

Shopsmith Woodworking Academy

Notes

Hardwood Information You Should Know — PART 1 of 4

*The heft and feel of a well-worn handle,
The sight of shavings that curl from a blade;
The logs in a woodpile,
The sentiment of huge beams in an old-fashioned house;
The smell of fresh-cut timber
And the pungent fragrance of burning leaves;
The cracking of kindling and the hiss of burning logs.
Abundant to all the needs of man,
How poor the World would be without wood.*
—Everard Hinrichs

If you look closely enough, you just might get the feeling that you're peering in on the surface of another world – a terrain very different, and yet so similar to our own. Textured lines are suddenly caught in a dense spiral, only to escape into a wavy, multi-colored ribbon. Bands of sharp ridges cut across smooth fields of red and gold; waves of highlights seem to dance on the surface like sunlight on water.

With all the features of a strange topographic map, wood is exquisite to contemplate and stimulating to the touch. Our American ancestors knew this well, for from a small oak cradle to a sturdy pine casket, each one lived a life surrounded by the beauty of wood. To plow the Earth or traverse it on wheels, wood was their means...their staple – their World. And no doubt, for thousands, perhaps millions of years before our forefathers, humans all over the globe were instinctively drawn to the intricate beauty and unlimited possibilities of wood – just as we are today.

Botanists have classified woods according to two broad groups of trees – hardwoods and softwoods. However, the terms *hardwood* and *softwood* are really misleading, in that they have little relevance to the actual density (hardness or softness) of the wood. There are differences, though, which separate the two groups, and several ways to classify them. The easiest way is according to the shapes of the leaves and whether the leaves are shed.

Softwoods are cone-bearing trees, otherwise known as *CONIFERS*. They retain their leaves or needles year-round. Hardwoods, on the other hand, have broad, flat leaves and are deciduous. That means they lose their leaves (usually in the Fall), every year.

Of the two groups, hardwoods usually rank the highest in overall beauty and durability. Most woodworkers would agree that *hardwoods* are a step-up from *softwoods*; the higher the craftsmanship of a project, the more reason to use *hardwoods* to build it. As you progress and improve in your wood-working skills, each project you complete is a little better than the last. That's when it's time to start moving up to working with *hardwoods*.

What's right for your project ?

There are thousands of hardwood types and species, both domestic and foreign...in all, well over 4,000 species. There are, however, a few factors to consider that will affect your lumber choices. To name just a few: (1) quality, (2) aesthetics, (3) hardness and durability, and (4) grain pattern and color.

With the virtual *explosion* of mega-sized Home Centers popping-up around the Country, finding premium-quality domestic hardwoods is much easier than it was just 10 or 15 years ago. However, if you live smack in the middle of Northern Kansas, you may have to travel a little further. The trick is to find higher grade material that's free of knots, checks, warpage and twists...which all add to the waste factor.

It's important that you carefully check EVERY board for these defects, then ask about the drying and storage processes used for their inventory. The traditional measure of 6% to 8% for kiln-dried lumber can be deceiving if you don't know exactly how or where the wood has been stored **AFTER** drying.

The *aesthetics* of the lumber are the creative feelings and moods the wood expresses through the projects that are built with it. Different types of hardwoods project different moods, whether they be *warm and casual*; *formal and sophisticated*; or *cool and austere*. Take a good look at the grain and figure patterns on different hardwoods, paying close attention to the way you *feel* about them. Then, choose the hardwood that most closely expresses what you have in mind for your finished project.

The *strength* or *hardness* of a wood can also be an important factor to consider when making your choices...particularly if it's going to receive a lot of wear and use. The *stability* of a wood (its tendency to stay in place both *before* and *after* it's worked) and *durability* (rot-resistance) of it also fall under this area of *strength* and *hardness*.

Two other factors that should influence your decisions about lumber choices are *color* and *grain pattern*. Grain patterns are highly individual. No two are exactly alike, and, as nature intended, most patterns seem to blend exquisitely and beautifully with others. Perhaps your project deserves the use of two contrasting hardwoods for a special, rich effect such as a parquetry or herringbone design in the appropriate spot. Whatever the case, you have unlimited choices in design and overall effect within your grasp...by simply taking advantage of the natural grain patterns and markings in the hardwood you choose.

The Top Eight

Of the 4,000 species, there are just eight tried-and-true species that qualify as "the most popular" among the majority of woodworkers. These eight species have gained their widespread popularity primarily through their combination of beauty, durability, availability and price. After years of proven workability and overall performance, here are the most popular: Poplar, Hard Maple, Red Oak, Cherry, White Oak, White Ash, Honduras Mahogany and Walnut.

In this series, we'll start with two of the naturally light-colored hardwoods...poplar and maple.

Poplar – genus: *Liriodendru* — principal lumber species: *Tulipifera*

For some odd reason that's unknown to botanists, lumber which comes from a tulip tree has for years been referred to as "poplar". The tulip tree itself isn't even remotely related to the poplar or cottonwood, but rather is a member of the magnolia family.

Tulip trees are found throughout most of the Eastern United States, although they flourish best in the Ohio Valley and Appalachian regions. They are among the tallest hardwood trees on the North American continent, with a record height of 200 feet and up to 10 feet in diameter!

Because of their unusual heights, even relatively small tulip tree timber produces a high percentage of clear lumber. The heartwood of poplar is yellow-brown to olive-brown, occasionally marked with dark streaks which have no effect on the physical properties of the wood. The sapwood is usually lighter, ranging from grayish-white to off-white. The wood is free from resin and is one of the easiest lumbers to successfully kiln-dry.

Poplar is one of the woodworking industry's favorite hardwoods because of its easy workability. Few hardwoods are more desirable for carving or working with either hand or machine tools. Poplar also accepts paints or finishes quite well, glues easily, is stable, and generally doesn't split when nailed. It has a medium density and texture and a straight, uniform grain.

Poplar is easy to cut and generally develops a smooth surface during most machining operations. Tests conducted by the Forest Products Laboratory, U.S. Department of Agriculture evaluate poplar for basic machining properties and workability (See **Fig. 1**). The results rate poplar fairly high in most woodworking operations.

Poplar is used mostly for furniture, musical instruments, veneers, general cabinet work (for interior trim) and siding. In veneer form, poplar is generally used for cross-bands in plywood. Lower grade poplar is often used for boxes, pallets and crates.

Poplar does a good job of "imitating" the more expensive hardwoods (most notably, walnut, maple and cherry) when the right stain is applied. Most woodworkers would agree that Poplar is a joy to work with and easy on the wallet.

Hard Maple — genus: *Acer* — principal lumber species: *Saccharum*

It's a common tendency for people to associate Maple trees with America; after all, they line our main streets, shade our lawns and forest much of the United States. Yet, of the 150 species of maple trees, only about a dozen of them are actually native to the U.S. and Canada...and the rest are most abundant in Eastern Asia.

The Sugar Maple is by far the most popular Maple species grown for lumber. The tree itself is referred to by a few other names, including rock Maple, hard Maple, sugar tree and black Maple. The *wood* of sugar Maple is called hard Maple and the principal lumber regions range from the Great Lakes through the Atlantic states.

Sugar Maples grow 75 to 100 feet tall and 2 to 4 feet in diameter. The best lumber from sugar Maples comes from those grown in dense woods, because the trunk is longer and grows fewer branches in its stretch toward the sunshine. The heartwood is light tan to reddish brown and the sapwood is thin and nearly white. The wood is known for its strength, even texture and straight grain.

Because of its high density, hard Maple is easy to work with and ideal for turning, boring, and mortising. Hard Maple offers superior resistance to abrasion and indentation, making it an excellent choice for a project that will receive a lot of wear. **Fig. 1** evaluates hard Maple for basic machining properties with results showing that it rates well for most operations.

Hard Maple’s unmatched durability makes it ideal for a number of uses. It is the leading wood for flooring in homes, schools, skating rinks, and bowling alleys because of its superior wearing properties.. Since hard Maple is both odorless and tasteless, it is also superb for cutting boards and food preparation surfaces. Well-made hard Maple furniture always outlasts its owners, while imparting beauty and practicality, as well.

With all of its obvious benefits to humans, hard Maple is surprisingly inexpensive and readily available in lumber and veneer form. Its easy workability and incredible durability make it a popular choice for a variety of projects.

Hardwood – The Best Choice

William Penn knew exactly what he was talking about when he said: “Wood is a substance with *Soul*”. His statement is evident in the sheer beauty of a finely crafted family heirloom, or the warmth and feel of an old oaken beam. Wood is gentle to the touch, yet stronger by weight than iron.

A finely-crafted project deserves the very best wood, and there’s nothing better than premium-quality hardwood. The superior quality of these woods and their lifelong beauty have made them the most popular choices of generations of woodworkers...and you can bet that in generations to come, hardwoods will still be the first choice.

Operation		Poplar	Hard Maple
Turning	good to excellent pieces	81%	82%
Planing	perfect pieces	70%	54%
Boring	good to excellent pieces	87%	99%
Shaping	good to excellent pieces	13%	72%
Mortising	good to excellent pieces	63%	95%
Sanding	good to excellent pieces	19%	38%
Steam-Bending	unbroken pieces	58%	57%
Nail Splitting	pieces free from complete splits	77%	27%
Screw Splitting	pieces free from complete splits	67%	52%

Coming up in the September/October issue — PART TWO of Hardwood Information You Should Know