



Radiata Pine

Pinus radiata D. Don Syn.- *P. insignis* Dougl. Ex loud = *P. Californica* Loisl.

Commercial names:

Spanish:	Pino insignis, Pino radiata, Pino de Monterrey
English:	Radiata pine, Monterey pine, Insignis pine, Remarkable pine
French:	Pin radiata, Pin de Monterey
Italian:	Pino insigne
German:	Monterey föhre

Common names:

EEUU:	Monterey pine
Australia:	Radiata pine
Nueva Ze.:	Radiata pine
Chile:	Pino insigne

Physical properties:

Density:	500 kg/m ³	
Shrinkage:	Moderately nervous	
Shrinkage values (ASTM):	Total	Unitary
Volumetric:	14,5%	(0,42)
Tangencial:	7,4%	(0,25)
Radial:	4,2%	(0,16)
Hardness:	1,8	Semi-hard

Mechanical properties (Wood free of defects (ASTM))

Static bending:	83-85 N/mm ²
Modulus of elasticity:	8,630-8,800 N/mm ²
Compression parallel to grain:	40-42 N/mm ²
Compression perpendicular to grain:	5,7-6,2 N/mm ²
Shear:	10-10,9 N/mm ²
Toughness:	3,6-3,7 J/cm ²

Structural wood:

The qualities ME-1 y ME-2 of the UNE 56.544-1997 standard, respectively, give rise to the C24 y C18 resistant classes.

Origin and availability:

Its original area is limited to a particular area of the Californian Coast, the United States of America. Nowadays, it is also spread through the southwest of Europe, New Zealand, Southwest of Australia, Chile, Brail and South Africa. In Spain, it is present in the Cantabrian Mountain range, mainly in the Basque Country, where two thirds of the Spanish forest stems are located. Its forests, production and export are important.

Note: The properties and other features described bellow are referred to the wood coming from Spain.

Description of the wood:

The colour of heartwood is yellowish white, and it gets darker under light exposure conditions quite rapidly, and the sapwood has a yellowish brownish-grey or dun brown colour. The heartwood is little or partially differentiated. The growth rings are visible and quite thick /from 1 and up to 5 per cm.).

The fibre is straight. The grain varies from fine to medium.

Drying:

In general terms, the air drying of wood can be classified as fast and good quality. By way of guidance, 1 to 3 months are required for 55 mm thickness, from green up to 14-18% humidity, and in interior areas, depending on the season. Treatments immediately after sawing are recommended in order to avoid the bluish colour. The drying places must have a high calorific capacity and allow the circulation of air at high speeds, in the artificial drying process, and due to its high penetration ease. The drying quality is usually high. The most frequent flaws are deformations due to high wood twistedness, and to the presence of young lumber. The drying timing from green to 10%, in 55 mm thickness, is around 10 days. High temperature drying (120°) and overheated vapour drying (120°), which reduce the process duration to 24-48 hours, have been successfully used as well.

The recommended drying schedules are no 11 from CTBA and «K» from PRL.

Natural durability and ease of penetration:

The wood is classified as scarcely durable or not durable against fungi, and susceptible to cerambycidae, anobide and termites. Heartwood in not penetrable, sapwood varies from partially penetrable to scarcely penetrable.

Technological properties:

Sawing is carried out easily, and conventional equipment may be used. Only very old trees or very thick trees may require special use of technology.

The wood is well suited to obtaining veneer through peeling and slicing. Summer and spring wood homogeneity eases the peeling operation.

Machining can be undertaken easily, even though shred may occur near the knots. The wear of blades and the consumed power needed are less than for other conifers such as the Scots pine or the Maritime Pine. Common devices may be used.

It is suitable for gluing, and any kind of glue may be used. Due to its high ease of penetration, it is advisable that the adhesives have a high content in solids that the content required when working with less penetrable woods and broadleaves. There is no problem with using nails and screws. It is recommended to apply previous treatment with primer. Dyes, paints, varnishes adhere well.

Applications:

Plywood boards: structural / lumber-cored boards. / Laminated for exterior carpentry. / Interior carpentry: coverings, friezes, frames. Assembling carpentry. Glued Laminated timber. Furnishing, Palettes. Packing's. Particle and fibre boards. Paper paste.