

As you probably know, wood is made up of wood cells that look like miniature soda straws. The cells are often around 1/8 to 1/4 inches in length and are very slender; the diameter is about 1/100 of their length. Depending on the species, the chemical constituents of the cells (both chemical in and on the walls, plus chemicals within the hollow space of the cells) can vary greatly within a tree, from tree to tree and from species to species. It seems that many of the chemicals have some color to them and also that these chemicals can be easily oxidized and form a new chemical with a different color.

In the living tree, the chemicals are not exposed to oxygen or light, so oxidation does not occur very quickly, if at all. However, once the tree is harvested and the logs are sawn into lumber, exposure to air and light (for the first time ever) can result in rapid oxidation. This oxidation may proceed slowly (months) or happen quickly (days or hours). Color changes in lumber, often with dark woods getting darker, and light woods getting lighter or darker, will happen naturally. Sometimes the color change is more than just darkening...for example, walnut can be green when first sawn, but changes to chocolate dark purple streaks in yellow poplar fade or can change to black.

In a few cases, these chemicals in the cells will move, before or after oxidation, with the water as the wood dries and then become concentrated at or near the surface when the water evaporates but leaves the chemicals behind. This often is seen as a surface color that can be planed off. In a few cases, I have seen a stronger oxidizer chemical used in finishing to create an instant aged look.

As a result of the oxidation of chemicals in the wood, it is common to see the wood's color change between when it is first sawn, to when it is stacked for drying, to when it is done being dried, to when it is pulled from storage, to when it is manufactured, to when the consumer first gets the product, and to later in the life of the product. Depending on the exposure, especially exposure to light, or being partially sheltered from light, the color change can be fast and/or erratic. Most of the time, the color change is only several 1/100 of an inch deep, so sanding can expose a different color.

Sometimes we see the outer shell of wood being a different color than the core because of the kiln drying temperature used...hotter when wet is usually darker. Alder and maple's color are two woods that are especially sensitive to kiln drying conditions. We can also dry wood more slowly under the kiln stickers, giving us a different color under the sticker (sticker stain) than the rest of the piece of lumber. The rule of thumb is that differences in drying speed result in differences in color. Reaction of wood and iron when the wood is wet can also create a very dark stain.

In a few cases, steaming wood prior to drying can darken the wood color substantially. Walnut, sweet gum, cherry and beech are often steamed in this manner to enhance color. Sometimes freshly sawn lumber is dipped in an insecticide or fungicide that also contains an optical brightener or bleach to brighten the outside of the lumber. Finally, color can also vary because we group several species with different colors into one lumber name, especially foreign woods. Within red oak, for example, are 20 commercial species, with some having a reddish color and others having a grayish hue.

The bottom line is that color variation is a key feature of wood and enhances wood's beauty. We can control wood's color somewhat during drying, but not much before or after that. If someone wants the same, uniform, predictable color, go with plastic.

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