



The Wood Component Company



Western Red Cedar Characteristics

Western Red Cedar (*Thuja Plicata*) is renowned for its natural beauty and outstanding physical properties that make it one of the world's most unique softwood species. This exceptionally beautiful wood has natural colouring in mellow ambers, reddish cinnamons and rich sienna browns. Its warm colouring is complimented by a uniform, fine-grained texture with a satin lustre. Slow growing and naturally durable, Western Red Cedar has one of the longest life spans of any softwood.

It produces long lengths of timber with true, straight grain. It is free from pitch and its heartwood has natural decay resistance. Its low density gives it an insulation value superior to most other species. Light weight, easy to work, easy to finish, possessing outstanding dimensional stability, Western Red Cedar is a preferred wood for nearly all purposes where attractive appearance or resistance to weather is important.

Western Red Cedar formed an integral part of the spiritual and practical life of the Northwest Coast Indians. The tree was used for constructing the walls and roofs of lodges, totem poles, canoes and utensils. The bark was used for weaving into baskets, mats, rope and clothing. The hallmark characteristic of Western Red Cedar, its natural durability, has preserved examples of this lifestyle for more than 100 years.

Natural Durability

Western Red Cedar is one of the few wood species that are naturally at home in the outdoors. It is classified as a durable wood by the building codes across the world, which permits the use of its heartwood in exterior applications without preservative treatments. The heartwood contains extractives that are toxic to decay causing fungi. The two principal extractives that are responsible for the decay resistance are Thujaplicans and water-soluble phenolics. The tree's ability to produce these extractives increases with age making the outer regions of heartwood the most durable.

Dimensional Stability

Dimensional Stability is essential for a wood product to maintain its shape during its service life. This is especially true of products that are subjected to the climatic changes of exterior applications. Western Red Cedar has twice the stability of most commonly available conifers. The stability is a result of its low density and shrinkage factors. As a result, Cedar products

shrink and swell minimally with changes in moisture. This superior resistance to warping, cupping and twisting makes them the best choice for use as cladding, decking, fencing and outdoor garden landscaping.

Density

At 22 lbs/ft³ at 6% moisture content, Western Red Cedar is one of the lightest softwoods available. Its specific gravity is a low 0.33. The light weight is the result of a larger percentage of lower density early wood and less high-density late wood within the annual growth rings. The lower density cells have air spaces that positively influence the insulating properties of the wood.

Thermal Insulating Properties

Western Red Cedar is an excellent thermal insulator. The low density and presence of air spaces make it the best insulator of any available softwood. Its thermal conductivity factor K is 0.74 BTU in / ft² h F and its R-value is 1.35 per inch of thickness. These exceptional thermal insulating properties protect a building from the extremes of heat and cold. Western Red Cedar cladding provides far superior thermal protection to alternatives such as concrete, brick and stone.

Acoustic Properties

The open cell structure of Western Red Cedar has demonstrated an ability to absorb and dissipate sound energy. The cell structure converts the sound energy into heat by friction and viscoelastic resistance. The use of Cedar for walls and ceilings provides a level of sound insulation that will quieten rooms.

Flame Spread and Smoke Development Ratings

Western Red Cedar has flame spread and smoke development classifications that are superior to the minimums set by the building codes. These ratings permit Cedar to be used in many interior applications without treatment. The surface burning characteristics are used to regulate and control the rate of flame spread in case of fire. Lower ratings indicate more resistance to the spread of fire. The rating for Western Red Cedar has a class II rating of 69. This compares to Canadian and American code requirements of 150 and 200 respectively. The smoke development classification for Western Red Cedar is 98 which is less than the code specifications of 300 and 450 for Canada and the US respectively. Further information on this topic is available from the Western Wood Products Association.

Workability

Western Red Cedar has a fine, straight grain and uniform texture that make it easy to cut, saw and nail with common tools. These features also contribute to its ability to be planed to a smooth surface or machined to any pattern. Cedar is highly resistant to splitting caused by fasteners. It is suggested that screws be lengthened approximately 1/3 when specified for use with Cedar. Cedar's freedom from pitch and resin make it an excellent base for all types of paints and stains.

Gluing Properties

The lack of pitch and resin allows Western Red Cedar to hold glue bonds from a wide range of adhesives.

Extractive Bleeding

Western Red Cedar contains water-soluble extractives that contribute to its colour, durability and aroma. The presence of moisture on exterior surfaces can bring these extractives to the surface and leave a reddish brown stain after the water has evaporated. The stains can be removed with detergent and water when they are first on the surface however they can be more difficult to remove after exposure to the sun. Controlling the extractive bleeding process is a matter of moisture control. When primers are required prior to the application of a solid colour coating, an alkyd oil primer is recommended because of its superior ability to block out moisture. This will limit the potential for extractive stains to appear on the coated surface. Removal of mature extractive bleeding stains is accomplished with an oxalic acid solution. Oxalic acid is available at most paint and DIY stores.

Iron Stains

The extractives in Cedar are also prone to staining when they are in contact with iron. The most common source of iron is the fasteners. The stain is a reaction to the water-soluble polyphenols resulting in a blue-black blot or streak that follows the moisture pattern in the area of the iron source. Care must be taken not to use wire brushes to clean Cedar or to allow iron filings from other work projects to come into contact with Cedar. The use of common steel or electroplated fasteners will lead to staining. The solution to iron staining is to select fasteners made from stainless steel, aluminium or double hot dipped galvanized steel. Stainless steel fasteners are best and recommended for deck and siding applications where the fasteners are highly visible.

Grades

Cedar is available in many different grades. From Knotty Grades to Clear Vertical Grain Grades. The most common choice of grade for Cladding in Ireland and the UK is No2. Clear & Better Grade which is a fine clear heartwood only grade that only allows few knots which must be tight and sound. Lower grades tend to offer more sapwood which is less durable. The tight knotty grade is a popular choice for Decking while it is also used as cladding on the American market when the material is being painted with solid colours.



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