

Getting the

Most Out of Your Wood Stove

Heating with wood **efficiently** means getting **maximum heat** from your firewood while minimizing smoke.

Here are some suggestions to help you get the most out of your wood stove.



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Safety First

The first step in efficient wood heating is to make sure the unit and its chimney are installed according to building code rules. This means having adequate clearances between the stove, its flue pipe and combustible walls and ceilings, and determining that the chimney is suitable for wood burning, properly cleaned and in good condition. Your stove is part of a system; all components of the system—right to the top of the chimney—must be in good working order.

You will probably need professional advice or services to confirm that the system is safe. The hearth industry, with government assistance, has developed training and certification programs for industry professionals. See "For Further Information" below for suggestions on how to find trained service personnel. Once you know your system has been installed safely, you can have every confidence that it will burn hot, efficient and safe fires.

Efficiency Depends on Good Fuel

Efficient, safe and convenient wood heating is impossible with unseasoned wet (green) wood. As a general guide, firewood that is cut, split and stacked in the spring will be ready for burning the following winter. The wood should be outside in an open area to dry. Drying may take longer for very dense wood such as oak, or for wood that must be dried in a damp climate. Never store unseasoned wood in your basement because it can support the growth of unhealthy molds. Firewood should be cut shorter than your stove's firebox to make loading easier. The pieces should be in a variety of sizes; a range between 75 mm (3 inches) and 150 mm (6 inches) is suitable for most modern wood stoves. When properly seasoned, each piece will have deep cracks in its end grain and will tend to have a dark grey colour.

Properly seasoned wood has just under 20 percent water by weight. The moisture in freshly cut firewood, which can range from 35 to 70 percent, suppresses the combustion process. The higher the moisture content, the more energy is consumed heating and boiling the moisture rather than burning the wood. Energy is wasted and the result can be a smoky fire. Wet wood produces an inefficient fire that is slow to start and difficult to sustain.

Only seasoned firewood should be burned in your stove. Never burn painted or treated wood, or saltwater driftwood. Never burn garbage, plastics or rubber. To start a fire, use newspaper and small, dry pieces of wood—*never* use liquid fire starters.

Burn Short, Hot Fires

Most of the energy in burning wood is released as a bright flame. The turbulence in the flames creates good mixing between the combustion air and the gases that are released from the wood as it heats up. The heat of the fire ignites and burns these gases. In contrast, the dense smoke from a slow, smouldering fire is potential heat energy that escapes up the chimney and either clings to the chimney flue as creosote or pollutes the outdoor air. Therefore, to gain the most heat from each load of firewood, the wood should be flaming throughout the burn cycle until it is reduced to charcoal.

Kindling a New Fire or Adding Wood

The first stage of the fire, just after kindling or adding wood to a coal bed, is usually the smokiest because the cool wood, the boiling water and the cool inside of the stove take heat away from the flames. During this stage, open all air inlets of the stove fully to get a hot flame.

It might appear that this initial hot burn lets too much heat go up the chimney, but it is a necessary part of an efficient fire. The extra heat "primes" the chimney to produce strong draft, and helps keep the flue liner clean by loosening creosote that might have been deposited by the previous fire. The hot initial burn also drives moisture out of the firewood and gives an ignition source for the smoke that is released from the wood.

Avoid Slow, Smouldering Fires

People sometimes stuff their stoves with wood and burn the wood very slowly overnight. This is one of the worst things to do. Smouldering fires are inefficient and dangerous—smouldering wastes wood and deposits creosote in the chimney, which can lead to a chimney fire. With seasoned firewood, careful fuel loading and proper air settings, it is usually possible to burn overnight without smouldering.

Upgrade to an Advanced Technology Stove

If you follow all these suggestions and still have dense smoke coming from your chimney, the problem may be with your stove. You should seriously consider replacing it with one of the new advanced technology wood stoves. You will find that an efficient burn is easy to achieve with these modern units.

In any case, if your wood stove is more than 10 years old, consider replacing it with an advanced technology stove. The carefully designed internal combustion features and clear viewing glass of these new stoves make clean and efficient wood heating much easier and more enjoyable. You can readily identify these advanced technology wood burners because they are tested and certified as clean-burning according to the Canadian Standards Association (CSA) standard B415, or by the United States Environmental Protection Agency (EPA).

Other Tips for Safe Wood Heating

Every house should have a system of smoke detectors. Install one on the ceiling of the room in which your wood stove is located, one in the basement, one in the other major living area and one near the entrance to the bedroom area.

Installing a carbon monoxide detector is also an excellent idea. It can sound an alarm in case this odourless gas is released into a room from a receding charcoal fire because of chimney backdraft or spillage. Install the carbon monoxide detector at or near ceiling level in the room in which the stove is located. In addition keep an ABC-type fire extinguisher handy in the same room as the wood stove.

Other Publications Available from Natural Resources Canada

- *The Guide to Residential Wood Heating*
- *An Introduction to Home Heating with Wood*
- *All About Wood Fireplaces*
- *Buying a High-efficiency Wood-burning Appliance*

To obtain copies of these publications, call 1-800-387-2000. You can also visit our web site at <http://www.nrcan.gc.ca/es/erb/reed>.

For Further Information

To learn more about hearth products or to locate qualified industry professionals, look for this logo in telephone directories, or call the Hearth Products Association of Canada at (705) 788-2221.



To locate trained and certified retailers, installers or chimney sweeps in all provinces, except Quebec, look for this logo in telephone directory ads, or call 1-888-358-WETT.



To locate trained and certified retailers, installers and chimney sweeps in Quebec, look for this logo in telephone directory ads, or call (514) 270-4944.



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