

Kiln for Drying Wood

By Larry Zubke



To speed up the drying process and improve the odds of successfully preserving wood blanks, I built a drying kiln. A kiln provides a stable environment by maintaining a consistent temperature and humidity. For research, I spoke to woodturners in my local club and also found articles on the Internet. I discovered that there are no hard-and-fast rules for building a kiln, so I took several ideas and combined them into something that would work for me.

A small chest freezer that had quit working began the project. The metal walls with insulation between them help retain heat, making this kiln economical to run, even in wintertime. For safety, I installed a hasp and padlock on the door.



Mounted on the left-hand side of the kiln are the controls, power switch, and outlet, as well as the greenhouse controller. Note the padlock for safety.

I removed the compressor and mounted casters on one side to stand the freezer up so it can move around easily. The vertical positioning of the door allows easy access. An upright freezer or refrigerator might work better, but this unit takes up less space.

I installed open-wire shelves to support the green wood and to allow air to move freely within the kiln. A watertight light fixture with two 60-watt incandescent lightbulbs mounted on the base of the freezer provides the heat source. A thin sheet metal plate sits over the bulbs to protect them from dripping water. The metal also retains heat from the bulbs, slowly releasing it after the power is off.

A greenhouse thermostat with a remote sensor monitors and



A fan is mounted underneath the wire shelf.

regulates the temperature inside the kiln by automatically turning the bulbs on or off so that a consistent temperature is maintained. I drilled four 1/2" (13mm) holes in the bottom of the freezer below the lightbulbs and four matching holes in the upper rear wall. Heat convection from the bulbs draws outside air into the freezer through the bottom holes. Warm humid air exits the freezer through the top holes.

After my first batch of wood was dry, I decided to install a 5" (13cm) fan, salvaged from computer equipment. This fan runs all the time and helps circulate the air, which speeds up the drying process. Without the fan, the first batch of wood took approximately seven weeks to dry. The second batch took only five weeks.



The lightbulbs are mounted on the back of the kiln near the bottom, a sheet of metal covers the bulbs, and the holes are drilled through the bottom of the freezer.

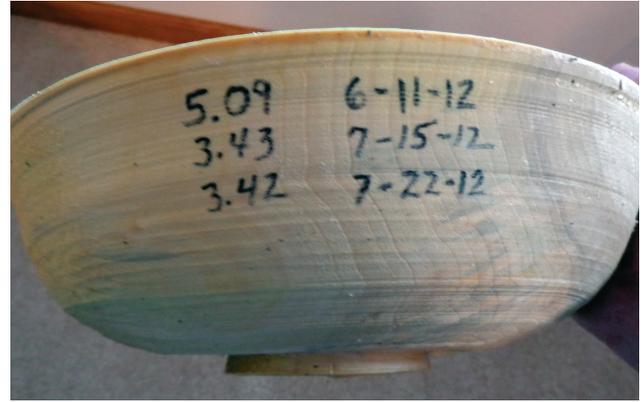
I generally start by setting the temperature at 80°F (27°C) for the first week. At week two, I increase the temperature to 85°F (29°C). The third week, I raise the temperature to 90°F (32°C) and leave it there until the wood is dry.

During the first few weeks, the humidity is 70 to 80

percent, so the air exiting the kiln often condenses on the outside of the holes. As the drying process progresses, the humidity continues to drop. The time it takes for the blanks to finish drying depends upon: the time of year the tree was cut, wood species, diameter, rough-turned wall thickness, stor-



The sensor for the greenhouse controller is mounted to the ceiling inside the kiln. The four holes drilled through the upper back wall of the freezer can be seen.



A 13" (33cm) cottonwood bowl, rough turned from green wood, weighed 5.09 lb (2.3kg) June 11 when it was placed in the kiln. It weighed 3.43 lb (1.6kg) July 15, and 3.42 lb (1.6kg) July 22. This bowl stopped losing weight, is dry, and ready to be finish turned.

age-environment temperature, and humidity.

To measure the wood's dryness, I weigh the largest and thickest blanks with a digital fishing scale and write the weight and date on each blank. At first, I check the blanks monthly, and then weekly as the weight loss begins to slow.

When the blanks stop losing weight (moisture), they can be finish turned. ■

Larry Zubke has been an avid woodworker all of his life, learning from his father and other family members. Since joining the Dakota Woodturners, his focus shifted to woodturning.