

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 OD = oven dry air = air dry 12% | Radial (OD) | 4.7% |
| | Tangential (OD) | 6.8% |
| | 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.