High strength, good looks and wide availability – just some of the reasons oak has become a woodworking favorite.

By Udo Schmidt

400 species of oak, with about 60 of them native to North America. The more northern species are deciduous, and some of the southern species are evergreens, which are sometimes called live oak. Oaks belong to the family Fagaceae; there are eight groups with 1,000 species in this family, with the most well known being beech, chestnut and chinquapin. The scientific name for oak is Quercus. The classic Latin name is said to come from Celtic, for “fine” and “tree.”

Besides its valuable timber, oaks have many other commercial values, past and present. Acorns have been feeding livestock, especially hogs, for centuries. The sweet varieties are also consumed by humans. Tannin, a substance used in making leather, can be extracted from the bark of most oak species. Other products made from parts of the tree are dyes and inks. Cork is the bark tissue from the species Quercus suber, native to the Mediterranean area and

OAK: THE WOODWORKER’S CHOICE FOR CENTURIES

In a woodworking sense, we sometimes tend to think of oak as a single species of wood. If we elaborate any more than that, we’ll probably specify that it’s either red oak or white oak.

While those are certainly the two most commonly used types of oaks for woodworking, there are actually more than
cultivated in the western United States and India. These trees are also known as cork oak. The bark of the cork oak is stripped every 8 to 10 years to produce commercial cork, with the cambium left on the tree to produce a new layer of bark.

In modern science, English oak – Quercus robur – is an important tree for dendrochronology, the study of tree-ring dating. Not only is the English oak a long-lived tree, the wood has been used for hundreds of years by craftsmen to build houses and ships. Through cross-dating, a continuing record of more than 2,000 years is now available for ring dating. Individual records are available for bog oak – trees covered with peat and preserved for many thousands of years.

Even in the spiritual world of magic and witchcraft the oaks find their place. Various cultures have used the trees and wood of

the oaks in spells for strength and stability. For Druids, the priests of the ancient Celts, the oak tree and the mistletoe growing on them were an important part of rituals.

In fact, “Druid” is a combining of the Celtic words for “oak” and “wise.” In ancient Greece, the god Zeus was thought to give answers to the oracle through the rustling of oak leaves.

Classification

The American oaks are classified into two groups, the white oak group (Leucobalanus), and the red oak group (Erythrobalanus).

The white oaks usually have round-lobed leaves, and acorns that are sweet with a smooth inner shell. Acorns of the white oak tree ripen in a single season. The red oaks, meanwhile, have point-lobed leaves with spiny bristle tip, and bitter acorns that take two seasons to ripen. However, southern live oak, which is placed in the red oak group because of its similarity in wood anatomy, has sweet acorns that ripen in one season.

The commercial lumber market separates oaks into three groups:
white oak, northern red oak and southern red oak. But due to harvest location, marked conditions and sawmill practice, as many as 20 species of oak are placed into the three groups. The main difference between red oak and white oak is the arrangement of pores in the latewood. The red oak’s latewood pores lack the tyloses found in white oak, making red oak unsuitable for tight cooperage due to its tendency to transfer water. The open and closed pores of the two species can easily be seen when a small piece of each, about $\frac{1}{16}$", is cut off the endgrain and held up against a light.

Even though oak lumber is readily available and one of the most frequently used materials in woodworking, it has unique properties that continue to delight even the most seasoned woodworkers. For example, when oak is quartersawn, the lumber has different features than the flat-sawn board. Ray flecks are pronounced and give this wood a distinct striped appearance. Mission style furniture is famous for the use of quartersawn oak, which is sometimes called tiger oak. Also, the tannin in the wood can be used for special finishing effects.

### Characteristics

Oak characteristics vary with species. The sapwood of both white oak and red oak is usually white to very light brown. The heartwood is usually light to dark brown in the white oak group and reddish-brown in the red oak group. The wood of all the oaks is heavy and strong, mostly straight-grained and coarse-textured.

Specific gravity for oaks is fairly close, with the red oaks ranging from .61 to .68, while white oaks range from .64 to .72. The heavier live oak falls out of these ranges with a specific gravity of .88 at 12-percent moisture content. The shrinkage, when seasoned, also ranges from the lowest for Quercus rubra at 8.6 percent tangential (perpendicular to the radius of the tree), and 4 percent radial (along the radius of the tree cross section), to Quercus falcata at 11.3 percent tangential and 4.7 percent radial.

All oaks are somewhat difficult to dry as they tend to check and split very easily, and develop internal checking called “honeycomb” if kiln-dried too quickly. Air-drying oak to 20-percent moisture content is the best prevention for excessive drying defects. However, this can take anywhere from two to six months, depending on the season and location. Slow-growth timber is easier to dry and more stable than the faster growing timber, but not as strong or stiff.

Born and educated in Germany, Udo Schmidt came to the United States in 1979. After 12 years in the lumber-export industry, he started his own cabinet shop. Schmidt has written numerous magazine articles and is the author of “Building Kitchen Cabinets” (Taunton Press, 2003).
FREE YEAR!

2 YEARS for $29.99!

Complete the form below and mail in an envelope addressed to:

WOODCRAFT MAGAZINE
PO BOX 7020
PARKERSBURG WV 26102-9916

By providing my e-mail address, I am indicating I’d like to receive information about my subscription and other offers from Woodcraft Magazine via e-mail.

Outside of the U.S and Canada add $30 for postage.
Foreign orders must be prepaid. Payment in U.S. Funds only.