

Hardwood Lumber and Veneer Series



Birch

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Daniel L. Cassens, Professor and Extension Wood Products Specialist
Department of Forestry and Natural Resources, Purdue University, West Lafayette, IN 47907

EXPERT
REVIEWED

There are about 12 species of birch in the temperate regions of North America, but only three are of commercial size and importance. These include yellow, sweet, and paper birch. The trees are noted for their peeling bark; and in addition, white birch has a distinctive white color. Birches are typically northern or Appalachian Mountain species growing on moist cool sites. The trees are small to medium sized. Yellow birch is the preferred species. Paper birch is plentiful but generally smaller and not as well formed.

In addition to the three species mentioned, gray birch is a common northeastern species on abandoned farms and burned areas. The species attains a height of only 20 to 30 feet and is poorly formed.

River birch or red birch will grow at lower elevations at the southern part of its range, and it is most common along stream banks. It will obtain a height of 70 to 80 feet and a diameter of 2 to 3 feet, but the tree often divides into several trunks making utilization for lumber or veneer difficult. River birch ranges from New Hampshire, west to southeastern Minnesota, south to east Texas, and back east to northern Florida.

The largest yellow birch reported is about 6.7 feet in diameter; the largest sweet birch is 4.8 feet in diameter; the largest paper birch is 5.9 feet in diameter; and the largest river birch is 5.5 feet in diameter—all at 4½ feet above the ground.



Dan Cassens

Three white birch (foreground) and one yellow birch veneer logs

Wood Color and Texture

Lumber from the different birch species cannot be separated with certainty once the logs are processed. Yellow birch and sweet birch tend to be harder, heavier, and stronger than the other species.

The pores in the wood are uniformly distributed and of the same size across the growth rings. In fact, the growth rings are usually not very distinct. Therefore, the wood is very uniform and lacks distinctive grain characteristics.

Color is very important in birch. In high-quality logs, the sapwood is usually wide and white. The heartwood is a reddish color. Currently, the sapwood is generally preferred, but markets exist for the red heartwood as well. White sapwood stains and discolors easily during warm weather.

Because of the white sapwood color and very uniform grain pattern, birch is substituted for hard maple. In the finished form, it can be distinguished by looking very closely at the flat sawn surface of finished wood. The pores in birch are just barely visible with the naked eye but they cannot be seen in hard maple. These pores become more pronounced when filled with old finish or dirt. Also, the pores will appear as tiny white dots when viewed through a hand lens on the end grain in birch, if a very clean cut has been made initially. The moisture content of the lumber when first cut is typically 70 to 90 percent.

Workability

Birch is above average in shaping and about average in planning, turning, and boring. The

planning and shaping properties of paper birch are rated considerably lower.

Strength

At 12 percent moisture content, yellow and sweet birch wood is about average in density and weighs about 42 pounds per cubic foot. Paper birch is somewhat lighter at 38.6 pounds per cubic foot. Yellow birch and sweet birch are some of our strongest hardwoods. Given the average density, their high strength values would not be expected. On the other hand, paper birch is about average in strength.

Steam Bending

Birch is rated above average for bending when steamed. Information is not published on paper birch.

Table 1. Birch timber species growing in the Eastern United States

Common and Scientific Names	Range	Site	Comments
Yellow Birch <i>Betula alleghaniensis</i> Britton.	From Newfoundland, through the Northeast and east through Minnesota and then the Appalachian Mountains to North Carolina and Tennessee.	In mountainous sections, it develops best on sandy loam soils in mixtures with sugar maple and beech. It can also be associated with eastern hemlock, red spruce, balsam fir, and eastern white pine. For the southern Appalachians, the species will grow on a variety of soils and prefers cool locations. Prolific seeder.	Premier species of all the birches. Medium sized tree reaching 60 to 70 feet in height and 2 to 2½ feet in diameter.
Sweet Birch <i>Betula lenta</i> L.	From Maine south through the northeast and then the Appalachian Mountains to northeastern Georgia and Alabama.	Prefers deep, rich and moist but well drained soils, but can also be found on rocky sites. Usually a scattered tree associated with white pine, hemlock, yellow birch, sugar maple, beech, black cherry, white oak, basswood, and yellow-poplar.	Medium sized tree, 50 to 60 feet high and 12 to 24 inches in diameter: Original source of oil for winter green.
Paper Birch <i>Betula papyrifera</i> Marsh.	Wide ranging throughout Canada and Alaska, the northeast, Lake States and parts of northwestern Montana, northern Idaho and Washington. Scattered in many other northern locations.	Paper birch can be a scattered tree in the mixed coniferous – hardwood forests of the north and it can also occur in pure stands developing after a fire.	Medium sized tree 50 to 70 feet high and 12 to 24 inches in diameter. The bark was used by the Native Americans for utensils, canoes, and wigwam covers.

Drying

Birch can be dried with a moderate kiln schedule. A somewhat more aggressive schedule is used for paper birch.

Shrinkage

Birch has a relatively high shrinkage given its more average density. Paper birch has a lower shrinkage more comparable to its density.

Decay Resistance

Birch has no resistance to decay. Spalded wood can occur.

Commercial Use, Grading, and Value

Birch is without characteristic odor or taste, generally straight-grained and moderately heavy to very heavy. It has good working and finishing qualities. Stock with a coarse curl can sometimes be found. Furniture, cabinets, and millwork (especially interior doors and flooring) are all applications for this species where a showy grain pattern is not wanted unless it is the contrast provided by a mixing of sapwood and heartwood, especially in rotary peeled veneer. The wood is also used for a variety of turned articles. These have included shuttles, spools, bobbins, and wooden ware. Other items include toothpicks, shoe pegs, and dowel rods because of the high strength of yellow birch.

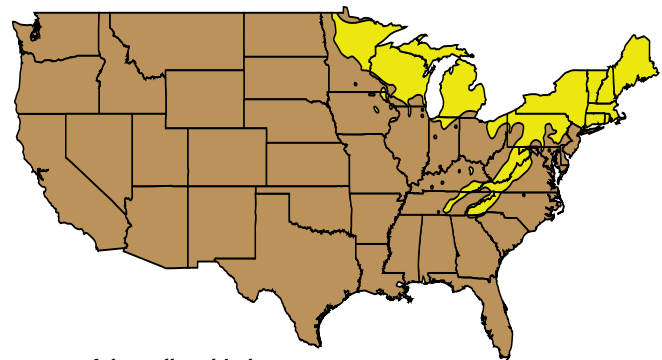
Using the National Hardwood Lumber Grading Rules, birch can be graded as standard, that implies no color separation for heartwood or sapwood is being applied. It can also be graded as sap birch when the white sapwood is preferred or as red birch where the red heartwood color is important. Sap birch requires that each required cutting has one clear sapwood or white face and red birch requires that each required cutting have one clear heartwood or red face. Some producers will keep the lumber from white birch and yellow birch species separate. White birch tends to be a smaller tree. As a result, the lumber tends to be narrower and shorter. The sapwood from white birch tends to be whiter and there is a greater possibility that both sides of the cuttings are white. Birch is sometimes steamed to blend the color of the heartwood and sapwood.

The Hardwood Review specifies that the prices reported are for yellow birch where the *Hardwood Market Report* does not specify species except for

kiln dried lumber from the Northern area. One would assume the prices are for yellow birch. Companies listing birch for sale often specify yellow or white birch. With increased emphasis on white birch, purchasers should check to make certain which species will be contained in the shipment, should it be important. Some birch lumber is also being imported from Russia.

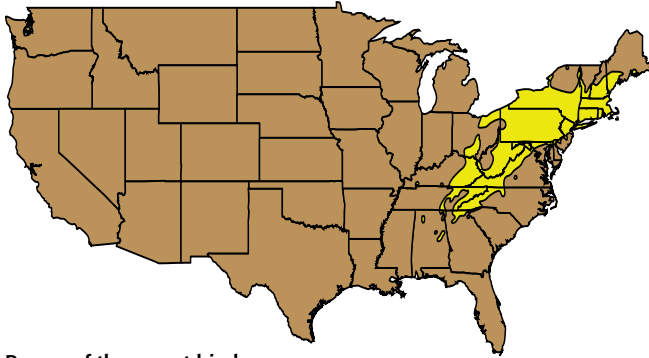


Yellow birch log showing wide, white sapwood area and a very small red heart

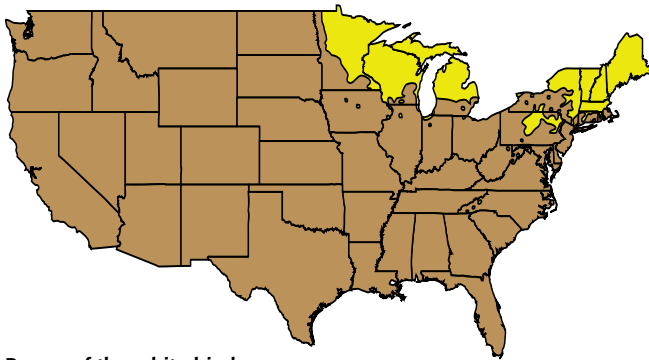


Range of the yellow birch

Range Maps continued on next page



Range of the sweet birch



Range of the white birch