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## How to Make Tree Building Blocks

The purpose of tree building blocks is to give preschoolers and young children a sensory activity that involves natural product, along with practicing balance and engineering skills.

Follow the steps below to create tree building blocks that not only look good but will also hold up in your classroom for years.

One set of building blocks consists of approximately 50 pieces. One set per classroom is needed.

### DO ALL THE STEPS!

**1. Determine your source of wood ...** Use small diameter tree trunks and limbs to create your blocks. Prunings work well. Do not prune oaks in June. Buckthorn (an invasive species) yields beautiful wood and is always free. You may wish to experiment with several species of wood.

**2. Cut the wood ...** Use a large tooth pruning saw (available at hardware stores) to cut the tree at the base and trim off the branches. Then cut the stems or limbs into log segments three or four feet in length so that it's easier transport them to your shop area.

**3. Dry the Wood [OPTIONAL]...** If you have access to a lumber kiln, dry log segments. Just ask the yard supervisor to stick your tree parts in with the lumber being dried. After three or four days in the kiln, the logs should be sufficiently dry and feel much lighter. Otherwise, you can set the pieces in a dry, well-ventilated place for about a year.

**4. Cut the Wood ...** Slice the logs into block segments. "Blocks" should have two parallel flat surfaces, but the rest of the surfaces may be variable. Blocks should range in size from 2-8



inches thick. Use a large-tooth pruning saw or a motor-driven saw such as a radial arm saw.

**5. Dry the Wood ...** If you dried your blocks in Step 3, skip this part. Otherwise, **drying is crucial!** If the blocks aren't dried properly, they will attract mold and fungus.

To dry the wood, store your cut blocks in a dry, well-ventilated surface under low humidity for three to ten days. Turn them over daily to allow both sides to dry. Placing them on a driveway on a sunny day also works well. Air movement is more critical than the amount of sun. If you need faster results, it is possible to very carefully and slowly dry them in an oven set on "warm" (200 degrees or less). This should be done under close monitoring and supervision. Place the blocks on a sheet or foil and allow to slowly dry for three to five hours, rotating blocks occasionally.

**6. Sand the Blocks ...** Sand the flat surfaces of properly dried blocks by hand or with a mechanical table mounted belt sander. Sand first with course paper and finish with medium paper. It's ok to keep the bark on.

**7. Almost Done ...** To stand up to the rigors of classroom life, brush, dip, or spray each block with a coat of clear varnish or polyurethane.

**8. Deliver the Blocks! ...** If you are creating blocks as a DNR volunteer project, put the blocks in a box with your name and contact information. (The contact information is used to award recognition.) To locate a preschool or school that is waiting for the blocks, contact Laura Duffey at 651-259-5263, 888-646-6367,

or [laura.duffey@state.mn.us](mailto:laura.duffey@state.mn.us). Alternately, you may drop these blocks off at any DNR office or field station. Tell a DNR staff person on site that the blocks are for Laura Duffey in the Central Office.

**Finally: THANK YOU! Your work will benefit teachers and their classes across Minnesota!**

## Notes and Tips about this Project

**A note about cracking...** By nature, wood often cracks when it dries, and that is just fine for this project! However, if you desire the perfect “uncracked” block, there is a lot of discussion about achieving this. The best way to prevent cracking is to cut blocks from a dried, not green, log or branch. The smaller the block, the less likely cracking will occur. Finally, others say they get better luck cutting blocks from dried limbs, as the grain is often tighter in the limbs than in the main stem.

Some block-makers soak freshly-cut blocks in a solution of two pounds of sugar for every gallon of water for at least two days. Use a non-metal container and hold the wood down with rocks to submerge. Big blocks (larger than 3 inches in diameter and 1/4 inch thick will need more time. Stir the solution daily. After soaking, put in a well-ventilated place to dry (one week).

Finally, you can get a similar result if you soak fresh-cut blocks in polyethylene glycol (PEG) when the wood is still green. PEG draws the water out and replaces it with the PEG, which is a waxy material. It takes a few days to dry and the wood becomes a little heavier. PEG looks and feels like paraffin wax. You dissolve it in an equal amount of hot water, then soak the wood in it for about a month, making sure the wood is totally submerged. PEG is sold over the counter under the name of “MiraLAX” (it’s used for constipation). It can be expensive. However, you can get a coupon for it [www.miralax.com](http://www.miralax.com) and find it easily at places like Target.



### **Why does the DNR need tree blocks?**

The Minnesota Department of Natural Resources distributes tree blocks to preschool teachers around the state who participate in the Project Learning Tree (PLT) and School Forest programs. Educators use these cookies in their classrooms to allow children free play with natural materials and to inspire outdoor play. Research shows that children who play outdoors are healthier—physically, socially, and mentally—and are therefore more ready to learn. In the last 2 decades, unstructured outdoor play time has decreased significantly. Today, the average American child gets only 30 minutes per WEEK of outdoor, unstructured play time. Tree blocks are a good “gateway” tool to introduce children and teachers to the possibilities of what can be found in nature.

## A note about using European Buckthorn

We know it is tempting to kill two birds with one stone and make wood products from the woody invasive plant, European buckthorn. Buckthorn is a smaller tree with specific characteristics. The following excerpt is pretty technical, but if you can follow it, you'll have better luck!

"Because of buckthorn's dense branching, curving growth habits, and its ability to maintain live branches on lower parts of its stem, any usable piece is likely to contain stresses that cause distortion in addition to that of normal shrinkage."

"Because of the presence of large clusters of earlywood pores, the buckthorn seems a bit coarse compared to the small-pored maple, but not nearly as coarse as ring-porous woods such as the oaks and white ash. In comparison with those woods, precise carved edges are much easier to achieve with the buckthorn. When concave surfaces are cut into its tangential plane and subsequently sanded, the buckthorn does behave like a ring-porous wood, with the earlywood eroding noticeably faster than the latewood. Otherwise, sanding is relatively easy for a wood of this density, and it readily accepts the clear oil-based finishes that I use."

"European buckthorn is not especially photo-reactive, and the attractive orange heartwood darkens only moderately after prolonged exposure to light. The appearance of powderpost beetles and pecky white rot in wood left unprotected outdoors indicates that European buckthorn is not durable."



Learn more about buckthorn and other woody invasive plants on [www.mndnr.gov/invasives](http://www.mndnr.gov/invasives)