



## Technical information

Western Red Cedar (*Thuja Plicata*) is one of the world's most unique softwood species, renowned for its natural beauty and durability. This exceptional wood has rich tones ranging from mellow ambers, to reddish cinnamons and sienna browns. Its texture is uniform and fine-grained, with a satin lustre.

### Growth and harvest regions

- Western Red Cedar grows on the western edge of the coastal mountains from southern Alaska to northern California.
- It typically grows in mixed forests with other species such as Douglas Fir, Pacific Coast Hemlock, Balsam Fir and Sitka Spruce.
- Forestry practices are guided by the internationally recognised sustainable forest management system elements of ISO 14001, as part of the CSA Z809 Canadian national standard.
- These high standards are audited by third-party inspection agencies to ensure compliance with the certification standards.
- Forest management plans control harvest levels and require reforestation to enhance natural regeneration and ensure regional biodiversity.

### Natural durability

- Western Red Cedar is an incredibly durable timber that's perfect for the outdoors.
- It's classified as a durable wood by building codes across north America, which permits the use of its heartwood in exterior applications without preservative treatments.
- The heartwood contains extractives (called Thujaplicans and Phenolics), that are toxic to decay-causing fungi.
- The tree's ability to produce these extractives increases with age, making the outer regions of heartwood the most durable.
- Western Red Cedar carries a durability rating of 1 in USA and Canada and 2 in Australia

### Retaining shape (dimensional stability)

- Dimensional stability is essential for a timber product to maintain its shape during its life, especially when used outside.
- Western Red Cedar has twice the stability of most commonly available conifers, due to its low density and shrinkage factors.
- Changes in moisture have minimal effect on this timber.
- Its superior resistance to warping, cupping and twisting makes it ideal for use in cladding, panelling and screening.

## Density

- Western Red Cedar is one of the lightest softwoods available.
- At 22lbs/ft<sup>3</sup> at 6% moisture content, its specific gravity is a low 0.33.
- The timber is light because of more low-density early wood and less high-density late wood within the annual growth rings.
- The lower density cells have air spaces that enhance the wood's insulating properties.

<b>Species</b>	<b>Density (lbs/ft<sup>3</sup>)</b>
Western Red Cedar	22
Douglas Fir	31

## Thermal insulation

- Western Red Cedar is an excellent thermal insulator, outperforming brick, concrete and steel. It protects buildings and houses from the extremes of heat and cold.
- The low density and air spaces make it the best insulator of any available softwood.
- Its thermal conductivity factor K is 0.74 BTU in / ft<sup>2</sup> h F.
- Its R-value is 1.35 per 25mm of thickness.

## Acoustic properties

- Western Red Cedar reduces or confines noise when used on walls and ceilings.
- The open cell structure of the timber is able to absorb and dissipate sound energy.
- The cell structure converts the sound energy into heat by friction and viscoelastic resistance.

## Flame spread and smoke development ratings

- Western Red Cedar's flame spread and smoke development classifications are far superior than minimum building code requirements.
- 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, and lower ratings indicate more resistance to the spread of fire.
- Western Red Cedar's rating has a class II rating of 69, compared with Canadian and American code requirements of 150 and 200 respectively.
- The smoke development classification for Western Red Cedar is 98, compared with Canadian and American code specifications of 300 and 450, respectively.

## Termite resistance

- Western Red Cedar has an in-built resistance to termites because of a naturally occurring preservative.
- In the absence of alternative food sources, some termites may attack Western Red Cedar.
- It is best to consult with local experts about regional termite species and use preventative treatments if local knowledge isn't available.

## Workability

- Lightweight but strong, Western Red Cedar is very easy to work with. Its fine, straight grain and uniform texture make it easy to cut, saw and nail without the need for special tools.
- It's also easy to plane to a smooth surface or profile to any pattern.
- It's highly resistant to splitting caused by fasteners.
- Screws should be lengthened by approximately a third for Cedar products.
- Western Red Cedar's lack of pitch and resin make it an excellent base for all types of paints and stains.

## Gluing properties

- Western Red Cedar can hold glue bonds from a wide range of adhesives, due to its lack of pitch and resin. This includes glue, laminate or external joinery.
- This allows real versatility and great applications, such as Fingerjointed Cedar Siding.

## Extractive bleeding

- Western Red Cedar contains water-soluble extractives that contribute to its appealing colour, durability and aroma.
- Moisture can bring these extractives to the surface and leave a reddish brown stain after the water has evaporated.
- While the stains can be removed with detergent and water when they first appear, they can be more difficult to remove after exposure to the sun.
- If applying solid colour to the timber, use an oil primer first as this helps block moisture and will minimise extractive stains.
- To remove mature extractive bleeding stains, use an oxalic acid solution, available at most paint and hardware stores.

## Iron stains

- The extractives in Cedar can also stain after contact with iron, most commonly found in fasteners. The stains appear as a blue-black blot or streak that follows the moisture pattern around the fastener.
- Don't use wire brushes to clean Cedar, or allow any contact with iron fillings from other work projects.
- To prevent staining, select fasteners made from stainless steel, aluminium or double-hot dipped galvanized steel (not common steel or electroplated fasteners).
- Silicon bronze and stainless steel fasteners are recommended for cladding and screening applications (where the fasteners are highly visible).