

Lodgepole Pine

Botanical Name: Pinus contorta var. latifolia

Common Names: Rocky Mountain Lodgepole Pine, Black Pine

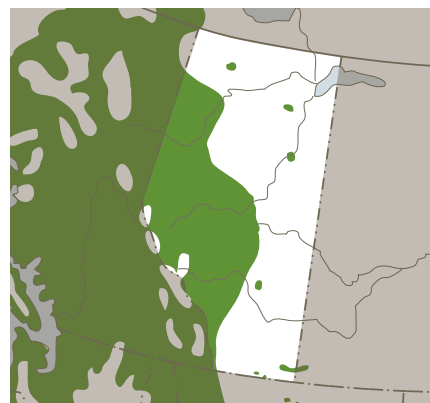
KEY PRODUCTS

Dimension Lumber (SPF)

Pulp

LVL (Laminated Vomer Lumber)

Known as Alberta's provincial tree, lodgepole pine is recognized by most Albertan residents by its tall straight narrow crown. On average 24 metres in height, lodgepole pine is typically found in dense, even-aged stands formed as a result of forest fires. The species primarily grows in pure stands and less often in mixed stands with other species. However, when in mixed stands, lodgepole pine is commonly found with white and black spruce, trembling aspen, balsam poplar and Douglas-fir.



Lodgepole pine coverage in Alberta

Lodgepole pine's geographical distribution stretches to the east of the Rocky Mountains and foothill regions of Alberta. In Alberta, lodgepole pine extends from the southern U.S./Canada border north to 56° latitude. The species' southern range is limited by precipitation within the prairie grassland regions, while its northern range is restricted by the aspen grove condition of the plains. Northeast of its range, lodgepole pine merges with jack pine where the two species hybridize. While smaller pockets of lodgepole pine stands can be found further north, these stands offer limited economic value.

The national inventory for lodgepole pine also includes jack pine and shore pine. Combined, the pine species account for just over 4 billion m³, or 20% of Canada's total coniferous growing stock. In Alberta, pine accounts for nearly 616 million m³ or 41% of the provincial coniferous growing stock (26% of the province's combined coniferous and deciduous growing stock). Exceeded by only the spruces, lodgepole pine contributes the highest volume to the timber harvest in Alberta.

Pines in Canada can be classified into two groups; soft pines and hard pines. Both lodgepole pine and jack pine are hard pines. They have prominent latewood, therefore the wood is moderately hard and heavy.

KEY STATISTICS

Specific Gravity	0.41
Density (Dry, kg/m ³)	412
MOE (Dry, MPa)	10900
MOR (Dry, MPa)	76.0
Hardness (Side, N)	2990
Colour - Sapwood	Nearly white
Colour - Heartwood	Loght yellow to reddish / brownish yellow
Machining	Excellent to medium
Fastening	Moderate to poor
Finishing	Average to good

PHYSICAL PROPERTIES

		LOGEPOLE PINE	PONDEROSA PINE	DOUGLAS-FIR
Density (kg/m ³)	Green	410	390	450
	Air Dry	430	420	487
Specific Gravity		0.41	0.39	0.45
Hardness (N)	Side	2190	2640	2990
	End	2990	3360	4020
MOE (MPa)	Green	8760	7790	11100
	Air Dry	10900	9510	13500
MOR (MPa)	Green	39.0	39.3	52.0
	Air Dry	76.0	73.3	88.6
Shrinkage OD = oven dry air = air dry 12%	Radial (OD)	4.7%	4.6%	4.8%
	Tangential (OD)	6.8%	5.9%	7.4%
	Volumetric (OD)	11.4%	10.5%	11.9%
	Volumetric (air)	6.6%	6.1%	7.0%
	Tang / Rad ratio	1.4	1.3	1.5

VISUAL PROPERTIES

COLOUR

Heartwood	Light yellow to reddish/brownish yellow
Sapwood	Nearly white
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

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
Shaping	Good shaping quality	
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	Surface is smooth with only two topcoats
FINISHING		
Staining	Easy	Surface is smooth with only two topcoats. Dark stain produces wild grain, but a wash coat could even out the colour. Recommended: light and natural stains
Painting	Average to good paint holding ability	
Lacquering	Good	Performed well in the tape test
Waxing	Good	Best results are obtained when using light coloured waxes
DURABILITY		
Decay Resistance	Not durable	
Treatability	Difficult	Heartwood difficult, but can be improved by incising



Common Uses

Lodgepole pine, spruce, and fir are marketed together as a single species group. Their most important use is for lumber, collectively known as SPF lumber. Lodgepole pine is used with spruce and fir for producing 100% bleached Kraft pulp and chemi-thermo-mechanical pulp (CTMP). Lodgepole pine is a good species for the manufacture of composite board due to its suitable wood density, a tendency to plasticize when compressed at high temperatures yielding panels with a smooth surface, 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, siding, mouldings, and other architectural millwork and joinery items. Other uses of 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.

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 can also be 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.

Facts on Wood

“Facts on Wood” is a series of fact sheets aimed at improving awareness and information exchange on Albertan and Canadian wood species. Facts on Wood is complemented by a “Wood Market” series characterizing the technical and market demands of wood consuming value-added sectors.

* 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.

Compiled by:



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