



## Populus spp.

### Family: Salicaceae

### Aspen

Aspen (the genus *Populus*) is composed of 35 species which contain the cottonwoods 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 grandidentata*-American aspen, aspen, **bigtooth aspen**, Canadian poplar, large poplar,argetooth aspen, large-toothed poplar, poplar, white poplar

*Populus tremuloides*-American aspen, American poplar, aspen, aspen poplar, golden aspen, golden trembling aspen, leaf aspen, mountain aspen, poplar, popple, quaking asp, **quaking aspen**, quiver-leaf, trembling aspen, trembling poplar, Vancouver aspen, white poplar

#### Distribution

Quaking aspen ranges from Alaska through Canada and into the northeastern and western United States. In North America, it occurs as far south as central Mexico at elevations where moisture is adequate and summers are sufficiently cool. The more restricted range of bigtooth aspen includes southern Canada and the northern United States, from the Atlantic coast west to the prairie.

#### The Tree

Aspens can reproduce sexually, yielding seeds, or asexually, producing suckers (clones) from their root system. In some cases, a stand could then be composed of only one individual, genetically, and could be many years old and cover 100 acres (40 hectares) or more. Most aspen stands are a mosaic of several clones.

Aspen can reach heights of 120 ft (48 m), with a diameter of 4 ft (1.6 m). Aspen trunks can be quite cylindrical, with little taper and few limbs for most of their length. They also

can be very crooked or contorted, due to genetic variability. The bark of the two species can be quite variable in color and degree of furrowing. The leaves of aspen can vary from nearly round to ovate, with small to large teeth. Aspen trees are dioecious, that is, they occur as either male or female trees.

## The Wood

### General

The sapwood of aspen is white, blending into the light brown heartwood. The wood of aspen has a uniform texture; is straight grained, light and soft; and has good dimensional stability and low to moderate shrinkage.

### Mechanical Properties (2-inch standard)<sup>a</sup>

	Specific gravity	MOE X10 <sup>6</sup> lbf/in <sup>2</sup>	MOR lbf/in <sup>2</sup>	Compression		WML <sup>a</sup> in-lbf/in <sup>3</sup>	Hardness lbf	Shear lbf/in <sup>2</sup>
				Parallel lbf/in <sup>2</sup>	Perpendicular lbf/in <sup>2</sup>			
				<b><i>Populus grandidentata</i> (bigtooth aspen)<sup>b</sup></b>				
Green	0.36	1.12	5,400	2,500	210	5.7	370	730
Dry	0.39	1.43	9,100	5,300	450	7.7	420	1,080
<b><i>Populus tremuloides</i> (quaking aspen)<sup>c</sup></b>								
Green	0.35	0.86	5,100	2,140	180	6.4	300	660
Dry	0.38	1.18	5,400	4,150	370	7.6	350	850

WML=Work to maximum load

<sup>a</sup>Relatively low strength, moderate stiffness and shock resistance.

<sup>b</sup>Reference (98) except for hardness (59).

<sup>c</sup>Reference (98).

### Drying and Shrinkage

Type of shrinkage	Percentage of shrinkage (green to final moisture content)		
	0% MC	6% MC	20% MC
<b><i>Populus grandidentata</i> (bigtooth aspen)</b>			

Tangential	7.9	6.3	2.6
Radial	3.3	2.6	1.1
Volumetric	11.8	9.4	3.9

***Populus tremuloides* (quaking aspen)**

Tangential	6.7	5.4	2.2
Radial	3.5	2.8	1.2
Volumetric	11.5	9.2	3.8

<sup>a</sup>Water soaked material can develop "wetwood" from bacteria, causing a collapse in the zone between sapwood and heartwood during drying.

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

**Kiln Drying Schedules<sup>a</sup>**

Condition	Stock				
	4/4, 5/4, 6/4	8/4	10/4	12/4	16/4
Normal wood	T12-E7	T10-E6	T8-E5	T8-E5	T7-C4
Wet streak or collapse prone	Table 109	Table 110	—	—	—

<sup>a</sup>References (6, 86).

**Working Properties:** Aspen does not split when nailed, machines easily with a slightly fuzzy surface, and turns, bores and sands well. It holds nails poorly to fairly well, but glues, prints, and holds paint well. It is easily pulped by all commercial processes.

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

**Preservation:** Extremely resistant.

**Uses:** Pulp for books, newsprint and fine printing papers. Fiberboard, wafer board, sheathing, decking, decorative applications, boxes, crates, pallets, furniture parts, lumber core, veneer, match sticks, tongue depressors, paneling, excelsior.

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

Additional Reading and References Cited (in parentheses) 29, 55, 68, 70, 74.

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