and is occasionally red tinged. Resin canals appear as dark streaks. It has good dimensional stability, no taste, and only a faint odour. Used for general joinery, foundry patterns, boxes and crates. Available separately but also marketed and sold as part of the Western Woods species combination.



Hem-Fir louvered door and mouldings, and the Ponderosa pine window, are stained to match Douglas fir cabinets trimmed in maple.



IDAHO WHITE PINE (WESTERN WHITE PINE)

Pinus monticola

Light in colour, it varies from nearly white to pale reddish brown and darkens with exposure. A moderately soft, even-textured, straight-grained, lightweight wood. It is famous for its beauty and workability across or with the grain. Valued for joinery, foundry patterns, panelling, interior trim, furniture, boxes and siding. It is the preferred species for stage flooring in theatres. Available separately or in the Western Woods species combination.



CALIFORNIA REDWOOD

Sequoia sempervirens

Found exclusively in northern California, the Coastal redwood is grown commercially in natural stands. Sapwood is cream coloured and the durable heartwood a reddish brown. Dimensionally stable with a refined texture and grain, redwood is world-renowned for its superb performance in exposed conditions: outdoor decks, garden structures, cladding, fascia, fences, benches. Marketed and sold separately.



ALASKAN CEDAR (YELLOW CEDAR)

Chamaecyparis nootkatensis

The lightest in colour of the naturally durable American softwoods. Fine, uniform texture and straight grain; silvers upon exposure. Strongly aromatic, moderately strong and hard. Used where weather resistance, stability and workability are needed: bleachers, park benches, exterior cabinetwork, stage construction, foundry patterns, marine and landscape installations. Marketed and sold separately.



Ponderosa pine is favoured for southwestern-style and other rustic furniture. Painted Adirondack chair is Douglas fir.



Greg Flores, Furniture of Taos; Taos, NM.



Courtesy



Courtesy Hood River Chairs; Hood River, OR.

PORT ORFORD CEDAR

Chamaecyparis lawsoniana

Found in a small area of southern Oregon and northern California, Port Orford cedar is finely textured with a pungent, ginger-like odour. Heartwood is light yellow to pale brown; sapwood is thin and hard to distinguish. Easily worked and polishes well. Often substituted in Japan for Hinoki when appearance is important. Also used in woodenware, novelties and toys. Marketed and sold separately; limited availability.



INCENSE CEDAR

Libocedrus decurrens

Fine and uniformly textured with a distinctly spicy odour. Sapwood is white or cream coloured. Heartwood is light brown, frequently tinged with red and extremely durable. A highly workable wood, it machines and weathers well. Used outdoors as landscape material, decking and fencing. Also used in the manufacture of paneling, louvers and pencils. Marketed and sold separately or in the Western Cedars combination.



WESTERN RED CEDAR

Thuja plicata

The largest of all cedars, it is non-resinous and has a strong spicy odour. Heartwood varies from dark reddish brown to a pinkish colour and has excellent weather-resistant properties. Sapwood is light yellow. One of the lightest in weight of the commercially important softwoods, it is often used for houseboats. Valued for panelling, decks and greenhouses as well as for cladding, posts, fencing, shingles and shakes. Marketed and sold separately or in the Western Cedars combination.





Ponderosa pine panelling graces the walls and ceiling in this remodelled home in Portland, OR. Sliding doors are Douglas fir. Baseboard mouldings are Hem-Fir.

To view photographs of timber in many of the western softwood grades, along with detailed information on standard sizes, please go to the Softwood Export Council website (www.softwood.org) and click on the publication, "Western Softwood Species & Grades."

WESTERN SOFTWOOD SPECIES & COMBINATIONS

STANDARD SPECIES COMBINATIONS

(based on similar structural performance properties)

Douglas Fir – Larch (DF-L)

- Douglas fir – *Pseudotsuga menziesii* (DF)
(Coastal, Interior West and Interior North DF grown in WA, OR, northern CA, ID, MT, and WY)
- Western larch – *Larix occidentalis* (LARCH)

Douglas Fir – South (DF^S)

- Douglas fir-South – *Pseudotsuga menziesii* (DF^S)
(Interior South DF grown in AZ, CO, NV, NM and UT)

Hem-Fir (H-F)

- Western hemlock – *Tsuga heterophylla* (HEM)
- Noble fir – *Abies procera*
- California Red fir – *Abies magnifica*
- Grand fir – *Abies grandis*
- Pacific Silver fir – *Abies amabilis*
- White fir – *Abies concolor*

Spruce Pine Fir – South (SPF^S)

- Sitka spruce – *Picea sitchensis* (SS)
- Engelmann spruce – *Picea engelmannii* (ES)
- Lodgepole pine – *Pinus contorta* (LP)

WESTERN WOODS

(specifically applied to the following but sometimes used to reference any combination of the above)

- Alpine (or Subalpine) fir – *Abies lasiocarpa*
- Ponderosa pine – *Pinus ponderosa* (PP)
- Sugar pine – *Pinus lambertiana* (SP)
- Idaho (or Western) White pine – *Pinus monticola* (IWP)
- Mountain hemlock – *Tsuga mertensiana* (M-HEM)

CALIFORNIA REDWOOD

(always sold as an individual species)

- California redwood – *Sequoia sempervirens* (REDWOOD)

WESTERN CEDARS

(generally sold as individual species)

- Incense cedar – *Libocedrus decurrens* (INC CDR)
- Western Red cedar – *Thuja plicata* (WRC)
- Port Orford cedar – *Chamaecyparis lawsoniana*
- Alaskan cedar – *Chamaecyparis nootkatensis*

WHITE WOODS COMBINATION

(designates any combination of the following true firs, spruces, hemlocks or pines)

True Firs

- Alpine (or Subalpine) fir – *Abies lasiocarpa*
- Noble fir – *Abies procera*
- California Red fir – *Abies magnifica*
- Grand fir – *Abies grandis*
- Pacific Silver fir – *Abies amabilis*
- White fir – *Abies concolor*

Spruces

- Sitka spruce – *Picea sitchensis*
- Engelmann spruce – *Picea engelmannii*

Hemlocks

- Western hemlock – *Tsuga heterophylla*
- Mountain hemlock – *Tsuga mertensiana*

Pines

- Lodgepole pine – *Pinus contorta*
- Ponderosa pine – *Pinus ponderosa*
- Sugar pine – *Pinus lambertiana*
- Idaho (or Western) White pine – *Pinus monticola*

OTHER COMBINATIONS AVAILABLE:

- Alpine fir / Hem-Fir (A-F / HEM FIR)—(for similar appearance)
- Ponderosa pine / Sugar pine (PP-SP)—(similar appearance)
- Ponderosa pine / Lodgepole pine (PP-LP)—(similar appearance)
- Engelmann spruce / Lodgepole pine / Alpine fir (ES-LP-AF)—(similar appearance)
- Engelmann spruce / Lodgepole pine (ES-LP)—(similar strength, ES controls)
- Engelmann spruce / Alpine fir (ES-AF)—(similar strength, AF controls)



A combination of Douglas fir and Hem-Fir was used to create the stair railing. Built-in, under-stair cabinets are Ponderosa and Sugar pines.

WESTERN SOFTWOOD PROPERTIES

WESTERN SOFTWOOD SPECIES	SPECIFIC GRAVITY	WEIGHT AT 12 % MOISTURE CONTENT		HARDNESS		MACHINING	RESISTANCE TO SPLITTING IN NAILING & SCREWING	NAIL & SCREW HOLDING ABILITY	GLUING
		kg/m ³	lb/ft ³	N	lbf				
Douglas fir (Coastal)	0.48	540	34	3160	710	•••	•••	••••	•••
Western larch	0.52	577	36	3690	830	•••	•••	••••	•••
Douglas fir (South)	0.46	N/A	32	2270	510	•••	•••	••••	•••
Western hemlock	0.45	465	29	2400	540	•••	•••	•••	•••
Noble fir	0.39	417	26	1820	410	••	••••	•••	••••
California Red fir	0.38	433	27	2220	500	••	••••	•••	••••
Grand fir	0.37	449	28	2180	490	••	••••	•••	••••
Pacific Silver fir	0.43	433	27	1910	430	••	••••	•••	••••
White fir	0.39	417	26	2130	480	••	••••	•••	••••
Sitka spruce	0.40	449	28	2270	510	•••	••••	••	••••
Engelmann spruce	0.35	368	23	1730	390	•••	••••	••	••••
Lodgepole pine	0.41	465	29	2130	480	•••	•••	••	•••
Alpine (or Subalpine) fir	0.32	529	33	1560	350	••	••••	••	••••
Ponderosa pine	0.40	449	28	205	460	••••	••••	••	••••
Sugar pine	0.36	401	25	1690	380	••••	••••	••	••••
Idaho (or Western) White pine	0.38	433	27	1870	420	••••	••••	••	••••
Mountain hemlock	0.45	529	33	3020	680	•••	•••	••••	•••
California Redwood (old growth)	0.40	448	28	2130	480	••••	••••	••	••••
California Redwood (second growth)	0.35	384	24	1870	420	••••	••••	••	••••
Alaskan cedar	0.44	497	31	2580	580	••••	••••	••	•••
Port Orford cedar	0.43	465	29	3200	720	••••	••••	••	••
Incense cedar	0.37	384	24	2090	470	••••	••••	••	••••
Western Red cedar	0.32	368	23	1560	350	••••	••••	••	••••

EXCELLENT: •••• VERY GOOD: ••• GOOD: •• FAIR: •

SOURCES: Oregon State University; Western Woods Products Association; Oregon Department of Forestry; California Redwood Association; U.S. Forest Products Laboratory—Harry A. Alden, *Softwoods of North America*, FPL-GTR-102, 1997.



SOFTWOOD EXPORT COUNCIL

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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