

## Fir

---

**Family.** Pinaceae

**Botanical Name(s).**

*Abies alba*

*Abies pectinata* (synonymous)

**Continent.** Europe

**CITES.** This species is not listed in the CITES Appendices (Washington Convention 2023).

**Notes.** European species, FIR appreciates cool climates where atmospheric humidity is high. In France, COMMON SPRUCE(*Picea excelsa*) is often falsely called "SAPIN"(*Abies alba*).

### Description of logs

**Diameter.** From 50 to 80 cm

**Thickness of sapwood.** -

**Floats.** Pointless

**Log durability.** Moderate (treatment recommended)

### Description of wood

**Colour reference.** Creamy white

**Sapwood.** Not demarcated

**Texture.** Medium

**Grain.** Straight

**Interlocked grain.** Absent

**Notes.** FIR wood is creamy white, a little bit dull, sometimes slightly reddish-brown. Rings are well visible. Texture is fine to medium according to growing speed.

### Physics and mechanics

*The properties indicated are for mature wood. These properties may vary significantly depending on the origin and growing conditions of the wood.*

Property	Average value
Specific gravity <sup>1</sup>	0.49
Monnin hardness <sup>1</sup>	2.5
Coefficient of volumetric shrinkage	0.44 % per %
Total tangential shrinkage (St)	8.7 %
Total radial shrinkage (Sr)	4.0 %
Ratio St/Sr	2.2
Fibre saturation point	29 %
Thermal conductivity (λ)	0.17 W/(m.K)
Lower heating value	19,080 kJ/kg
Crushing strength <sup>1</sup>	41 MPa
Static bending strength <sup>1</sup>	80 MPa



Flat sawn



Quarter sawn

Modulus of elasticity <sup>1</sup>	14,300 MPa
------------------------------------	------------

<sup>1</sup> At 12 % moisture content, with 1 MPa = 1 N/mm

### Natural durability and preservation

Resistance to fungi. Class 4 - poorly durable

Resistance to dry wood borers. Class S - susceptible (risk in all the wood)

Resistance to termites. Class S - susceptible

Treatability. Class 2-3 - poorly to moderately permeable

Use class ensured by natural durability.

Class 1 - inside (no dampness)

Notes. This species is listed in the European standard NF EN 350 (2016). Prone to blue stain. FIR wood is used with sapwood. Hence a preservative treatment is imperative.

### Requirement of a preservative treatment

Against dry wood borer. Requires appropriate preservative treatment

In case of temporary humidification. Requires appropriate preservative treatment

In case of permanent humidification. Use not recommended

### Drying

Drying rate. Normal to slow

Risk of distorsion. High risk

Risk of casehardening. No known specific risk

Risk of checking. High risk

Risk of collapse. No known specific risk

Notes. Must be dried slowly and carefully to avoid pockets moisture.

Suggested drying program.

Phases	Duration (H)	MC (%) probes	T (°C)	Rh (%)	UGL (%)
<b>Prewarm 1</b>		> 50	55	84	15.5
<b>Prewarm 2</b>	3	> 50	57	83	15.0
<b>Drying</b>		> 50	60	76	12.5
		50 - 40	60	73.0	11.6
		40 - 35	60	69.0	10.7
		35 - 30	60	62.0	9.5
		30 - 27	63	55.0	8.2
		27 - 24	64	50.0	7.5
		24 - 21	65	46.0	6.9
		21 - 18	65	39.0	6.0
		18 - 15	68	32.0	5.0
		15 - 12	70	29.0	4.5
		12 - 9	70	25.0	4.0
		9 - 6	70	24.0	3.9
<b>Conditioning</b>	6		63	(3)	(2)
<b>Cooling</b>	(1)		Stop	(3)	(2)

(1) ) Cooling: until the temperature inside the kiln no longer exceeds external temperature by more than 30 °C.

(2) UGL = final H% x 0,8 to 0,9.

(3) Subtract RH from the UGL determined in (2) and temperature, using the Hailwood-Horrobin equation.

## Sawing and machining

Blunting effect. Normal

Sawteeth recommended. Ordinary or alloy steel

Cutting tools. Ordinary

Peeling. Good

Slicing. Not recommended or without interest

Notes. The quality of surface depends on the grain regularity and the possible presence of knots or areas of compression wood.

## Assembling

Nailing and screwing. Poor

Notes. Tend to split when nailing.

## Commercial grading

Appearance grading for sawn timbers.

According to European standards EN 1611-1 (October 1999) and EN 1611-1 A1 (March 2003): possible grading on 2 sides G2-0, G2-1, G2-2, G2-3, G2-4, and possible grading on 4 sides G4-0, G4-1, G4-2, G4-3, G4-4.

## Fire safety

Conventional French grading.

Thickness > 18 mm: M3 (moderately inflammable)

Thickness < 18 mm: M4 (easily inflammable)

Euroclasses grading. D-s2, d0

Default grading for solid wood, according to requirements of European standard EN 14081-1+A1 (August 2019). It concerns structural graded timber in vertical uses and ceiling with mean density upper 0.35 and thickness upper 22 mm.

## End-uses

- Boxes and crates
- Current furniture or furniture components
- Fiber or particle boards
- Glued laminated
- Heavy carpentry
- Interior joinery
- Interior panelling
- Light carpentry
- Moulding
- Musical instruments
- Pit props
- Poles
- Pulp
- Shingles
- Wood frame house

## Main local names

Country	Local name
France (temperate timber)	Sapin
Germany (temperate timber)	Tanne

Italia (temperate timber)

Abete

Spain (temperate timber)

Abete comun

United Kingdom (temperate timber)

Fir