

# Steamed Walnut vs Unsteamed Walnut



Q. What is the difference between steamed walnut and unsteamed walnut?

A. The process of steaming walnut, and several other species including sweetgum, beech and cherry, involves putting the freshly sawn lumber (tight-piled and not stickered for drying) into a chamber (a permanent structure or perhaps just a temporary enclosure made with tarpaulins).

The process only works well when the wood is soaking wet and has not begun to dry. Next, wet steam (often the steam is injected into a trough full of water to assure wet steam) is injected into the chamber to achieve a temperature of around 200 F. The heat causes some of the chemicals in the wood to oxidize very rapidly; oxidation means a darker color develops. This change occurs in both the white sapwood and the darker heartwood. This heat will get rid of the greenish hue that freshly sawn walnut sometimes has. So, the heat makes the color within the wood darker and more uniform.

Also, the heating causes the air within the wood (there are a lot of small air bubbles in the millions of wood cells) to expand and push the water in the wood (we call it sap) out to the surfaces. In walnut, this water is not clear but will have various dark colored, water-soluble chemicals in it. So as this water moves from the heartwood into the white colored sapwood, the sapwood is further discolored to the rich walnut color.

The steam in the process creates 100 percent relative humidity and thereby prevents the wood from drying during this steaming process. If the humidity was not 100 percent RH, then the wood would dry. But at such high temperatures, the wood loses strength and during this high temperature drying the lumber would check, crack and split easily.

After a few days, the process is done. When the lumber is removed from the chamber, the residual heat does result in some drying, as evidenced by the steam clouds that are emitted for an hour or so as the wood cools.

Technically, we know that exposing wood to a high temperature does create a slight, permanent strength loss. This loss would be most noticeable with impact strength, such as with a hammer handle. This loss also results in a bit more chipped grain when other machining factors are not close to perfect (such as a dull knife).

The steaming process also seems to “open up” the wood pathways, so we might notice a little bit faster and more uniform drying and a slight difference in absorptivity when finishing. All these effects are minor when using walnut lumber for furniture, cabinets and flooring. Overall, however, the main difference between steamed and unsteamed lumber is that properly steamed walnut has a richer, more uniform color.

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