



The best solution for wood protection

## Important Information: **Stains and Leaching**

### **Extractives**

Wood is a natural material that contains a wide variety of compounds that are termed "extractives". While they are not part of the essential wood structure, they contribute to natural colour, odour, durability and moisture absorbency of a particular species, and may comprise of polyphenols, terpenes, oils, fats, gums, resins and waxes. Extractives may represent from 5% to as high as 30% of the dry wood mass, varying with species, sapwood or heartwood, rate of growth, growth location and season. Many of these extractives are partially or fully water soluble.

### **Stains On Lumber Due To Natural Causes**

There are many ways in which wood can become stained by natural causes, from the invasion of organisms and chemical change in extractives, to stains arising from leaching and decay during the service life of the lumber.

### **Stains On Processed Lumber Arising From Damage To The Living Tree**

The rupturing of the protective bark on a tree causes the tree to respond by forming protective compounds which are generally phenolics in hardwoods and terpenes in softwoods. The rupture of the bark also potentially exposes the tree to invasion by a wide variety of organisms. An unsightly coloured/staining effect may appear on processed lumber when these compounds and organisms which may also be photosensitive are exposed to oxygen and environmental weathering.

### **Stains Due To Chemical Changes In Wood Extractives**

During the growth of wood, streaks or blotches of different shades are produced, and it is these variations that enhance the decorative value of the wood by adding character. However when processed lumber is placed in the environment, oxidation of the natural extractives accentuated by exposure to light often causes these natural colorations to significantly change. Often blonde woods acquire a yellowish tint and red woods become more brown.



### **Stains And Leaching Due To Water**

Exposure of processed lumber to liquid and gas phase moisture in the environment often causes difficulty with unsightly leaching. Many extractives are partially water soluble and when the surface of the lumber is wetted, some of these coloured extractives may partially dissolve and produce watermarks on the lumber surface when it redries. Additionally, some extractives may runoff and stain other surrounding surfaces like concrete, walls, tiles, pavers etc. Tannins (polyphenols) in particular are likely to react with alkaline surfaces such as concrete to form an unsightly red/brown stain. If left alone to weather, the level of extractive runoff will reduce, resulting in a significant reduction in ongoing staining with time. Chemical cleaning and removal of these stains is a simple and easy process.



### **Stains Caused By Chemical Reaction With Iron**

Many species have a high tannin content which reacts with iron to form black and insoluble iron tannates if the wood is in a wet condition. Dark/black discolorations can often be observed on processed lumber that has been newly exposed to a wet environment as a result of contact during processing or fixing with a steel blade or tool. Such stains appear suddenly and can be alarming, but are limited to the surface. Chemical cleaning and removal of these stains is a simple and easy process. More information on iron stain is available [here](#).



### **Pre-Cleaning Susceptible Lumber**

Lumber with a high level of extractives that are to be fixed in a wet environment where it would be undesirable for leaching to occur, or if iron contamination is suspected; may benefit from a pre-clean using [CUTEK®ProClean](#) prior to coating with [CUTEK™EXTREME](#). While it is impossible to guarantee that leaching or staining will not occur after this process, experience has proven that such an event is more unlikely, and if it does occur is of a significantly reduced nature.

### **Removing Stains And Leachate**

Removal of iron tannates on wood and leachates on adjacent surfaces is easily accomplished by using [CUTEK®ProClean](#) and following the procedures in the [CUTEK®ProClean factsheet](#)