



# Curing Firewood in Interior Alaska

**Purpose** It's a common notion that firewood takes multiple years to fully cure in Fairbanks, however there is limited information available to confirm or refute this idea. To this end, the Cold Climate Housing Research Center completed a study in 2011 to determine the length of time and storage methods needed to fully cure firewood in Fairbanks. Through studying a variety of ways to dry green firewood to a moisture content of 20% or less, CCHRC identified several best practices for wood drying.

**Research Methods** For both the spring and fall harvests, live trees were harvested, cut into 12 – 16 inch logs, and sampled for initial moisture content. Some firewood was split with an electric log splitter. Piles of firewood mixed both split and whole logs. The moisture content of the firewood was measured frequently until samples were considered cured.

The study considered a number of factors affecting firewood curing:

**Time of harvest** The spring harvest was conducted in April-May 2010 and the fall harvest in September 2010, two common time periods for harvesting firewood.

**Species** The trees studied were white spruce, birch, and aspen, local species that are commonly harvested for firewood.

**Firewood preparation** The study tracked the moisture content of whole logs and split logs.

**Storage condition** Logs were stored in four different scenarios:

- arranged on a pallet and covered to simulate a **wood shed**
- stacked on the ground and covered completely with a **tarp**
- stacked on the ground and left **uncovered**
- stacked on the ground inside a **solar kiln**

\*This study was conducted in an open field where firewood was exposed to sun and airflow. Wood piles stored in shady areas will presumably take longer to cure, and firewood in large continuous piles may dry faster on the edges than in the middle.

## BEST PRACTICES

- Firewood needs to be **split** in order to get a fast cure
- Fall-harvested wood will not cure over the winter under any storage scenario; **summer** is the drying season
- A **wood shed** is the best storage option



Although none of the fall harvest fully cured over one winter, split birch firewood stored in a simulated wood shed (shown here) dried the most, to a 30% moisture content.



The study tested four storage methods, from left to right: uncovered, simulated wood shed, solar kiln, and covered with a tarp (not pictured).

What is fully cured firewood?

- **moisture content of less than 20%.**

How do I know if my firewood is cured?

- **dry wood usually has cracks and makes a hollow sound when you knock two logs together**
- **dry wood will feel light for its size when you pick it up**
- **moisture meter (found at a hardware store) measures the moisture content of wood**

Why should I cure my firewood?

- **optimizes heat output**
- **less dry wood is needed to meet heating demand than wet wood**
- **releases fewer emissions such as PM 2.5 than wet wood**

**Research Findings**

**Spring Harvest** All species of firewood that were harvested in the spring and split cured over one summer when stored in a wood shed, solar kiln, or covered with a tarp. Firewood that was left uncovered, however, dried to 20% within 6 weeks but then absorbed moisture from rain and snow throughout the year.

Whole logs did not cure over the summer under any storage scenario.

**Fall Harvest** None of the firewood harvested in the fall fully cured during one winter. However, split birch in a simulated wood shed did dry to a moisture content of 30% over the winter. These results demonstrate the difficulty of fully curing wood over one winter, although show that fall harvest will be ready to burn the following winter.

**Summary** The diagram below shows the drying times for fall- and spring-harvested firewood using different storage methods. Note the firewood harvested and split in the spring fully cured within a few months, while the unsplit wood and fall-harvested wood usually did not cure by the following spring.



Firewood subsamples stored at CCHRC's Research and Testing Facility.

Thanks to Sierra Research and Fort Wainwright Directorate Public Works for their support of this study.

Find the full study and complete results at <http://cchrc.org/wood-storage-best-practices>

## DRYING TIMELINE

