

Operate and Maintain Your Wood Stove for Safer, Cleaner Burning and Efficiency

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If you heat your home with wood, there are at least three reasons to operate and maintain your wood stove properly:

- You get more heat from less wood.
- The fire is less smoky.
- The fire burns safer.

This publication offers guidelines for operating and maintaining wood stoves properly. These guidelines apply only to wood stoves that burn firewood. They do not apply to pellet stoves.

Burn Only Dry Firewood

Moisture in firewood prevents wood stoves from operating cleanly and efficiently. Green wood or wood that is wet is difficult to ignite. Fires built with green wood produce a lot of smoke but not much heat. They also deposit more creosote in flues and chimneys. Creosote can ignite and produce hot chimney fires—a major cause of home fires.

Dry wood ignites easily, burns hot, and produces little smoke. You'll use less firewood if you burn only dry wood. The wood will be easier to handle, too, because dry wood is lighter. And you'll be safer—the less creosote in your flue and chimney, the less likely you are to have a chimney fire.

Efficient Non-catalytic Wood Stove Operation

You'll get more heat and less smoke from your wood stove if you provide the right amount of fuel, air, and heat for each stage of combustion.

First, open the air inlets and flue dampers wide to supply plenty of air. Then start

the fire with paper and dry kindling. Add two or three small pieces of dry firewood, keeping air supplies open to get the fire going quickly.

After about 20 minutes, when the fire is burning briskly, reduce the air flow for a moderate burn rate. Don't restrict air supply so much that you put out the flames. Watch what comes out of the chimney. If you see smoke, increase the air supply.

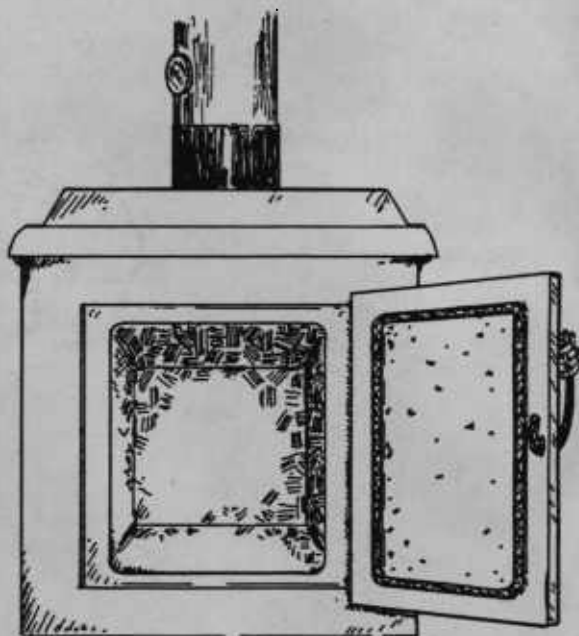
Once the fire is established, continue burning a small hot fire by adding only one or two pieces of dry firewood at a time.

Provide more air after refueling to help ignite the new fuel, then reduce the air supply for a moderate burn rate. When the fuel is reduced to coals and you don't plan to add more wood, further restrict the air supply.

Slow, smoldering overnight fires waste wood and are a major source of wood smoke pollution, so don't burn fires overnight. Let the fire burn out after you go to bed. If you need heat use another fuel source or another blanket.

On days when pollution levels are high, use an alternate heat source instead of your woodstove.

It's important never to burn garbage, junk mail, magazines, treated or painted wood, plastics, or gift wrapping. These materials can produce toxic fumes that are a risk to people in your home as well as to everyone breathing the smoke from your chimney.



Monitor Stove Operation With A Thermometer

A stove pipe thermometer can help you monitor and adjust your wood stove. Probe thermometers are installed by drilling a small hole and inserting the thermometer probe into the pipe. Magnetic thermometers are attached to the outside of a single wall pipe.

Optimum stove pipe temperature differs depending on the stove and where the thermometer is mounted. Find the best operating range for your stove by observing temperatures that emit the least smoke from your chimney. Then you can monitor stove pipe temperature and adjust the stove to maintain the optimum range.

Typically you will want the stove pipe temperature to range from 250°F to 350°F. If the temperature falls below the optimum range increase the air supply, or add more wood if the fire has burned down. If the stove pipe temperature

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exceeds, say, 400°F to 450°F, too much heat is going up the chimney. Reduce the air supply.

Operating A Catalytic Wood Stove

Catalytic wood stoves are usually designed to operate with larger fuel loads and be refueled less often.

Proper operation is more critical for catalytic wood stoves than for other stoves. Improper operation reduces efficiency and shortens stove life.

To start a fire in a catalytic stove, open the air inlets and flue dampers wide to supply plenty of air. Open the bypass damper or disengage the catalytic combustor. Then start the fire with paper and dry kindling. Add two or three small pieces of dry firewood, keeping air supplies open, to get the fire going quickly. When the starter firewood is burning briskly, fill the stove with wood. Keep the air supply open to fully ignite the wood.

Maintain a hot fire for 15 minutes. Monitor the thermometer in the stove, if there is one. Maintain a temperature of 500°F to 600°F. Then direct the flue gas through the catalytic combustor by closing the bypass damper or moving the combustor into operating position. This will "light off" the combustor to burn flue gases before they escape up the chimney.

Reduce the air supply once the combustor has ignited. Allow enough air to keep the combustor ignited, maintaining a temperature above 500°F. Do not allow combustor temperatures to exceed 1,000°F.

When refueling, open the bypass damper or disengage the catalytic combustor again. Increase the air supply to raise the temperature of the stove. Reload the wood, and burn the fire hot for 15 minutes again before directing flue gas back through the combustor and reducing the air supply.

Wood Stove and Chimney Maintenance

Wood stoves are designed with air flows to promote efficient combustion and heat transfer. When ash and creosote build up, air flows are obstructed and heat transfer is reduced. Cracks and leaks around the door or elsewhere on the stove may allow air to be sucked in or smoke to leak out. These problems decrease efficiency and may also pose health and safety risks. Cracks and leaks can allow the smoke to leak out especially during start-up and slow burn fires.

Creosote buildup in the stove and chimney increase backdrafting and can result in a fire.

Inspect, clean, and repair your stove and chimney to keep them operating properly:

- Remove ashes from your wood stove before they block air inlets in the firebox.
- Use a wire brush to remove creosote that blocks inlets or coats the door perimeter, preventing it from closing tightly.

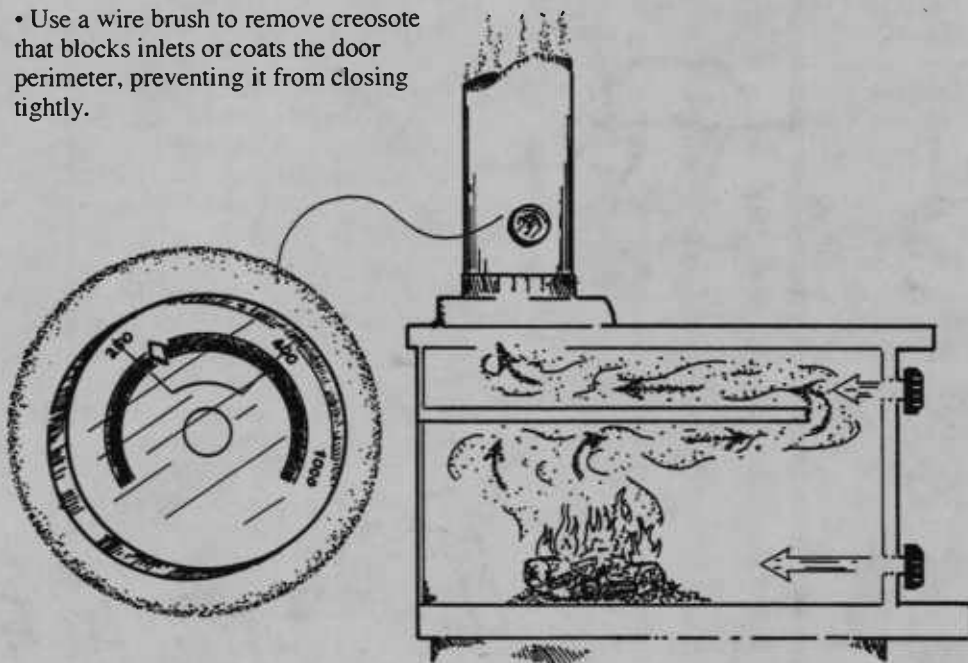
- Clean the chimney when creosote is more than one-quarter inch thick. You can hire a chimney sweep to inspect and clean your chimney, or with the proper tools, you can do it yourself.

- Check door and window gaskets and gaskets around a removable top for good seals. Replace them if necessary. Gasket material is available from wood stove dealers.

- Check for cracks and to make sure joints are intact. You can seal joints and cracks with high temperature cement or you can weld them.

- Replace firebrick linings that have broken down.

Your wood heating system will operate more cleanly and efficiently if you properly maintain it. And most important, you'll reduce the risk of a fire in your home.



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