

An Introduction to

Home Heating With Wood

Inside you will find advice on:

- choosing a wood-burning system
- installation safety
- fuel selection and preparation
- burning wood efficiently
- maintaining the system
- sources of further information



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There are several good reasons to heat your home with wood. While keeping your family safe and warm during the colder seasons you will also be saving money on fuel. You may require a guaranteed heat supply in the event of a power failure. You might also enjoy the sense of independence that comes from managing your own fuel supply. Or maybe you just like the warmth and beauty of a natural wood fire. Whatever your reasons are, using a wood-burning system to heat your home can be safe, effective and environmentally friendly provided that it is done properly. This guide will help you do just that.

Start With Good Advice

The type of appliance and installation you choose is influenced by several factors, including your house type, size and layout, and your wood heating objectives. A good way to evaluate your options is to get advice from experienced wood heat professionals. Experienced dealers know how various systems perform, and can suggest a range of options to meet your objectives.

Whatever type of appliance you choose, look for one that is tested and certified as “clean-burning” according to the Canadian Standards Association (CSA) standard B415 or by the U.S. Environmental Protection Agency (EPA). Certified advanced appliances produce more heat from the same amount of fuel and cut smoke emissions by up to 90 percent compared to older “airtight” wood stoves. By choosing a certified clean-burning, efficient wood burner, you will save money and time on your fuel supply and do the environment a favour at the same time.



Fireplace Inserts

- Inserts are similar to wood stoves but are designed to fit into the firebox of an existing fireplace, transforming the fireplace into a safe, clean-burning heating system.
- Clean-burning, efficient and certified inserts, in addition to being almost as effective for home heating as free-standing wood stoves, have a more attractive flame than the original fireplace.
- A new stainless steel liner is installed within the existing chimney to safely vent the insert's exhaust outdoors.

Masonry Heaters

- Although it may appear otherwise, high-efficiency, low emission heaters built mainly of brick and/or stone have little in common with conventional masonry fireplaces.
- Only highly skilled people can design and build efficient masonry heaters.

Cook Stoves

- Cook stoves can be a practical option for people who want to cook, heat water and a room or two with wood.
- Cook stoves are not certified clean-burning and tend to operate at lower efficiencies than other wood-burning options.

Furnaces or Boilers

- A wood-burning furnace or boiler could be an option for central heating if your house is very large, but most Canadian houses can be heated effectively with a space heater or advanced technology fireplace.
- Wood-burning furnaces and boilers are mostly older designs and are not certified as “clean-burning”. Their efficiency is lower than new, advanced wood stoves and they tend to have high emissions levels.
- The popularity of wood-burning furnaces and boilers has been declining for many years.

Wood-burning Appliance Options

Wood Stove

- The most popular type of wood-burning appliance, wood stoves are used by more than 80 percent of Canadians who heat with wood.
- A stove is a flexible option because it can be located almost anywhere in the house, provided there is room for proper clearances and a suitable location for the chimney.
- Like any space heating system, a wood stove should be installed where your family spends most of its time. Avoid installing your new stove in the basement unless you spend most of your time there.

Pellet Stoves

- The fuel for pellet stoves is compressed sawdust pellets that are fed automatically from a storage hopper into the combustion chamber.
- Pellet stoves need electricity to operate.

Fireplaces

- Nearly all wood fireplaces in existing homes are designed to be decorative only. They are highly inefficient because they consume a lot of warm room air and have no effective way of transferring heat to the house.
- A few certified clean-burning fireplaces are now available. They have heating efficiency almost equal to that of advanced wood stoves and are capable of producing an attractive flame.
- Some advanced fireplaces can serve as central heaters when ducts are connected to distribute their heat throughout the house.

Installation Safety

A wood-burning system that is installed exactly according to building code rules and the manufacturer's instructions will provide safe and secure heating for years to come. Here are some suggestions to make sure your wood heating system is safe and effective.

Choose a Safety-Tested Appliance

Select a new, safety tested and labeled appliance that is the correct size for your home. If home heating is your goal, avoid used or antique appliances. Select an advanced low emissions model to minimize smoke and maximize efficiency.

Building Permit

Check with your municipal office to determine if a building permit is needed. Part of the permit process includes an inspection to confirm safe installation.

Get Expert Advice

Get advice from an experienced hearth retailer and consider having the unit professionally installed. Qualified installers are certified under the Wood Energy Technical Training Program.

Follow Minimum Safety Clearances

Confirm that there are minimum safety clearances between the appliance and combustible walls.

If clearances must be reduced, use shields that are constructed and installed exactly according to the building code or according to the instructions provided with the certified shield.

Location

Locate the appliance in a major open living area where it can "see" other parts of the house. Do not put a wood-burning appliance in a small closed room.

Install a Fire Extinguisher, Smoke and Carbon Monoxide Detectors

Install an ABC-type fire extinguisher in the same room as the wood burner. Install a system of smoke detectors and at least one carbon monoxide detector to provide warning in case anything goes wrong.

Notify Your Insurance Agency

Advise your insurance company that you have installed a wood-burning system.

Chimney and Flue Pipes

The chimney does more than just provide an outlet for exhaust gases. It also functions as the "engine" of the wood-burning system by providing the draft that pulls combustion air into the firebox and draws the exhaust gases out of the system. The chimney's design, location and installation affect the performance of the whole system. Many complaints about the poor performance of wood-burning appliances are directly attributed to chimney and flue pipe problems. You should give as much attention to the selection, location and installation of the chimney and flue pipe as to the wood-burning appliance itself.



Here are some practical suggestions for effective chimney and flue pipe installation:

- Most importantly, have the chimney installed *inside the house* and not on an outside wall. Outside chimneys cause serious performance problems such as smoking, odours and backdrafting that reduce the safety and enjoyment of wood-burning.
- A wood-burning appliance can be vented through a properly sized masonry chimney, through a certified 650°C factory-built metal chimney (see your dealer for details), or through a stainless-steel lined masonry chimney.
- Masonry chimneys must conform to building code rules.
- Metal chimneys must be installed according to the manufacturer's instructions.
- The chimney flue should be the same size as the appliance flue collar outlet.
- The ideal chimney location is one that penetrates the roof near the peak; the chimney must extend at least one meter above the peak of the roof.
- The ideal flue pipe assembly runs straight up into the base of a ceiling-supported metal chimney. If this is not possible, use 45-degree flue pipe elbows instead of 90-degree elbows to minimize airflow resistance.
- Flue pipe assemblies are the weak link in many installations; single-wall pipes must be installed according to the Canadian Standards Association installation code CSA B365. Consider buying certified double-wall flue pipes to ensure good performance.
- Factory-built fireplaces may be connected only to the chimney models listed in the manufacturer's installation instructions.
- Pellet stoves do not use standard flue pipes but use a specialized type of vent. See your dealer for details.

Fuel Selection and Preparation

Your wood-burning system cannot operate safely or efficiently on poor quality fuel. Here are suggestions for maintaining a good fuel supply:

- To be ready for burning in the fall, firewood should be fully processed in the spring, i.e., cut to length, split to the right size for the appliance and stacked under cover.
- Firewood size and moisture content are more important than the kind of wood.
- Split wood burns better than whole logs.
- A range of pieces from 75 mm to 150 mm (3 to 6 inches) at the largest cross-section is desirable.
- Do not burn painted or treated wood, saltwater driftwood or any garbage in your appliance.
- Never store unseasoned firewood in your basement; the extra moisture could support the growth of unhealthy molds.
- Pellet fuel should be handled as little as possible and stored in a dry location. It should not be stored directly on a concrete floor.

Burning Wood Efficiently

When it comes to heating with wood, you are in control. Your system's safety, efficiency and the amount of smoke it produces are in your hands. Here are some tips to get the best performance from your wood-burning system:

- If the owner's manual for your appliance has specialized operating instructions, refer to them often as you become accustomed to the new system. If only general information is provided, ask your dealer for advice.
- Never let a fire smoulder; the wood should be flaming until it is reduced to charcoal.
- You should not see dense smoke coming from your chimney except when a fire is first lit or for a few minutes after refueling.

- In milder weather, build small hot fires to take the chill off. Do not fill up the firebox and then turn the air control down to produce a smouldering fire.
- A stable fire is always made up of at least three pieces of wood.
- When making small hot fires, use smaller pieces rather than fewer pieces per load.
- Each new load of wood should be burned hot until the pieces warm up and a layer of charcoal forms on them.
- The glass doors on modern wood stoves and fireplaces are designed to stay clear; dark stains are a sign of smouldering caused by slow burning or poor fuel.
- You should not smell wood smoke inside your house. If your system smokes or smells, contact a certified professional to identify and fix the problem.

The most effective way to reduce smoke emissions and boost efficiency is to upgrade your wood heating system to an advanced certified low emissions appliance. This one step can reduce your smoke emissions by as much as 90 percent, and reduce your consumption of wood by as much as one-third.

Maintaining the System

An effective wood heating system is a large investment and, if maintained properly, can provide many years of reliable service and enjoyment. Here are suggestions for maintaining your wood heating system:

- Every month, check the chimney and flue pipe for creosote accumulation and clean if necessary. This is particularly important in the first year as you learn to use the system.
- Every year, have the entire chimney and flue pipe system checked from top to bottom for corrosion, loose roof flashings, deteriorating bricks and mortar, loose fasteners, etc.
- After the heating season, clean out the appliance thoroughly, including all heat exchange passages. Check gaskets and replace any that are hard or frayed. Check door latches, hinges and the system's operating controls for proper operation and lubricate them.

- Remove ashes from the firebox regularly; do not let them build up. Store ashes in a metal container outside, away from combustible material.
- Clean door glass only when the appliance is cool. Use a damp cloth for white haze and use special wood-burning appliance glass cleaner for brown stains.

For Further Information

Much of the information in this brochure is taken from Natural Resources Canada's *A Guide to Residential Wood Heating*. If you are seriously considering purchasing and installing a wood-burning appliance, call 1-800-387-2000 to obtain a copy of the guide and other publications on wood heating. If you have access to the Internet, print off a copy of the guide at <http://www.nrcan.gc.ca/wood>.

To find out 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 l'Association des professionnels du chauffage au (514) 270-4944.



Aussi disponible en français sous le titre :
Une introduction au chauffage au bois résidentiel.

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