



Is it Red Oak or White Oak?

A simple chemical test can quickly and accurately distinguish white oaks from eastern U.S. red oaks.

Researchers at the Forest Products Laboratory (FPL) confirmed the accuracy of this chemical test by treating almost 10,000 oak logs at 30 sawmills and on logs at overseas ports of unloading. Additional tests were performed on 500 eastern oak specimens and all commercially important eastern hardwoods and softwoods from FPL's wood collection.

The identification procedure is easily administered by spraying or brushing a 10% solution of sodium nitrite (NaNO_2) on a 2-inch- (5-cm-) diameter area of the heartwood portion of the log or lumber. The solution makes the natural light-brown color of red oak only slightly darker, but it turns white oak yellow-orange, then red-brown, and then dark green or purple to black. Remember that the specific color reaction occurs only on heartwood; sapwood and wood colored by fungi do not give a suitable reaction.

Application of the chemical produces a distinctly different color reaction in about 5 minutes at 80°F (27°C). At lower temperatures, the reaction takes much longer. Below freezing, the time is almost 24 hours at -4°F (-20°C). In extremely cold weather, however, the solution can be heated to reduce reaction time.

The test works on wood with moisture content from green to 6%. In green or fresh wood, the reaction time is faster; the yellow, orange, and red shades seem more brilliant and the color sequence is more distinct. Large and small pieces of oak react in essentially the same time.

The sodium nitrite test could be beneficial to loggers, sawmill operators, grading authorities, wholesale/retail lumber dealers, exporters, and port officials. The test also fulfills the requirements for an easily administered test that could make white oak logs exempt from the fumigation process prior to shipping abroad.

Sodium nitrite is available from chemical supply stores. Use 3.34 oz/quart (104 g/Liter) of either tap or distilled water to get the 10% solution, which remains effective for several months. With temperatures below 27°F (-2.4°C), 20% ethylene glycol can be added to the solution as an antifreeze agent.

