



## Galician Pine

*Pinus pinaster* Ait. Syn.: *P. maritima* Lam. = *P. maritima* Mill. = *P. pinaster* Sol. = *P. glomerata* Salisb = *P. escarena* Risso = *P. Lemoniana* Benth. = *P. hamiltoni* Ten.

### Commercial names:

English:	Maritime pine, Seaside pine.
Spanish:	Pino pinaster, Pino gallego, Pino negral, Pino ródeno, Pino rubial, Pino marítimo.
French:	Pin maritime, Pin de Landes, Pin de Bordeaux, Pin de Corte.
Italian:	Pino marittimo, Pinastro, Pino selvatico.
German:	Seestrandkiefer, Sternkiefer, Ingelföhre, Bordeauxkiefer.

### Common names:

Guadarrama:	Pino negral, Pino negrillo.
Gredos:	Pino negral, Pino negrillo.
Castille-Leon:	Pino negral, Pino negrillo.
Aragón:	Pino ródeno.
Cuenca:	Pino ródeno.
Guadalajara:	Pino ródeno.
Valencia:	Pino ródeno.
Jaén:	Pino rodezno.
Baza:	Pino borde.
Andalusia:	Pino resinero.
Ávila:	Pino rubial.
Galicia:	Pino bravo, Pino gallego.
Basque Country:	Piñu gori.

### Physical properties:

Density:	530-540-550 Kg/m <sup>3</sup>
Shrinkage:	Moderately unstable.
Shrinkage values:	Total Unitary
Volumetric:	14.5% (0.45)
Tangential:	7.6% (0.25)
Radial:	4.1% (0.14)
Hardness:	2.7 Semi-hard

### Mechanical properties (Wood free of defects)

Static bending:	78 N/mm <sup>2</sup>
Modulus of elasticity:	7,230 N/mm <sup>2</sup>
Compression parallel to grain:	39 N/mm <sup>2</sup>
Compression perpendicular to grain:	6.0 N/mm <sup>2</sup>
Shear:	9 N/mm <sup>2</sup>
Toughness:	3.0 J/cm <sup>2</sup>

### Structural lumber:

The UNE 56.544-1997 standard establishes two grades, ME-1 and ME-2, which correspond to strength grades C24 and C18 respectively.

### Origin and availability:

This wood is found in almost all the countries that border the eastern part of the Mediterranean Sea (Algeria, Morocco, Spain, France, Italy and Greece.) It is found in nearly all the Spanish provinces, but principally in Galicia and in the Guadarrama, Gredos, Cazorla, Segura and Alcaraz mountains ranges. There are two subspecies of *Pinus pinaster* Ait., the ssp. *atlantica* Huget et Villar and the ssp. *mesogeensis* o *mediterranea*. The first of these grows in Galicia (Pino Gallego) and the second in the rest of the peninsula (Pino Negral). In France in the region of Les Landes an Atlantic variety called Pin de Landes grows.

The forested area, production and export are important.

*Note: The properties and other characteristics described below refer to wood from Spain.*

### Wood description:

The sapwood is a yellowish white and the heartwood varies from yellow-orange to a salmon red color. The sapwood is clearly differentiated. The growth rings are visible and there is a clear distinction between earlywood and latewood. The wood is straight-grained (straight fibers) and the grain texture varies from medium to open (coarse). The wood displays numerous pitch streaks, and it is usually quite impregnated with resin, which gives it a reddish color. The wood also has numerous knots, which can have a very large diameter.

### Drying:

The wood dries rapidly. There are slight risks of warping and checking. In addition to conventional kiln drying, high temperature drying (100°C), which permits drying completion in a few hours, has also been used successfully. If temperatures above 70°C are used there exist the drawbacks of resinous exudations and increased risk of warping, checking and split knots. In order to protect the wood from blue stain, a preventive treatment is recommended immediately after lumbering. The recommended drying schedules are number 11 from the CTBA and the M schedule from the PRL.

### Natural durability and ease of penetration:

The wood is graded as moderately or slightly durable against the degrading action of fungi and susceptible to cerambycids, anobiids, and termites. The sapwood is very susceptible to blue stain. The heartwood is not penetrable and the sapwood is penetrable.

### Technological properties:

The wood is easy to saw, although the presence of resin can blunt saws and cause them to overheat. Widening the kerf and the space between teeth in order to facilitate the elimination of resinous exudations and taking the accustomed precautionary measures for sawing resinous wood are recommended. The wood is well suited for obtaining rotary-cut veneer. Prior steaming at 85°C is recommended to reduce the hardness of the knots. Machining is relatively easy, but the abundance of knots can cause tearing and the presence of resin can blunt tools. Frequent cleaning of feedlines and tools with solvents to prevent the accumulation of resin and using cutting angles of 25°, which will keep the knots from splitting, are recommended. Due to the presence of resin, gluing soon after planing (gluing fresh wood) is advisable. The use of resorcinol glues and washing the wood prior to gluing are also recommended. It is not advisable to use casein, phenolic, or urea-formaldehyde glues. Nailing and screwing present no problems. Before applying finishing products prior treatment with a filler is recommended. If the wood is to be used outside or near a heat source it is advisable to wash or previously eliminate the high resin content before applying finishing products (since exposure to sunlight or heat will cause the resin to surface).

### Applications:

Glulam./ Plywood: structural./ Interior carpentry: paneling, friezes, door frames./ Pallets/ Crates./ concrete woodforms./ Paper pulp./ Particleboard and fiberboard./ The wood is also used for obtaining resin. It is important to remember that wood from resinous trees is poorer quality wood.