



# Protect Your Investment

Your new redwood deck is the talk of the neighborhood and your cedar playground is a hit with the kids. To protect your investment in these and other outdoor projects use these helpful tips and use PrimeGuard Max™ stainless steel fasteners that will maintain your appearance and safety of your project for the long term.

## Mildew

Small black or brown spots may appear on areas of a board that are not directly exposed to sunlight, and may be tiny organisms called mildew. Dirt and mildew can be hard to distinguish, but a spot test with household bleach can help; if the contaminant disappears after bleaching, it is most likely mildew.

Wood can be cleaned with a solution of bleach and water. Wood must be cleaned of mildew prior to staining as the organisms will thrive on the oils in the stain, multiplying and spreading. Mildew is not caused by wood composition or by fasteners used with the wood, and with proper upkeep and maintenance, mildew can be prevented.

## Moisture: Shrinkage

Wood is very sensitive to moisture, and it affects wood structurally and cosmetically. All wood is either KD (Kiln Dry, <19% moisture) or PAD (Partially Air Dry, >19% moisture). Because wood swells and shrinks as it gains and loses moisture, the use of undried wood in construction leads to shrinkage as the wood dries. This shrinkage distorts the shape of a construction project, negatively impacting both the appearance and structural integrity of the job.

## Moisture: Extractive Bleeding and Galvanic Action

Dry wood consists of cellulose, lignin, hemicelluloses, and small amounts of other materials, both organic and inorganic. The organic materials are referred to as “extractives” because they can be removed by extraction with solvents, including water.

Extractives contribute to wood color, odor, decay and insect resistance, and inflammability. Tannic acids are one type of extractive. Redwood, cedar, teak and other insect- and rot-resistant woods contain relatively high amounts of tannic acids, which serve to protect the wood. Lumber from older trees will contain even higher levels of tannic acids.

When a fastener is driven into the wood, tannic acids are released from within the wood to rise to the surface around the fastener head. The tannic acids will travel down the grain of the wood and produce tobacco-brown discolorations (extractive bleeding) usually caused by water: rain, fog, high humidity, or the water in latex finish. In addition, tannic acids themselves can actually cause fastener corrosion through galvanic action (see “What Causes Fasteners to Corrode?” on p. 30 for more information on galvanic action). Moisture internal and external to the wood, especially salt water, can

contribute to these processes. The darkening from tannic acids will dry and turn to a tannic dust as wood weathers; soap and water can usually clean this stain.

Galvanic action will result in a blue-black stain that will worsen with continued exposure. These stains will not dry and turn to dust—the streaking will only darken and become more pronounced as the fastener corrodes.

## How to Protect Your Projects

There is no cure for extractive bleeding or shrinkage, but both can be minimized. These steps are particularly useful when working with cedar, redwood, and mahogany:

- 1 Use dry wood.** Boards should be dried using stickers (small, evenly placed strips of dry wood that ensure air flow across drying lumber in stacks) to ensure the wood is in equilibrium with the environment. Cover if exposed directly to the weather.
- 2 Cut off 1–3 inches** from each end of boards. The ends have the most moisture, and are the most prone to extractive bleeding.
- 3 Coat all six sides** of the board prior to installation.
- 4 Use stainless steel fasteners** to avoid additional staining due to corrosion, particularly in acidic or corrosive lumber such as cedar and redwood.

