

## IDENTIFICATION KEY FOR COMMON WOODS OF NORTH AMERICA

1. Vessel elements present. (Hardwoods) (2)
1. Vessel elements not present (softwoods) (35)

### Hardwood Species

2. Wood is ring porous (3)
  2. Wood is not ring porous (17)
3. Narrow rays interspersed between very broad, noded rays. Latewood pores always found in flame tracks. (4)
  3. Rays relatively consistent in thickness and not very broad or noded. Latewood pores sometimes found in flame tracks. (5)
    4. Tyloses present in earlywood pores (white oak)
    4. Tyloses not present in earlywood pores (red oak)
  5. Latewood pores have ulmiform arrangement (6)
  5. Latewood pores do not have ulmiform arrangement (7)
    6. Large earlywood pores mostly one row wide (American elm)
    6. Large earlywood pores several rows wide (Hackberry)
  7. Parenchyma arranged in continuous thin wavy bands between latewood pores. (8)
  7. Parenchyma is not arranged in continuous thin wavy bands between latewood pores. (9)
    8. Banded parenchyma faint. Earlywood pores sparse and lacking tyloses. (Giant Chinkapin)
    8. Banded parenchyma obvious. Earlywood pores abundant and contain tyloses. (Hickory)
  9. Parenchyma not visible with a hand lens. Wood is relatively soft. Latewood pores found in flame tracts (American chestnut)
  9. Parenchyma visible. Wood may be soft or hard. Latewood pores not found in flame tracts (10)
    10. Tyloses present. (11)
    10. Tyloses are not present. (14)
  11. Wood very light. Easily scratched with a fingernail. Heartwood grey-brown to medium brown in color. (Sassafras)
  11. Wood heavy and hard. Cannot be scratched with a fingernail. Heartwood dark in color. (12)
    12. Latewood pores arranged in discontinuous bands. Rays are not easily seen without a hand lens. (13)

12. Latewood pore not arranged in discontinuous bands. Rays visible without a hand lens. (Mulberry)
- 13 Latewood pores small and arranged in thin discontinuous bands. Shaving, when placed in water, will turn the water orange after two hours. (Osage orange)
13. Latewood pores relatively large, nested, and arranged into thick, discontinuous bands. (Black locust)
14. Wood is relatively soft and can be scratched with a fingernail. Confluent parenchyma arrangement found infrequently and only along the later edge of the growth ring. Heartwood is medium-brown to grey-brown in color. (Black ash)
14. Wood is hard and cannot be scratched easily with a fingernail. Confluent and aliform parenchyma arrangement always present. (15)
15. Heartwood is pale yellow to light brown in color. Latewood pores never in nested arrangements. (White ash)
15. Heartwood is dark brown in color. Latewood pores may be in nested arrangement. (16)
16. Widest rays are clearly visible without a hand lens. A reddish gum is evident in some earlywood pores. (Honey locust)
16. Widest rays are not clearly visible without a hand lens. Gum is not present in earlywood pores (Kentucky coffeetree)
17. Wood is semi-ring porous. (18)
17. Wood is diffuse-porous (22)
18. Banded parenchyma is visible with a hand lens. Wood emits a weak nutty odor or no odor when freshly cut. Heartwood color is light brown, to reddish-brown, to nearly black. (19)
18. Banded parenchyma is barely visible or not visible at all with a hand lens. Wood emits a strong, distinct nutty odor when freshly cut. Heartwood is chocolate brown in color. (Black walnut)
19. Wood is soft and easily scratched with a fingernail. Banded parenchyma visible with hand lens only. Wood has a slight nutty odor and taste when freshly cut. (Butternut)
19. Wood is very dense and cannot be scratched easily with a fingernail. Banded parenchyma is clearly visible with the unaided eye. The wood does not have an odor. (20)
20. Pores strictly solitary and barely visible with the unaided eye. Growth rings not apparent. (Tanoak)
20. Pores arrangement either solitary or in small multiples. Pores apparent to the unaided eye. Growth rings somewhat apparent. (21)

21. Boundary parenchyma present. Heartwood thin and very dark to almost black. Sapwood creamy white to light gray. (Persimmon)  
21. Boundary parenchyma not present. Heartwood reddish brown. Sapwood light yellow brown. (Pecan)

22. Rays noded. Nodes may or may not be obvious without a hand lens (23)  
22. Rays are not noded. (26)

23. Boundary parenchyma present. Rays fine.(24) Select  
23. Boundary parenchyma not present. Rays broad.(25)

24. Wood moderately light and soft. Sapwood white. Heartwood color variable ranging from clear yellow, tan, or greenish-brown. May have shades of green, purple, blue, or black. (Yellow Poplar, Cucumbertree)

24. Wood very light and soft. Can be scratched with fingernail. Sapwood and heartwood cream to light yellow in color. (American Basswood)

25. Rays are all relatively the same thickness. Rays appear numerous and close together on the radial face. (Sycamore)

25. Rays are of two thicknesses with the widest visible without a hand lens. Rays appear to be spaced apart and only somewhat numerous. (American beech)

26. Some pores arranged in long pore chains (Holly)  
26. Pores never in pore chains (27)

27. Wood relatively soft. Easily scratched with a fingernail (28)  
27. Wood relatively hard. Not easily scratched with a fingernail (30)

28. Heartwood color is tan to reddish-brown and typically indistinguishable from sapwood. Aggregate rays often present. Pore size is consistent throughout. (Red Alder)

28. Heartwood color is typically white to yellow white and indistinguishable from the sapwood. Aggregate rays are not present. Pore size is consistent or variable. (29)

29. Pore size and distribution typically greater in the earlywood. Dark tissue found along the growth ring. (Aspen)

29. Pore size and distribution similar in the earlywood and latewood. Light colored tissue (boundary parenchyma) found along growth ring. (Buckeye)

30. Sapwood is nearly white, sometimes with a pinkish tinge. Heartwood is mottled or striped and is grey to reddish brown and often streaked with black. Interlocked grain. (Sweetgum).

30. Sapwood does not have a pinkish tinge. Heartwood is a consistent color lacking any mottling, or striping. Grain may be straight or interlocked, or, in rare instances, figured. (31)

31. A distinct, narrow row of earlywood pores that are slightly wider than other pores is found along the growth ring. Heartwood color is cinnamon to reddish brown to red in color. (Black cherry)

31. Pore size is generally consistent or is random throughout the earlywood and latewood. Heartwood color ranges from grey to light reddish-brown. (32)

32. Interlocked grain. Greyish heartwood often tinged with brown or green. (Black tupelo)

32. Grain is typically straight. Heartwood is not streaked with brown or green. (33)

33. Rays width equal to or wider than pore diameter. (34)

33. Ray width is less than pore diameter. (White birch, yellow birch, sweet birch)

34. Sapwood creamy white. Heartwood light reddish brown. (Hard maples including sugar maple and black maple)

34. Sapwood white but often with grey streaks or a grey tinge. Heartwood light to medium brown. (Soft maples including red maple and bigleaf maple)

### **Conifer Species**

35. Resin canals are present. (36)

35. Resin canals are not present. (43)

36. Wood has a resinous odor. Resin pockets typically present on the tangential and radial faces. Resin canals relatively large and numerous. (Pines)(37)

36. Wood does not have a resinous odor. Resin pockets not typically present on the tangential and radial face. Resin canals relatively small and sparse (39)

37. Earlywood/latewood transition gradual. Slight resinous odor. Heartwood cream colored to light brown. Even grained. Medium to medium-coarse texture. (Eastern white pine, western white pine, sugar pine). Note: Sugar pine has larger resin canals than both white pines and its wood does not darken with age. Otherwise it is nearly identical to the white pines.

37. Earlywood/latewood transition moderate to very abrupt. Moderate to strong resinous odor. (38)

38. Latewood transition very abrupt. Latewood very thick and dense. Growth rings typically very wide. Cannot be penetrated easily with knife. (Southern yellow pines including loblolly pine, slash pine, shortleaf pine, longleaf pine)

38. Latewood transition moderately abrupt to abrupt. Latewood dense but thin. Growth ring width variable. (Red pine, jack pine, Ponderosa pine, Lodgepole pine) Note: Lodgepole pine is dimpled on its tangential face. Ponderosa pine usually, but not always dimpled. Jack pine may sometimes be dimpled. Red pine is never dimpled.

39. Wood has a characteristic odor similar to plywood. Growth rings often wavy. Range in wood color from yellowish to pale-yellow-red to red to red-brown. (Douglas-fir)  
39. Wood does not have a characteristic odor similar to plywood. Growth rings are not wavy. (40)

40. Wood is hard for a conifer. Earlywood/latewood transition abrupt. (41)

40. Wood is soft. Earlywood/latewood transition gradual. (42)

41. Lustrous wood. Yellowish to orange brown heartwood. Fine to medium-fine texture. (Eastern larch or tamarack)

41. Wood is not lustrous. Reddish-brown to brown heartwood. Course texture. (Western larch)

42. Resin canals medium in size and randomly arranged. Medium to coarse texture. Heartwood often with a pinkish tinge. Wood is sometimes dimpled. (Sitka spruce)

42. Resin canals very small and sometimes arranged in tangential rows. Heartwood creamy white to light yellow. Not distinguishable from sapwood. (Red, black, white, Engelmann spruce)

43. Heartwood ranges from light red to deep purplish red. (44) Select

43. Heartwood is not red. (45)

44. Wood has a strong, sweet odor. Fine texture. Zonate parenchyma similar in appearance to false growth rings. Rays are very fine. (Eastern red cedar)

44. Wood is odorless. Very coarse texture, Parenchyma is not visible. Rays are relatively wide for a conifer species. (Redwood)

45. Wood has an oily feel to it. Heartwood is variable in color. Coarse texture. False growth rings frequently present. Rancid odor when fresh cut. (Baldcypress)

45. Wood does not have a greasy feel to it. False growth rings rarely present. Wood does not have a rancid odor. (46)

46. Wood has a distinct odor. (47)

46. Wood is odorless. (51)

47. Heartwood is white to pale yellow in color (48)

47. Heartwood is medium brown to straw brown to red-brown in color. (50)

48. Wood has an odor similar to that of ginger. (Port Orford cedar)

48. Wood does not have an odor similar to ginger. (49)

49. Wood has a unique odor similar to raw potatoes. (Alaska yellow cedar)

49. Wood has a mild, fragrant or sweet odor. (Northern white cedar)

50. Wood has a pleasant sweet smell that is relatively strong. (Western red cedar)

50. Wood has a very strong pungent smell similar to wooden pencils.  
(Incense cedar)
51. Wood is confirmed to be of eastern US and Canada origin (52)  
51. Wood is confirmed to be of western U.S. and Canada origin (53)
52. Abrupt earlywood/latewood transition. Growth rings are frequently wavy.  
Whitish to yellow-brown white color (Eastern hemlock)  
52. Gradual earlywood/latewood transition. Growth rings are not wavy. White to  
yellowish –white color. (Balsam fir)
53. Light to reddish brown color. Moderately even to somewhat uneven grain. Course  
texture. (Western true firs)  
53. White to yellow-brown color. Uneven-grained. Medium to course texture.(Western  
hemlock)
- Note: The true firs and hemlocks are very difficult to tell apart. If the wood can be  
positively confirmed as being of eastern or western origin, it may be possible to separate  
them out especially between balsam fir and Eastern hemlock. Western hemlock and the  
Western true firs are much more difficult to differentiate especially due to subtle  
differences between the different true fir species. Western true firs and western hemlock  
are frequently marketed as Hem-fir due to their similarities in wood properties.