Spruce-Pine-Fir [SPF]

Engelmann Spruce {Picea glauca}
Lodgepole Pine {Pinus contorta}
Subalpine Fir {Abies lasiocarpa Fir}

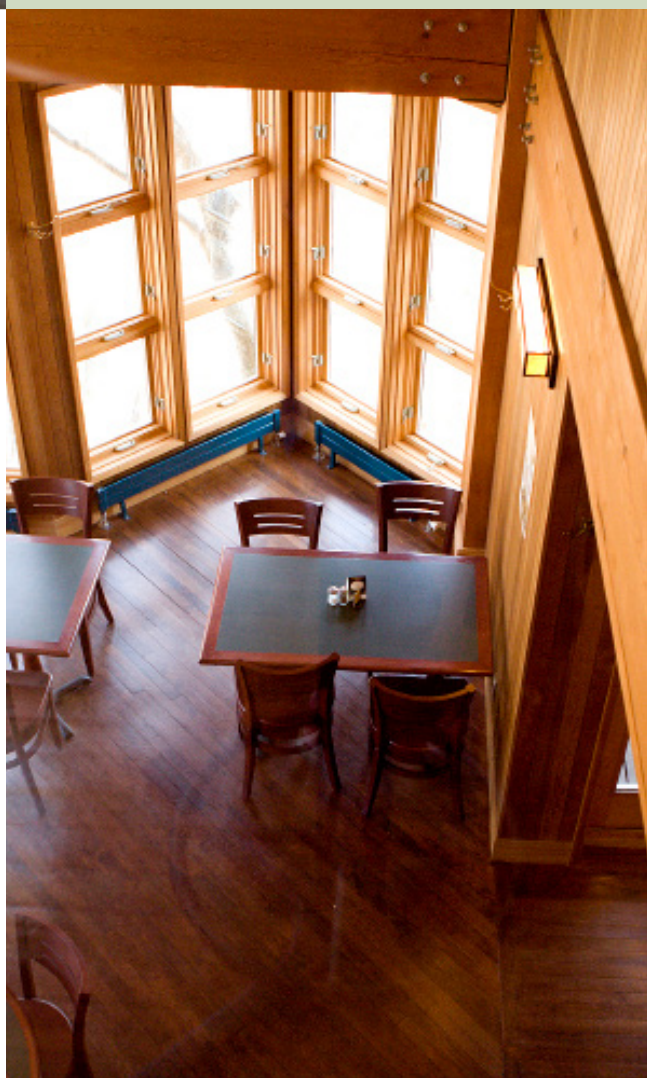
The three softwoods of the Spruce-Pine-Fir (SPF) species group share common characteristics and the same native habitat in the montane, boreal, and subalpine forests of British Columbia and Alberta. These hardy, medium-sized trees average 30 metres in height and 80 centimetres in diameter when mature, and yield high-grade timber with small sound, tight, knots. These slow-growing trees are the most abundant softwoods in Canada—and the most commercially important.

COMMON USES

SPF's strength, light weight, ease of handling and good working properties have made it a popular wood for framing applications in all types of construction.

Strong, stiff, and stable, SPF is well known and highly regarded in North America, Europe, and Japan. Readily available in a wide range of sizes and lengths, including finger-jointed lengths up to 12 metres, SPF is a versatile lumber for residential, commercial, industrial, and agricultural buildings. It's a particular favourite with house builders, who appreciate its high structural performance and fine appearance.

The prefabrication industry also relies on SPF's strength, dimensional stability, and superior gluing properties. Manufacturers of modular houses, trusses, and other structural components regularly specify kiln-dried SPF as a wood they can rely on for consistent quality and ready availability in precise dimensions.



PHYSICAL PROPERTIES (SPRUCE, PINE & FIR)

		SPRUCE	PINE	FIR
STIFFNESS/ MOE (MPa)	Air Dry	10000	10900	10200
STRENGTH/MOR (MPa)	Air Dry	63	76	56
DENSITY (kg/m^3)	Air Dry	380	430	351
COMPRESSION PARALLEL (MPa)	Air Dry	36.9	43.2	35.4
SHEAR (MPa)	Air Dry	6.79	8.54	6.74
SHRINKAGE (air dried - 12%)	Tangential / Radial ratio	2.2	1.4	2.8

APPEARANCE & PROPERTIES

In contrast with other commercial softwoods, SPF is a distinctly white wood, with very little colour variation between springwood and summerwood. The wood has a bright clean appearance, ranging in colour from white to pale yellow, with a fine straight grain and smooth texture. It has a high strength-to-weight ratio, and is known for its outstanding working properties. It takes and holds nails exceptionally well, and is easily worked with hand power tools. It has good gluing, painting and staining properties. SPF lumber is seasoned uniformly in dry kilns to a moisture content of 19% or less. Kiln drying inhibits natural staining of the wood, improves its strength and stiffness, enhances its appearance, and increases its resistance to decay and insect attack. This process also improves the wood's dimensional stability, finishing qualities, and thermal resistance—reducing shrinkage, warping, and checking in storage.

WORKING PROPERTIES WHITE SPRUCE/ENGELMANN SPRUCE			
	PROCESS	PERFORMANCE	COMMENTS
MACHINING	Planing	Excellent	Good planing quality. Recommended planer settings: 12 degree or 20 degree hook angle and 20 KMPI (knife marks per inch).
	Shaping	Good	Good shaping quality.
	Sanding	Very Good	
FASTENING	Screwing	Good	Very good resistance to splitting.
	Nail Retention	Good	Very good resistance to splitting.
	Gluing	Average	
FINISHING	Staining	Good	Good staining properties. A smooth finish is achieved. A natural finish (clear coat) or a light stain looks the best.
	Painting	Average	
DRYING	Ease of Drying	Good	Spruce dries faster than pine and is not adversely affected by severe high-temperature schedules.
DURABILITY	Natural Decay Resistance	Poor	Not appropriate for prolonged outdoor exposure.
	Treatability	Good	Can be improved by incising.

WORKING PROPERTIES LODGEPOLE PINE			
	PROCESS	PERFORMANCE	COMMENTS
MACHINING	Planing	Excellent	Recommended planer settings: 20 degree hook angle and 8, 12 or 16 KMPI.
	Shaping	Good	
	Sanding	Good	
FASTENING	Screwing	Average	
	Nail Retention	Average	
	Gluing	Easy	
FINISHING	Staining	Easy	Surface is smooth with only two topcoats. Recommended: light and natural stains.
	Painting	Good	
DRYING	Ease of Drying	Good	Few defects expected except in the most extreme cases.
DURABILITY	Natural Decay Resistance	Poor	Not appropriate for prolonged outdoor exposure.
	Treatability	Good	Can be improved by incising.

WORKING PROPERTIES SUBALPINE FIR			
	PROCESS	PERFORMANCE	COMMENTS
MACHINING	Planing	Good	Recommended planer settings: 20 degree hook angle and 20 KMPI.
		Medium to low	
	Sawing	Good	
	Shaping	Good	
	Sanding	Good	
FASTENING	Screwing	Average	
	Nail Retention	Average	
	Gluing	Easy	Bonds very easily with adhesives of a wide range of properties and under a wide range of bonding conditions.
FINISHING	Staining	Easy	Smooth finish with little texture. Dark stain can highlight prominent wild grain. Recommended: light-coloured stains with low penetration power will produce a more even colour.
	Painting	Average to Good	
DRYING	Ease of Drying	Good	Few defects expected except in the most extreme cases.
DURABILITY	Natural Decay Resistance	Fair	Not appropriate for prolonged outdoor exposure.
	Treatability	Poor	Can be improved by incising.

For more information on the availability of Spruce-Pine-Fir (SPF), please contact
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