

LOGGEPOLE PINE

Botanical Name:

Pinus contorta var. *latifolia* Engelm.

Lodgepole pine is the single most plentiful tree species in British Columbia. It grows throughout most of the Interior of the province from mid-elevation to subalpine sites. On average 24 metres in height and 20 cm in diameter, lodgepole pine is typically found in dense, even-aged stands formed as a result of forest fires. Lodgepole pine makes up 23.3% of the provincial growing stock.

Common Uses

Lodgepole pine, interior spruce, and subalpine fir are marketed together as a single species group (SPF). Kiln dried SPF lumber is used as a structural framing material in all types of residential, commercial, industrial and agricultural building applications. Kiln dried SPF lumber is also used extensively in the manufacture of prefabricated housing, trusses and other structural components.

Lodgepole pine is a good species for the manufacture of composite board due to its suitable wood density, its tendency to plasticize when compressed at high temperatures, its gluing ease, and its uniform ring density.

Lodgepole pine is firmly established as a first class joinery wood for furniture, windows, doors and shutters, panelling, edge-glued shelving, siding, mouldings, and other architectural millwork and joinery items. Other uses for lodgepole pine include telephone poles, fence posts and corral rails (because of its small diameter and lack of taper), mine timbers, railway ties and fuel.

Lodgepole pine is used with spruce and fir for producing 100% bleached Kraft pulp and chemi-thermo-mechanical pulp (CTMP).



LOGGEPOLE PINE

Lodgepole pine is dried according to end-use and customer specifications. Kiln drying inhibits natural staining of the wood, improves its strength and stiffness, enhances its appearance and increases its resistance to decay and attack by insects.

PHYSICAL PROPERTIES		
DENSITY (kg/m ³)	Green	410
	Air Dry	430
SPECIFIC GRAVITY (12% M.C.)	Standard	0.41
HARDNESS (N)	Side	2190
	End	2990
MOE (Mpa)	Green	8760
	Air Dry	10900
MOR (Mpa)	Green	39.0
	Air Dry	76.0
COMPRESSION PARALLEL (Mpa)	Air Dry	43.2
COMPRESSION PERPENDICULAR (Mpa)	Air Dry	3.65
SHEAR (Mpa)	Air Dry	8.54
CLEAVAGE (N/mm Width)	Air Dry	52.0
SHRINKAGE	Radial (OD)	4.7%
OD = oven dry	Tangential (OD)	6.8%
air = air dry 12%	Volumetric (OD)	11.4%
	Volumetric (air)	6.6%
	Tang / Rad ratio	1.4

VISUAL PROPERTIES	
COLOUR	
Heartwood	Light yellow to reddish/brownish-yellow.
Sapwood	Nearly white. Sometimes blue.
Heartwood / Sapwood Contrast	The sapwood is wide with a subtle, yet definite contrast in colour to the heartwood.
Latewood / Earlywood Contrast	The annual growth rings are distinct, defined by narrow bands of latewood. Transition from earlywood to latewood is abrupt in narrow rings and more or less abrupt in fast-growing, wide-ringed wood.
GRAIN	
The wood is generally straight-grained with a fine, fairly even texture.	
FIGURE	
Plainsawn lumber or rotary-cut veneer: Distinct, with visible latewood bands; faint pocked appearance.	
Quartersawn lumber or quarter-sliced veneer: None	
Other: When split along the tangential plane, it exhibits a prominently dimpled surface. Resin canals are normally present, inconspicuous without magnification on the transverse section, but evident as brownish streaks along the grain on faces of boards.	
KNOTS	
The knots are intergrown and generally small and tight, but relatively abundant.	
OTHER	
Wood of lodgepole pine has a resinous odour especially when green. It is moderately soft and light. Wood is resinous, pitch pockets are infrequent.	



WORKING PROPERTIES

Lodgepole pine has a high strength-to-weight ratio and is well known for its working properties. The wood dries rapidly with small dimensional movement and little tendency to check. It is relatively easy to work, with good machining qualities. It turns, planes and shapes well and can be sanded to a smooth finish. The wood glues easily, has moderate nail and screw holding ability, and takes a good finish.

PROCESS	PERFORMANCE	COMMENTS
MACHINING		
Planing	Excellent planing quality	Recommended planer settings: 20° hook angle and 8, 12, or 16 kmpi (knife marks per inch).
Turning	Medium to low surface quality	Common defects: torn out grain.
Sawing	Easy to work with tools	Resin exudation can sometimes negatively affect sawing properties.
Boring	Medium	Medium boring quality with both brad and single twist bits.
Mortising	Good	Good mortising quality when using a hollow chisel mortise. Common mortising defects: splintering on the out-going side of the mortise and crushed grain inside the mortise.
Shaping	Good shaping quality	Common shaping defects in the order of frequency: splintering at the corner, rough end-grain, fuzzy grain, raised grain, and torn grain. Recommended: the use of a counter piece for end-grain shaping.
Veneering	Good	Slight tendency to split during drying.
Sanding	Good	
FASTENING		
Screwing	Moderate to poor holding	Average screw retention: 435 lb.
Nailing	Moderate to poor holding	Average nail retention: 132/116/85 lb (tangential/radial/end-grain).
Gluing	Easy	
FINISHING		
Staining	Easy	Surface is smooth with only two topcoats. Dark stain produces wild grain, but a wash coat can even out the colour. Recommended: light and natural stains.
Painting	Average to good paint holding ability	
Lacquering	Good	Performed well in the tape test (i.e. small flakes of the coating were detached along edges and at intersections of cuts) and in the pull-off test (i.e. average strength of 30 kg/cm ²).
Waxing	Good	Best results are obtained when using light-coloured waxes (e.g. Mellow Pine).
DRYING		
Ease of drying	Easy to moderately easy	
HEARTWOOD DURABILITY		
Decay Resistance	Slightly durable	
Treatability	Impermeable to extremely impermeable	Can be improved by incising.



Commercial Availability

Lodgepole pine is produced predominantly as SPF lumber in structural grades according to National Lumber Grades Authority (NLGA) rules for dimension lumber. Select Structural, #2 and better, and stud grades are the most common grades produced. Specialty in-house grades, lamstock and export grades are also available. Lodgepole pine is the largest component of the SPF species mix that is available preservative-treated.

Appearance grades are also produced according to NLGA rules. Clears, shop lumber and moulding stock are most common, though there are many potential appearance grades that can be produced.

** Marketed as structural lumber in the SPF (spruce-pine-fir) species mix. SPF includes lodgepole pine, white spruce, Engelmann spruce, red spruce, black spruce, jack pine, balsam fir, and subalpine fir.*



Data for this factsheet has been compiled by Forintek Canada Corp. from internal and external scientific sources. Forintek is a not-for-profit technical research institute serving the Canadian forest sector.