Hem-Fir

British Columbia's most abundant coastal species

The two species comprising the Hem-Fir commercial group are the most abundant and important trees growing in the coastal region of British Columbia, accounting for about 60% of mature coastal forests. These species, Western hemlock (Tsuga heterophylla) and Amabilis fir (Abies amabilis), are dominant in the forest, are excellent regenerators, and thrive in mixed stands of timber throughout coastal and interior wet belt regions.

Trees of both species are shade-tolerant and prune themselves as they grow to produce a tall, branch-free trunk. In dense stands they may have a clear stem for three-quarters of their height, a natural growth characteristic that produces large amounts of Clear and Factory lumber from the log.

Responsible timber harvesting

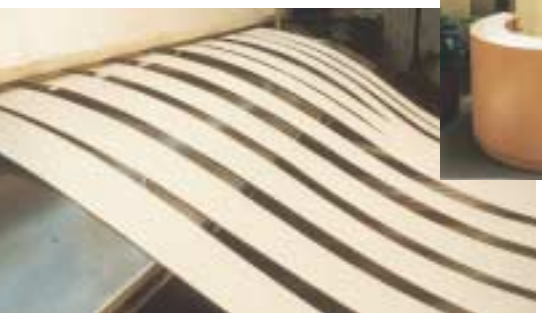
All forest products companies harvesting Hem-Fir in coastal British Columbia recognize that the forest is a precious resource that must be carefully managed and continually renewed. Intensive silvicultural and forest protection operations help renew the Hem-Fir resource. Every company has ISO certification and many are working towards certification under other forest management certification programs.

The wood's appearance and properties

Western hemlock and Amabilis fir are nearly identical in both visual appearance and physical properties and therefore are harvested, processed and marketed as a species group in mixed packages under the commercial designation Hem-Fir.

Both species have a fine texture and a straight uniform grain. The annual growth rings are distinct but there is little difference between the heartwood and sapwood, which makes the transition subtle and the wood quite uniform in color, ranging from creamy white to light gold.

Air drying and kiln drying are both effective ways to season



Hem-Fir. Once dry, the wood is stable. It hardens gradually as it dries and ages, giving it excellent wearing qualities throughout its service life.

Hem-Fir is valued for its good working properties and can be machined easily. Stiff and straight-grained it planes smoothly without splitting to take a fine finish with a light-reflecting sheen. Hem-Fir takes and holds nails and screws firmly and is receptive to various paint and stain finishes because of its smooth, resin-free surface. It may be treated successfully with both preservative- and fire-retardant treatments. Its excellent treatability makes it a preferred species for treated wood applications where high strength and density are important.

A comprehensive tabulation of Hem-Fir's physical properties and working characteristics and comparisons with other British Columbia coastal softwoods is shown on page 3.

Widely available in Clear, Factory, Construction and custom grades

Hem-Fir's versatility for widespread use in the construction and secondary remanufacturing industries derives from both its desirable physical properties and the wide range of grades in which it is available. All Hem-Fir lumber is manufactured, graded and sorted in compliance with the provisions of the relevant domestic or foreign grading rule. Hem-Fir is readily available in the following Canadian grade classifications:

Clear (Knot free)	No. 2 Clear and Better No. 3 Clear No. 4 Clear
Factory (Remanufactured for Clear recovery)	Factory Flitch Shop Flitch No. 1 Shop and Better No. 2 Shop Moulding Stock A & B
Construction	Light Framing Structural Light Framing Structural Joists and Planks E 120 Merchantable

A full description of the above grades and the range of available sizes can be found in the Coast Forest publication *Wood Species and Products from the Coast Region of British Columbia* and on website www.coastforest.org.

A multiplicity of uses

Hem-Fir has an extremely wide range of uses because it offers good strength, appearance and working qualities.

On construction projects it is often used interchangeably with Douglas fir and is a reliable performer in both light and heavy construction.

The wood's physical and visual properties make it well suited for remanufacturing applications, where it is used in a variety of joinery items. It is attractive as panelling, a major area of use, because of its uniform tone, lustre and hardness. It is also used as panelling in saunas because its finished surface is smooth to the touch and the wood is completely odorless and pitch free.

Hem-Fir's appearance and ease of finishing make it well suited for commercial installations. Its easy treatability contributes to the species' popularity for treated wood applications. And because it takes well to fire-retardant treatment, Hem-Fir is frequently specified as panelling in public buildings such as theatres and large shopping centres.

The species' ease of machining and finishing combined with its strength and stability in service make it suitable for windows, ladders and doors. It is used for both household step ladders as well as industrial extension ladders, and for mouldings, louvered cupboards, kitchen doors and decorative front doors. Remanufactured products of Hem-Fir typically have straight, clean edges and smooth accurate contours. These qualities, plus the fact that the wood takes heavy wear without detriment, make it appropriate for furniture, staircase components, and other items in constant use. The uniformity and grain and color make it a common choice for finger-joined and edge-glued decorative components.

Comparative Physical Properties of Coast Species

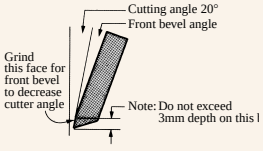
			High Range ◆	Low Range ❍	Hem-Fir: Amabilis Fir *Abies Amabilis*	Hem-Fir: Pacific Coast Hemlock *Tsuga heterophylla*	Douglas Fir *Pseudotsuga menziesii*	Sitka Spruce *Picea sitchensis*	Western Red Cedar *Thuja plicata*	Yellow Cedar *Chamaecyparis nootkatensis*
Physical Properties	Density (12%-kg/m³)				445	480	545	430	385	480
	Specific Gravity (12% m.c.)				0.39	0.43	0.49	0.39	0.34	0.43
	Bending Strength (MOR) (MPa)				68.9	81.1	88.6	69.5	53.8	79.7
	Stiffness (MOE) (x10³ MPa)				11.4	12.3	13.5	11.2	8.3	11.0
	Compression parallel to grain (MPa)				40.8	46.7	50.1	37.8	33.9	45.9
	Compression perpendicular to grain (MPa)				3.6	4.5	6.0	4.1	3.4	4.7
	Shear (MPa)				7.5	6.5	9.5	9.2	5.6	9.2
	Cleavage (N/mm)				36.8	37.5	38.9	38.0	25.4	45.4
	Dimensional stability	Tangential			9.2	7.8	7.4	7.8	4.5	6.0
	(Shrinkage % green to O.D.)	Radial			4.4	4.2	4.8	4.6	2.1	3.7
	Hardness (N)				1820	2740	2990	2200	1470	2510
Durability	Natural durability (approx. life in contact with ground)		>10 yrs	≤ 10 yrs	❍	❍	◆	❍	◆	◆
	Treatability (preservatives or fire)		permeable – moderately resistant	resistant – extremely resistant	◆	◆	❍	❍	❍	❍
Drying	Drying rate		rapid-moderate	fairly slow-very slow	◆	◆	◆	◆	❍	❍
	Tendency to check during drying		absent or easily controllable	controllable with some care	◆	◆	◆	◆	◆	◆
	Tendency to distortion during drying		absent-slight	moderate	◆	❍	◆	◆	◆	◆
Workability	Machining (planing/turning/moulding/ mortising/boring, etc.)①		good-excellent	fair	◆	◆	◆	◆	◆	◆
	Blunting		very little/ slight-little/slight	moderate	◆	◆	❍	◆	◆	◆
	Nailing/resistance to splitting		well-excellent	poor-satisfactory	◆	◆	◆	◆	◆	◆
	Screw/nail holding		good-excellent	satisfactory	◆	◆	◆	◆	❍	◆
	Gluing		w/out difficulty exceptional	difficult satisfactory	◆	◆	◆	◆	◆	◆
Finishing	Natural colour - whitsh[1], creamy wht[2], lt. buff[3], pale/lt. yellw[4], yellwsh[5], yellwsh-brn[6], pnksh[7], redsh wht[8], salmon[9], pnkshyellw[10], red[11], cherry rd[12], dp rd[13], mahogany[14], pnk-brn[15], orng[16], dk chocolate brn [17], lt. brn[18], pale rdsh brn[19], orng-wht[20]				1, 3, 6	1, 6	4, 8 11, 13	2, 4 7, 10, 16	9, 17 15	1, 5
	Paint finishing		good-excellent	poor-satisfactory	◆	◆	❍	❍?	◆	◆
	Stain finishing		good-excellent	poor-satisfactory	◆	◆	❍	◆	◆	◆
	Tendency to resin exudation		Absent or infrequent after drying	Acceptability depends on finish to be used and visual standards required	◆	◆	❍	◆	◆	◆
Misc. Properties	Tendency to corrode ferrous metals		Likely	Unlikely	❍	❍	❍	❍	◆	◆
	Becomes stained in contact with ferrous metals		Likely	Unlikely	❍	❍	❍	❍	◆	◆

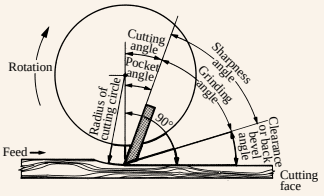
①Machines best at 15% to 18% moisture content. Recommended cutter-head angles:

Moisture Content (%)	Cutting Angle (°)
Less than 10	Less than 20
10-12	20-22
15-18	25
Green	27-35

Jointing land or heel should be kept below 0.15mm to 0.30mm. Recommended knife mark range is 12 to 18 marks per 25mm of feed. Additional information about drying and machining Hem-Fir is available from Coast Forest.

Standard Angles for a Planer Cutter-head





Commercial enquiries and requests for information

Quality assured Hem-Fir is widely available in domestic and export markets. The Coast Forest Products Association (Coast Forest) is committed to prompt customer referral. Upon receipt, bona fide commercial enquiries and requests for other information are immediately forwarded to Coast Forest members who will then respond with relevant product literature and/or information regarding pricing, terms, documentation and shipping. Enquiries may be sent to Coast Forest by mail, fax, telephone, e-mail, or by referring to the website.

Product literature

The Coast Forest Products Association (Coast Forest) publishes a library of descriptive, application, and technical literature about Hem-Fir products, single copies of which are available free of charge from the office listed below.

Coast Forest
PRODUCTS ASSOCIATION

Coast Forest Products Association
1200 – 1090 West Pender Street
Vancouver, British Columbia
Canada V6E 2N7
Tel: (604) 891-1237
Fax: (604) 682-8641
Website: www.coastforest.org

Published with the participation of:

Canada Wood
Produits de bois canadien

Forestry Innovation Investment Ltd.

Printed in Canada
November 2003