



Western Hem-Fir

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

Western Hem-Fir

The Hem-Fir Species Combination

Hem-Fir is a species combination of Western hemlock (*Tsuga heterophylla*) and five of the true firs: California Red fir (*Abies magnifica*), Grand fir (*Abies grandis*), Noble fir (*Abies procera*), Pacific Silver fir (*Abies amabilis*), and White fir (*Abies concolor*). Although distinctly different as trees, the timber from all of these softwood species is light in colour, finely grained and, most significantly for engineering, interchangeable in structural performance. Thus, these species are marketed together to simplify inventories and facilitate product specification for design.

Hem-Fir accounts for approximately 22% of timber production from the western U.S., second only to Douglas fir in terms of abundance, production volumes, strength, and versatility in end use.

Growing Region & Production

The Hem-Fir species grow intermingled in stands along the Pacific Coast, from the Kenai Peninsula in Alaska to northwestern California. They also grow inland, scattered along the U.S.-Canadian border as far eastward as northwestern Montana. The frequent fogs and rains in the Coast Range and on the western slopes of the Cascade Mountains in Oregon, Washington, British Columbia and Alaska produce the largest stands.

More than half of the total forestlands in the Western Region are protected from harvesting through legislative, administrative or judicial withdrawals. These protected forestlands are set aside in parks, scenic reserves, wilderness areas, habitat reserves and research areas to ensure a multiplicity of forest values in perpetuity. All commercial timberlands

are governed by stringent local and state laws related to harvesting and forestland management practices, reforestation requirements, protection for habitat, watersheds and soils, and biological diversity.

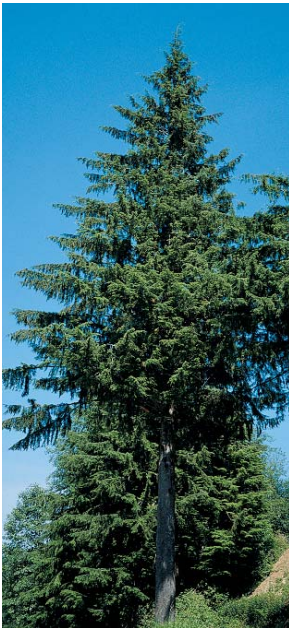
Characteristics, Grades & Best Uses

Hem-Fir is a perfect combination of strength and beauty and is considered by many as the most elegant and versatile of the softwood species combinations. The timber is bright in colour, varying from a creamy, nearly-white to a light, straw-brown colour. Often as light or lighter than are some of the Western pines, and with little variation between the heartwood and sapwood, Hem-Fir is very desirable to those seeking a strong wood that is light in colour. Sometimes Western hemlock may have a slight lavender cast, especially around the knots and in the transition area between the springwood and summerwood growth rings. In addition, attractive, delicate, dark gray or black streaks may be apparent in this species.

Hem-Fir products are available in all three of the basic categories for U.S. softwood timber grades:

- **structural framing products** - visually graded and/or mechanically sorted for strength and physical working properties (appearance is secondary, unless specified);
- **appearance products** - graded for their aesthetic qualities in non-structural applications, ranging from the beautifully refined to the most utilitarian;
- **industrial and remanufacturing products** - include a variety of structural and non-structural grades of which the largest volume for Hem-Fir is *Factory & Shop* timber.

Western hemlock (*Tsuga heterophylla*), also known as West Coast hemlock or Pacific hemlock, is distinguished by its downward sweeping branches and often-drooping top. Averages 46 - 70 m in height, from 600 - 1200 mm in diameter; develops best in the Pacific Northwest between sea level and 1850 metres.



True firs grow intermixed with hemlock, Douglas fir, cedars and spruce. Pacific Silver firs (*Abies amabilis*), also known as Cascade fir, grow best in the coastal regions of Washington and British Columbia and on the western slopes of the Cascade Mountains in Washington and Oregon. Grand firs (*Abies grandis*) reach their greatest size in the temperate rain forests of the Olympic Peninsula in Washington. Noble fir (*Abies procera*) prefers the Coast and Cascade Mountain ranges, while California Red fir (*Abies magnifica*) is most abundant at high elevations on the dry, inland side of the northern Sierra Nevadas in California and the Cascade Range in southern Oregon.



Although widely dispersed throughout the region, White firs (*Abies concolor*) achieve maximum size in the central portions of California's Sierra Nevada Mountains. The true firs of the Hem-Fir species combination typically range in size from 12 to 60 metres tall, 600 to 1650 mm in diameter.



All Hem-Fir species are light in colour. Subtle variations occur as the colour gradually shifts from the creamy white of the springwood to a light, reddish brown in the summerwood.



Grading Agencies

Softwood Export Council (SEC) member grading agencies include:



**Pacific Lumber
Inspection Bureau
(PLIB)**



**Redwood
Inspection
Service (RIS)**



**West Coast Lumber
Inspection Bureau
(WCLIB)**



**Western Wood
Products Association
(WWPA)**

All of these agencies are accredited by the American Lumber Standard Committee, Inc., under the U.S. Department of Commerce. Their grading rules are as follows:

PLIB	<i>Export R-List Grading & Dressing Rules</i>
RIS	<i>Standard Specifications for Grades of California Redwood Lumber</i>
WCLIB	<i>Standard Grading Rules for West Coast Lumber</i>
WWPA	<i>Western Lumber Grading Rules</i>

RIS, WCLIB and WWPA are accredited rules-writing agencies 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. PLIB's *Export R-List Rules* are used primarily for export timber.

All four agencies are certified to provide grading and inspection services for structural products under the **National Grading Rule for Dimension Lumber**. PLIB, WCLIB and WWPA are also accredited by the Canadian Lumber Standards Accreditation Board to provide grad-

ing inspection services under the *Standard Grading Rules for Canadian Lumber* published by the National Lumber Grades Authority of Canada (NLGA).

International Services are described on page 11.

Moisture Content

The term "dry" can be confusing in timber terminology, but it does have precise meaning in U.S. grading rules. S-DRY can mean kiln dried or air seasoned, while KD specifically means kiln dried.

For **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. Such timber is typically stamped S-DRY; however, some mills that are kiln drying choose to use the KD mark. Hem-Fir is generally seasoned to below 19% MC before surfacing. Any timber surfaced at a MC level of 15% or below may be stamped MC15 or, if kiln dried, KD15. Approximately 80% of Hem-Fir structural framing products are manufactured either S-DRY or KD15.

In **appearance-grade products**, "DRY" is defined in grading rules as a maximum of 15% MC in the high-end, clear and nearly clear timber, i.e. the *Clears, Industrial Clears, Selects & Finish* grades. Timber manufactured to this criteria is typically stamped MC15; however, it may be stamped S-DRY. In the knotty grades for appearance products, i.e. the *Board, Merchantable & Common* grades, DRY allows for a maximum of 19% MC. Such timber is typically stamped S-DRY; however, some mills that are kiln drying choose to use the KD mark.

For **remanufacturing or glued products**, Hem-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.

Moisture content definitions and designations may vary in other countries. For example, in Australia, any timber with moisture content above 15% is considered unseasoned.

Please refer to SEC website, www.softwood.org, for additional information on SEC grading agencies and their member companies.

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 (nominal 5" x 5") 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 a piece of wood, grade information for appearance products may be included in accompanying documentation rather than stamped directly onto the piece.

Products Graded for Structural Applications



Structural Products

Hem-Fir is produced in a wide variety of sizes and lengths to meet the structural specifications of the international marketplace. Much of the structural Hem-Fir timber produced and shipped to Japan is for posts (*Hashira*) and treated for sills (*Dodai*) in traditional post and beam wood-frame housing. U.S. mills manufacture to the standard 90 mm x 90 mm (3.54") or 105 mm x 105 mm (4.134") sizes, and to standard 3-metre (10 foot) and 4-metre (13 foot) lengths. Smaller Hem-Fir members (45 mm x 45 mm) are used for roof rafters (*Taruki*). Kiln-dried Hem-Fir boards are often used as laminating stock to be glued onto metric-sized square posts. Metric-sized Hem-Fir timber is also produced for market niches in Europe, Latin America and throughout the Pacific Rim.

Hem-Fir structural products perform well in structural framing applications including residential, light commercial and heavy construction. Its specific combination of strength and stiffness properties makes it an excellent choice for floor systems. S-DRY and KD Hem-Fir are subject to minimal shrinkage and checking and, therefore, perform well in hot dry climates, or in cold low-humidity climates. These seasoned products are ready for immediate assembly with other dry framing products, making them especially well suited for multi-storey wood-frame construction.

Hem-Fir is additionally preferred by many builders because of its: resistance to splitting in nailing and screwing; ability to hold nails and screws securely; ease of sawing without splintering; ability to hold a variety of glues and adhesives; and moderate lightness in weight.

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 40 through 90 mm wide)

Structural Light Framing - for highest-strength engineered systems, trusses, laminated products and multi-storey projects

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

Nominal sizes: 2" through 4" thick x 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 40 through 343 mm wide)

STUD grade: Intended for vertical-use only, 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 127 mm and wider)

Structural Joists 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) Lumber - mechanically assessed for strength and connection capabilities, used for trusses and other engineered applications.

Hem-Fir MSR products are available in several stress levels, up to 2400 Fb -2.0E.

Structural-Glued Lumber - end- or finger-jointed, edge- and face-glued; 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)

A roof and flooring product; not intended for outdoor, backyard decks. Available in 38, 64 and 89 mm tongue-and-groove widths with "V" or rounded edges, as well as other standard patterns to meet discriminating architectural requirements. WWPA and WCLIB each provide rules for two grades - *Selected Decking* and *Commercial Decking* (WWPA Rules); *SELECT DEX* and *COMMERCIAL DEX* (WCLIB Rules). Grades manufactured at 19% (S-DRY or KD) and 15% (MC15 or KD15) moisture content. The *Selected Decking/SELECT DEX* grades are ideal for exposed ceilings. *Commercial* grades are used primarily for industrial roof and flooring applications.

Large Sizes

Whilst these products may be specified S-DRY, they are often shipped unseasoned. They may be rough cut or surfaced on four sides (S4S). These "Heavy Timber" sections also are valuable for their excellent fire ratings which are in compliance with U.S. and other countries' Model Building Codes. Surfaced size is 1/2" (13 mm) off nominal dimension.

Beams & Stringers - nominal 5" and thicker (125 mm nominal) with a width more than 1/2" (50 mm nominal) greater than thickness

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



Structural products, widely available in S-DRY and KD moisture content levels, have good strength and stiffness properties. Hem-Fir meets structural load-bearing/load carrying requirements for residential, light commercial and heavy construction. It is straight grained, stiff, strong, easy to work, and relatively free from pitch; dry framing products are subject to minimal shrinkage and checking.

Oregon's Forest Practices Act celebrated its 25th anniversary in 1996. It has been a national model for forest protection since it was passed by the State Legislature in 1971. This Act influenced State Forest Practices Acts in Washington and California, the Best Management Practices in Idaho, and the evolving forestland management strategies which are now in effect throughout the Hem-Fir region. These progressive environmental regulations foster a variety of forest values, ensuring the continued availability of Western timber products.

Opposite: Hem-Fir bonds exceptionally well with adhesives. This asset, combined with its strength and beauty characteristics, makes this species combination an excellent choice for glue-laminated (glu-lam) beams. Mouldings, door casings and ceiling panelling are also Hem-Fir.



Appearance Grades

In products graded for appearance, wood-savvy architects and designers often choose Hem-Fir for trim, fascia, panelling, moulding and millwork, as well as for exposed wood ceilings. Remarkably versatile and useful, it complements many architectural styles and design themes.

Interior designers often like Hem-Fir for two primary reasons: its colour and its natural resistance to darkening with exposure to light. While all wood darkens over time with exposure to sunlight, Hem-Fir often remains true to its original, freshly milled pastel colour.

Finish carpenters, remanufacturers and woodworkers like Hem-Fir for other reasons. The straight grain and fine texture sands to a silky, reflective smoothness with virtually no tendency to split. Hem-Fir yields clean, straight edges and accurate contours with either machine or hand tools, and can be worked easily by either. The wood grips fasteners securely and accepts adhesives without a problem. It readily accepts finishes ranging from clear coatings, transparent lacquer, varnishes, oils, or wax to a full selection of stains and bright or subdued tints or paints.

When acclimatized prior to installation, MC15 or KD15 Hem-Fir products retain their shape and size without shrinking, swelling, cupping, warping, bowing, or twisting. Adding to its aesthetic qualities, Hem-Fir has a coefficient of heat transmission, or K value, of 0.89 BTU per 25 mm of net thickness at 12% moisture content, which puts it among the best species for insulating properties.

Clear and nearly clear timber products are available in Hem-Fir from the long-rotation commercial timberlands of the western region. The highest-grade categories include the *Clears* (*Export R-List Rules*), *Industrial Clears* and *Finish* (*WCLIB Rules*), and *Selects* (*WWPA Rules*). These may be specified in either vertical or flat grain. If grain pattern is not specified, these grades will be shipped as a combination of vertical and flat grain. These high-appearance Western timber products are recommended for interior wall and ceiling panelling, trim and cabinet work with either natural, stain, or enamel finishes that respect their fine appearance. Generally, these products are not grade stamped and they are sometimes wrapped at the mill for protection in shipping and handling.

Most of the knotty fibre in Hem-Fir is generally manufactured into structural products whenever possible. However, some knotty, appearance-grade products are available. Manufactured and shipped, about half-and-half in S-GRN and S-DRY, these products are intended more for general construction applications than fine interior installations. The general-purpose, knotty-appearance grades in Hem-Fir are usually manufactured in the *Board* (*WCLIB Rules*), *Commons* (*WWPA Rules*) and *Merchantable* (*Export R-List Rules*) grades. The higher knotty grades are used primarily in housing and light construction for soffits and fascia, and shelving where sound, tight knots are appealing. The lower, knotty grades are used for general construction purposes and serviceability in sub-floors, roofs, wall sheathing and let-in bracing, or in applications where economy is the basic requirement.

Panelling

The clear and nearly clear products available in Hem-Fir give a stunning, soft glow to ceiling and wall panelling in traditional and contemporary homes as well as a subtle, sophisticated ambience in family and living rooms, dens, bedrooms and kitchens. Based on U.S. testing procedures, Hem-Fir has a U.S. flame-spread rating of 73, which qualifies it for a Class 2 (or B) rating. Consequently, it is frequently specified for panelling in such commercial buildings as theatres, shopping centres and restaurants. Hem-Fir is a popular choice for panelling among northern Europeans who favour its uniform tone, luster and hardness.

Like all patterned products, solid wood panelling products reflect the grade of the starting appearance-grade material (as described earlier), adhering to similar requirements for permissible characteristics. In most cases, panelling products in Hem-Fir will be run-to-pattern from the exquisitely beautiful, clear and nearly clear *Clears*, *Industrial Clears*, *Finish* and *Select* grades. Whereas several grades of knotty panelling products are widely available in the Western pines, knotty grades in Hem-Fir are not as commonly remanufactured into panelling products.



These cabinets showcase the subtle variations in colour among the Hem-Fir species.



In this room, Hem-Fir is used for the ceiling, panelling, cabinets, mouldings and doors.



Hem-Fir's soft-toned colour remains light, even after exposure to UV rays. Panelling products in this species combination are both practical and elegant.



Opposite: Hem-Fir panelling products may be run-to-pattern from the exquisitely beautiful clear and nearly clear grades (*Clears*, *Industrial Clears*, *Selects*, and *Finish*) or from the higher knotty grades (*Select Merchantable* and *No.1* or *No.2 Merchantable*). Many types of finishes are appropriate, including enamels.



Factory & Shop Grades for Remanufacturing

Timber intended for trim and other non-structural applications may be from the appearance grades. However, if intended to be run-to-pattern or further manufactured into specialty wood products it may be more economical to select starting material from the *Factory & Shop* category of grades.

Factory & Shop describes a large group of timber grades for products that are intended to be re-cut for the recovery of small clear pieces. These grades are ideal for mouldings, doors, windows, case goods, cabinets and furniture. The USDA Forest Products Laboratory rates Hem-Fir in the top group of softwoods for gluing under varying conditions and with different types of adhesives.

For the most part, a pre-determined number of "cuttings" of specified quality and size must be available in a piece. The grading rules also place specific limitations on the number and spacing of allowable characteristics and imperfections in these MC15 and KD15 products.

Owing to its unique combination of attributes, Hem-Fir is a dominant species combination for manufactured woodwork. On the West Coast of the U.S., residential baseboard and doorjamb mouldings are more often manufactured from Hem-Fir than any other species. Hem-Fir is readily milled to sharp, accurate detail and its smooth surfaces and high dimensional stability assure continuing fine appearance over time.

Many moulding patterns and lengths are available. Hem-Fir mouldings and interior trim do not splinter, are resistant to scuffing and the effects of use. The colour tones remain light. Hem-Fir stair components are exceptionally hard wearing and readily take paint or stain finishes.

Factory & Shop grade products are usually sold only in large volumes, mill direct to remanufacturers. Grades include, but are not limited to the following:

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
(WCLIB Rules & PLIB Export R-List Rules)

Merchantable
(PLIB Export R-List Rules)

Because it can be machined easily with exact precision, a number of decorative items are also made from Hem-Fir: turned and worked cornices, crown mouldings, shutters, louvers, blinds, ornamental trim pieces, wine and spice racks, knife holders, serving trays, cutting boards and more.

Please refer to the SEC website (www.softwood.org) to order the publication, **Western Softwood Species & Grades for additional information on *Factory & Shop* grade products.*

Treated Products

Among the Western species, Hem-Fir is preferred for preservative pressure treating. Preservative pressure-treated* Hem-Fir products are strong, visually appealing, and economical for decks and other outdoor installations. Products may be treated for above- or in-ground installations and easily stained to enhance the natural color or resemble other woods.

Please refer to the SEC website (www.softwood.org) to order the publication, **Wood That Works, Wood That Lasts for information on preservative pressure-treated products.*



Hem-Fir is a preferred species for doors, louvers, door casings and baseboard mouldings. Such products are manufactured from the *Factory & Shop* grades.



Stronger than the naturally durable Western species, and easily pressure treated with preservatives, Hem-Fir is useful for both the load-bearing and non-structural elements of outdoor amenities. It is an economical choice for the structural framing members and may be stained to resemble other woods.



Opposite: Hem-Fir's straight grain and fine texture sand to a silky, reflective smoothness, retaining its light color over time; well suited for much of the interior architecture of the Pacific Rim. Hem-Fir is often favoured for exposed ceilings.

Hem-Fir is a species combination of Western hemlock and several of the true firs. Characteristics of individual species vary somewhat, but after manufacturing into timber, the wood fibres are virtually indistinguishable. Because these species share similar design values, they are interchangeable for structural applications.



Figure 1

Figure 1: *Clears, Industrial Clears, Finish and Selects* grade categories are showcased here. Grades shown are **C & BTR SELECT and SUPERIOR** (WWPA Rules), **C & BTR FINISH** and **C INDUSTRIAL CLEAR** (WCLIB Rules), and **NO. 3 CLEAR** (PLIB Export R-List Rules). Such high-end timber is generally marketed as boards or run-to-pattern for panelling.



Figure 2

Figure 2: The colours revealed by the flat grain range from a pleasing off-white to a very light, reddish brown. Variety of natural characteristics and manufacturing imperfections are permitted in the knotty grades. Shown here: **NO. 2 & BTR COMMON** (WWPA), **NO.1 MERCH** (PLIB), or **CONSTRUCTION** (WCLIB).



Figure 3

Figure 3: The majority of Hem-Fir is manufactured into S-DRY and KD structural timber, primarily *Dimension* grades and sizes. "Structural Light Framing" **NO.1 & BTR** products, as shown here, are used in applications where highest strength is necessary.

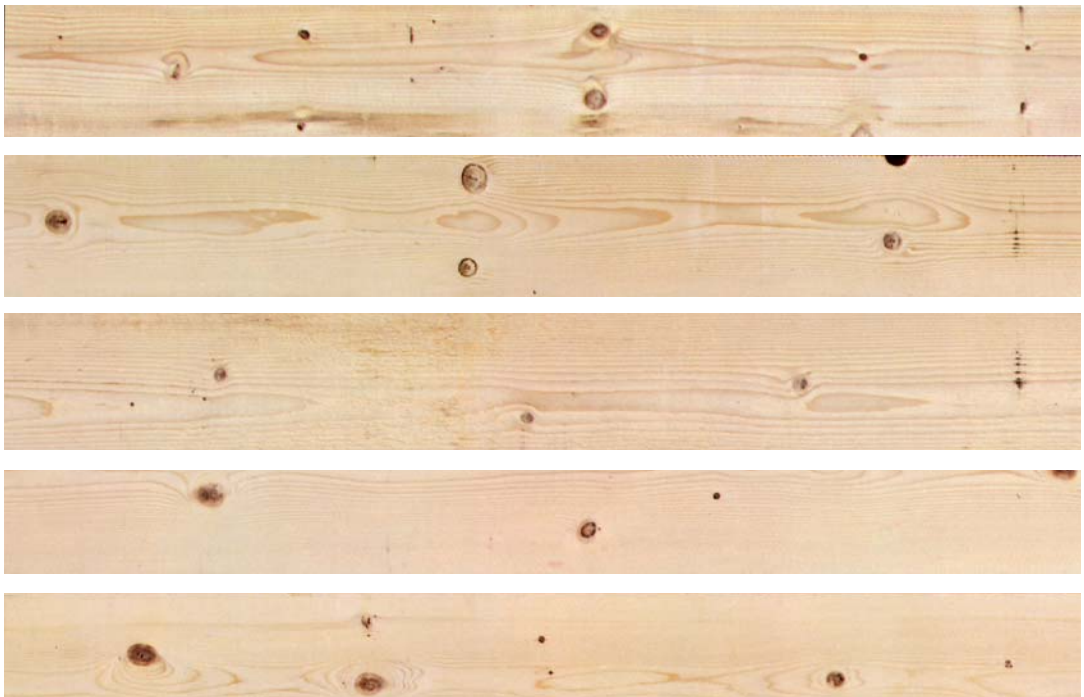


Figure 4

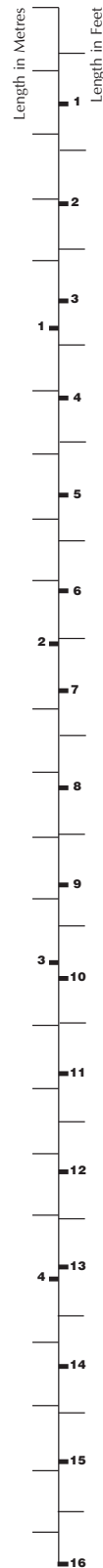
Figure 4: **SELECT STRUCTURAL Joists & Planks** (38 through 89 mm thick x 38 through 337 mm wide, actual). Knots are limited to sound, firm encased and pith knots, if tight and well spaced, with one unsound or loose knot permitted per 1.2 m. Knot size (relative to centerline) and knot type (unsound or loose) are restricted in this high-strength grade. *J&P* and other *Dimension* grades are often manufactured S-DRY or KD.



Figure 5



Figure 6



International Services

All SEC member grading and inspection 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. Member agencies are listed on page 2 and described further on the SEC website, <http://www.softwood.org> and in the SEC publication, *Western Softwood Species and Grades*.

Upon request, these agencies 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 **Re-inspection Services** anywhere in the world to resolve disputes. **Certificates of Kiln Drying** certifying a moisture content of less than 20% are also available. In addition, these agencies are approved to prepare documentation for individual companies in preparation for acquisition of the USDA **Phytosanitary Certificates** that are required by specific destination countries.

All four agencies are accredited by American Lumber Standard Committee, Inc. to supervise grading under the **National Grading Rule** and provide 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.

Factory & Shop timber, often considered the economical “clears” of the timber industry, is graded for the amount of clear wood that can be obtained by ripping and cross cutting a piece. “Cuttings” are used in doors, windows, mouldings, millwork, cabinets and furniture.

Figure 5: Hem-Fir is widely used for baseboard and door jamb mouldings. **MOULDING STOCK** is suitable for cutting into strips 25 mm and wider, 254 mm and longer. Lines indicate where this **5/4 & THICKER RWL MOULDING STOCK** grade would be cut to recover the percentage of moulding rips required for the grade. Wane, stain, skips in dressing or other characteristics (that would surface off in making mouldings of standard sizes) are permitted in computing the percentage of cuttings available.

Figure 6: Hem-Fir is ideally suited for panelled and louvered doors. This **5/4 & THICKER RWL NO.1 SHOP FLUSH DOOR STOCK** is intended for panelled doors. Lines indicate how the specified number and sizes of door cuttings (muntins and stiles) of specified quality would be recovered from the pieces.



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 also 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**

**email: info@softwood.org
website: www.softwood.org**

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