

Wood of The Month



Oak – *Quercus* spp.

The Oaks form a large group (genus) with a worldwide distribution. Most are trees but some are shrubs. One estimate calls for 450 species in the world; another, more modest, calls for 275, yet Wikipedia boasts 600 species. In North America, north of Mexico, there are about 54 species of oaks, 21 of which grow wild in Missouri. This abundance of American oak species compares with just three to five in all of Europe. There are also several species described as oak which are quite unrelated to true oak. (*See last paragraph*).

The oaks comprise the most important group of hardwood timber in the United States, including Missouri. No other wood is more widely used. Oaks are divided into two subgroups, the white oaks and the red oaks (which includes black oaks). Missouri has seven white oak species and 12 red oaks as well as some additional hybrids. There are notable differences between the subgroups. The following chart lists some of the distinguishing features of white and red oaks.

Feature	White oak	Red oak
Acorns	Mature in one season	Mature in two years
Leaf lobes	Rounded	Bristle-tipped
Heartwood color	Tends to be tan or brownish	Tends to be reddish
Heartwood pores	Have abundant tyloses	Have few tyloses
Fresh-cut odor	Distinct, but not unpleasant	Sour, often unpleasant
Summerwood pores	Small and numerous. Cannot be counted with hand lens.	Few. Can be counted with hand lens
Annual rings	Usually compact, resulting in a finer textured wood.	Usually widely separated, resulting in coarse, textured wood.
Durability	Quite durable	Not particularly durable

The white oak group here in Missouri includes species such as; White Oak (*Quercus alba*), Post Oak (*Q. stellate*), Bur Oak (*Q. macrocarpa*), Swamp White Oak (*Q. bicolor*), Chinkapin Oak (*Q. muehlenbergii*), Swamp Chestnut Oak (*Q. michauxii*), Overcup Oak (*Q. lyrata*), and Dwarf Chestnut Oak (*Q. prinoides*).

The Missouri red oak group includes; Northern Red Oak (*Quercus rubra*), Shumard Oak (*Q. shumardii*), Black Oak (*Q. velutina*), Blackjack Oak (*Q. marilandica*), Pin Oak (*Q.*

palustris), Northern Pin Oak (*Q. ellipsoidalis*), Scarlet Oak (*Q. coccinea*), Southern Red Oak (*Q. falcate*). Cherrybark Oak (*Q. falcate* var. *pagodifolia*), and Nuttall Oak (*Q. texana*). Also in the red oak group are oaks that have entire (unlobed) leaves that include; Shingle Oak (*Q. imbricaria*), Willow Oak (*Q. phellos*), and Water Oak (*Q. nigra*).

While there is one particular species that's commonly considered *the* White Oak (*Quercus alba*), and one particular species that's considered *the* Red Oak (*Quercus rubra*), in reality, oak lumber is not sold on a species level. Instead, it is sold under a broader species grouping; either red or white.

Identification of the oak groups, white or red, in tree form can be done by the tree's leaves themselves. The red oak's leaves have pointed lobes and the white oak's leaves have rounded lobes. Besides the leaves, there's a few other ways to distinguish between the two groupings of oak wood. When looking at the endgrain, the large earlywood pores on red oaks are open and empty. The pores of white oaks, however, are all plugged with tyloses (bubble-like structures), a feature that makes white oak impermeable and able to hold liquids and withstand weathering. When looking at the face grain, particularly in the flatsawn areas, the thin dark brown streaks running with the grain direction are rays. Red oaks will almost always have very short rays, usually between 1/8" to 1/2" high, rarely ever more than 3/4" to 1" in height. White oaks, on the other hand, will have much taller rays, frequently exceeding 3/4" on most boards.

As is the case with many other woods, there are woods named oak that are not true oaks belonging to the *Quercus* genera. Many of these are from Tasmania and Australia whose early settlers found several tree species which produced timber having superficial resemblance to the oak with which they were familiar in Britain. They therefore gave the familiar name to Australian silky oak which comes from two distinct species, *Cardwellia sublimis*, and a smaller tree, *Grevillea robusta*. Three species of *Eucalyptus* in Tasmania, *Eucalyptus regnans*, *Eucalyptus delegtensis* and *Eucalyptus obliqua*, also provide a timber which is exported as Tasmanian or Victorian oak.

Similarly, the term Bog Oak is not a specific oak species, but is rather a term that designates oak wood that has been buried in a peat bog for hundreds or sometimes thousands of years. The conditions in the bog protect from normal decay while mineral reactions with the tannins in the wood, gradually give it a distinct dark brown to almost black color. Though Bog Oak does not describe a specific tree, it tends to most frequently occur in the United Kingdom, with English Oak (*Q. robur*).

Brown Oak, likewise, is technically not a distinct species of oak, but rather refers to oak – almost always English Oak (*Q. robur*) or other European species – that has been infected with beefsteak fungus, which has the effect of turning the wood a deep brown color.

Oak varieties are very workable, can be glued easily, stained and finished well. Due to the high tannin content, it can react with iron (particularly when wet) and cause staining and discoloration. And the longevity of items made from oak can be attested to by the history of the ship *USS Constitution* (Old Ironsides) which is well over 200 years old and was only just a year ago taken out of the ocean and put into dry dock for maintenance.

You can read more about Oak at; [Oak on Wikipedia](#) or [Oak species on Wikipedia](#) and on [The Wood Database](#) .

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