technology transfer *fact sheet*

*Center for Wood Anatomy Research*
USDA Forest Service • Forest Products Laboratory • One Gifford Pinchot Drive • Madison, Wisconsin 53705–2398

# *Populus*spp.

Family: Salicaceae

## Cottonwood

Cottonwood (the genus *Populus*) is composed of 35 species which contain the aspens and poplars. Species in this group are native to Eurasia/north Africa [25], Central America [2] and North America [8]. All species look alike microscopically. The word *populus* is the classical Latin name for the poplar tree.

*Populus angustifolia*-balsam, bitter cottonwood, black cottonwood, lanceleaf cottonwood, mountain cottonwood, narrowleaf cottonwood, narrow leaved poplar, Rydberg cottonwood, smoothbark cottonwood, willow cottonwood, willowleaf cottonwood

*Populus balsamifera*-balm, balm of Gilead, balm of Gilead poplar, balm cottonwood, balsam, balsam cottonwood, balsam poplar, bam, black balsam poplar, black cottonwood, black poplar, California poplar, Canadian balsam poplar, Canadian poplar, cottonwax, hackmatack, hairy balm of Gilead, heartleaf balsam poplar, northern black cottonwood, Ontario poplar, tacamahac, tacamahac poplar, toughbark poplar, western balsam poplar

*Populus deltoides**-aspen cottonwood, big cottonwood, Carolina poplar, cotton tree, eastern cottonwood, eastern poplar, fremont cottonwood, great plains cottonwood, Missourian poplar, necklace poplar, northern fremont cottonwood, palmer cottonwood, plains cottonwood, Rio Grande cottonwood, river cottonwood, river poplar, southern cottonwood, Tennessee poplar, Texas cottonwood, valley cottonwood, Vermont poplar, Virginia poplar, water poplar, western cottonwood, whitewood, wislizenus cottonwood, yellow cottonwood

*Populus fremontii*-Arizona cottonwood, Fremont cottonwood, Fremont poplar, meseta cottonwood, valley cottonwood, wislizenus cottonwood

*Populus heterophylla*-bigleaf cottonwood, black cottonwood, cotton gum, cotton tree, cottonwood, downy cottonwood, downy poplar, river cottonwood, swamp cottonwood, swamp poplar

*Populus trichocarpa**-balsam cottonwood, black cottonwood, California poplar, cottonwood, western balsam poplar

*commercial species

### Distribution

Most of North America, with *Populus deltoides* in the eastern to midwest United States and *Populus trichocarpa* in the western United States.

### The Tree

Cottonwood trees can reach heights of 190 ft (77 m), with a diameter of 6 ft (2.4 m).

### The Wood

#### General

The sapwood of cottonwood is white, while the heartwood is light brown to brown. The wood is weak in bending and compression, soft and low in shock resistance. It has a sour odor when wet, but no characteristic odor or taste when dry. Tension wood is frequently present, causing a fuzzy surface when cut.

## Mechanical Properties (2-inch standard)

| | Specific gravity | MOE X10$^6$ lbf/in$^2$ | MOR lbf/in$^2$ | Compression | | WML[a] in-lbf/in$^3$ | Hardness lbf | Shear lbf/in$^2$ |
|---|---|---|---|---|---|---|---|---|
| | | | | Parallel lbf/in$^2$ | Perpendicular lbf/in$^2$ | | | |
| | | | *Populusbalsamifera* (balsam poplar) | | | | | |
| Green | 0.31 | 0.75 | 3,900 | 1,690 | 140 | 4.2 | 230 | 500 |
| Dry | 0.34 | 1.10 | 6,800 | 4,020 | 300 | 5.0 | 300 | 790 |
| | | | *Populusdeltoides* (eastern cottonwood) | | | | | |
| Green | 0.37 | 1.01 | 5,300 | 2,280 | 200 | 7.3 | 340 | 680 |
| Dry | 0.40 | 1.37 | 8,500 | 4,910 | 380 | 7.4 | 430 | 930 |
| | | | *Populus trichocarpa* (black cottonwood) | | | | | |
| Green | 0.31 | 1.08 | 4,900 | 2,200 | 160 | 5.0 | 250 | 610 |
| Dry | 0.35 | 1.27 | 8,500 | 4,500 | 300 | 6.7 | 350 | 1,040 |

[a]WML = Work to maximum load.
[b]Reference (98).
[c]Reference (59).

## Drying and Shrinkage

| | Percentage of shrinkage (green to final moisture content) | | |
|---|---|---|---|
| Type of shrinkage | 0% MC | 6% MC | 20% MC |
| | *Populusbalsamifera* (balsam poplar) | | |
| Tangential | 7.1 | – | – |
| Radial | 3.0 | 2.9 | 1.2 |
| Volumetric | 10.5 | – | – |
| | *Populusdeltoides* (eastern cottonwood) | | |
| Tangential | 9.2 | 7.4 | 3.1 |
| Radial | 3.9 | 3.1 | 1.3 |
| Volumetric | 13.9 | 11.3 | 4.7 |
| | *Populus trichocarpa* (black cottonwood) | | |
| Tangential | 8.6 | 6.9 | 2.9 |
| Radial | 3.6 | 2.9 | 1.2 |
| Volumetric | 12.4 | 9.9 | 4.1 |

References: 0% MC (98),
6% and 20% MC (90).

## Kiln Drying Schedules

| | Stock | | | | |
|---|---|---|---|---|---|
| Condition | 4/4, 5/4, 6/4 | 8/4 | 10/4 | 12/4 | 16/4 |
| Normal wood | T10-C5 | T8-F4 | T6-E3 | T5-D2 | – |
| Wet streaks | T8-D5 | T6-C4 | T4-D3 | T3-D2 | – |

Schedule for *Populus balsamifera* (balsam poplar), *P. deltoides* (eastern cottonwood), *P. heterophylla* (swamp cottonwood), *P. sargentii* (plains cottonwood) and *P. trichocarpa* (black cottonwood

References (6, 86).

**Working Properties:** Cottonwood glues well, has low nail-holding ability, does not split easily, and holds paint well.

**Durability:** Rated as slightly or nonresistant to heartwood decay.

**Preservation:** No information available at this time.

**Uses:** Lumber, veneer, plywood short bolts, pulpwood, boxes, crates, food containers, interior furniture parts, agricultural implements, wooden ware, cutting boards.

**Toxicity:** Sawdust may cause dermatitis (40, 64, 105).

### Additional Reading and References Cited (in parentheses)


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