

Family: PINACEAE (gymnosperm)

Scientific name(s): Picea abies

Picea excelsa (synonymous)

Commercial restriction: no commercial restriction

Note: COMMON SPRUCE comes from cold areas of Europe. Outside of its natural growing area (temperate areas), its growth is quicker when planted. In France, COMMON SPRUCE is often falsely called "SAPIN" (Abies alba) and "Sapin blanc du Nord" is used to speak of COMMON SPRUCE coming from Scandinavia or from Eastern Europe.

WOOD DESCRIPTION

Color: creamy white
Sapwood: not demarcated
Texture: fine
Grain: straight
Interlocked grain: absent

Note: Creamy white wood with sometimes a thin redish coloured heartwood. Narrow and regular rings on woods coming from cold areas but large and irregular rings on planted trees from other areas. Resin pockets are rather common.

LOG DESCRIPTION

Diameter: from 40 to 80 cm
Thickness of sapwood:
Floats: pointless
Log durability: moderate (treatment recommended)

PHYSICAL PROPERTIES

Physical and mechanical properties are based on mature heartwood specimens. These properties can vary greatly depending on origin and growth conditions.

	<u>Mean</u>	<u>Std dev.</u>
Specific gravity *:	0,45	0,06
Monnin hardness *:	2,2	0,5
Coeff. of volumetric shrinkage:	0,39 %	0,04 %
Total tangential shrinkage (TS):	8,2 %	0,8 %
Total radial shrinkage (RS):	3,9 %	1,4 %
TS/RS ratio:	2,1	
Fiber saturation point:	33 %	

Stability: moderately stable

Note: Mechanic properties are directly linked to growing rings' width and to the proportion of summer wood inside the rings. Visual classifying of structure woods (EC marking) takes into account the growing speed of the woods.

European standard EN 14081-1 "Timber structures - Strength graded structural timber with rectangular cross-section" gives the scope of the requirements found in NF B 52001 and applying to timber structures for visual grading of French timbers.

MECHANICAL AND ACOUSTIC PROPERTIES

	<u>Mean</u>	<u>Std dev.</u>
Crushing strength *:	46 MPa	16 MPa
Static bending strength *:	78 MPa	18 MPa
Modulus of elasticity *:	11900 MPa	2000 MPa

(*: at 12% moisture content, with 1 MPa = 1 N/mm²)

Musical quality factor: 90,9 measured at 2985 Hz

NATURAL DURABILITY AND TREATABILITY

Fungi and termite resistance refers to end-uses under temperate climate. Except for special comments on sapwood, natural durability is based on mature heartwood. Sapwood must always be considered as non-durable against wood degrading agents.

E.N. = Euro Norm

Funghi (according to E.N. standards): class 4 - poorly durable

Dry wood borers: susceptible

Termites (according to E.N. standards): class S - susceptible

Treatability (according to E.N. standards): class 3-4 - poorly or not permeable

Use class ensured by natural durability: class 1 - inside (no dampness)

Species covering the use class 5: No

Note: This species is listed in the European standard NF EN 350-2. COMMON SPRUCE wood is poorly durable and it is used with sapwood. Hence a preservative treatment is imperative.

REQUIREMENT OF A PRESERVATIVE TREATMENT

Against dry wood borer attacks: requires appropriate preservative treatment

In case of risk of temporary humidification: requires appropriate preservative treatment

In case of risk of permanent humidification: use not recommended

DRYING

Drying rate: rapid

Risk of distortion: slight risk

Risk of casehardening: no

Risk of checking: high risk

Risk of collapse: no

Note: For naturally dried woods there can be some resin exudation if the structure is exposed to heat. COMMON SPRUCE artificial drying over 70°C allows to avoid this problem.

Possible drying schedule: 3

M.C. (%)	Temperature (°C)		Air humidity (%)
	dry-bulb	wet-bulb	
Green	60	56	81
30	68	58	61
20	74	60	51
15	80	61	41

This schedule is given for information only and is applicable to thickness lower or equal to 38 mm.

It must be used in compliance with the code of practice.

For thickness from 38 to 75 mm, the air relative humidity should be increased by 5 % at each step.

For thickness over 75 mm, a 10 % increase should be considered.

SAWING AND MACHINING

Blunting effect: normal

Sawteeth recommended: ordinary or alloy steel

Cutting tools: tungsten carbide

Peeling: good

Slicing: good

Note: Presence of hard knots adhering more or less.

ASSEMBLING

Nailing / screwing: poor

Gluing: correct

Note: COMMON SPRUCE wood tends to split. There is a strong risk of split when nailing.

COMMERCIAL GRADING

Appearance grading for sawn timbers: According to European standard EN 1611-1 (October 1999)

Possible grading (on 2 sides): G2-0, G2-1, G2-2, G2-3, G2-4

Possible grading (on 4 sides): G4-0, G4-1, G4-2, G4-3, G4-4"

Visual grading for structural applications: Traded timber with CE marking. Possible strength classes: C18, C24 or C30 related to the European standard EN 14081 (May 2006).

FIRE SAFETY

Conventional French grading: Thickness > 18 mm : M.3 (moderately inflammable)

Thickness < 18 mm : M.4 (easily inflammable)

Euroclasses grading: D s2 d0

Default grading for solid wood, according to requirements of European standard EN 14081-1 annex C (April 2009). It concerns structural graded timber in vertical uses with mean density upper 0.35 and thickness upper 22 mm.

END-USES

Heavy carpentry

Wood frame house

Glued laminated

Interior joinery

Fiber or particle boards

Pulp

Stringed instruments (sounding board)

Shingles

Light carpentry

Poles

Interior panelling

Moulding

Veneer for back or face of plywood

Boxes and crates

Ship building (mast)

MAIN LOCAL NAMES

<u>Country</u>	<u>Local name</u>	<u>Country</u>	<u>Local name</u>
Germany (temperate timber)	FICHTE	France (temperate timber)	EPICEA
Italia (temperate timber)	ABETE ROSSO	United Kingdom (temperate timber)	COMMON SPRUCE

