

# Facts about fireplaces

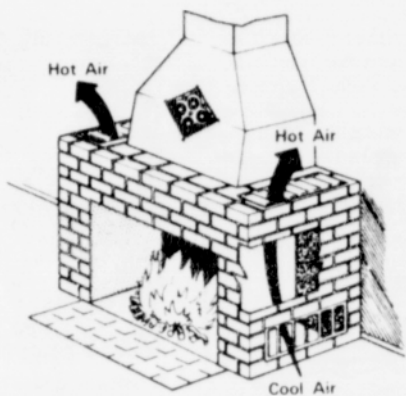


Figure 1. Heat-Circulating Pre-fabricated Metal Firebox.

As late as the mid-1800's, most of this country's fuel needs were met by wood. Soon after, other fuel sources emerged that were as inexpensive and abundant as wood. As a result, wood suffered a sharp decline in popularity and appeal as a fuel. Homeowners turned to more efficient, safer and easier-to-care-for oil, gas and electric heating systems.

Today, the energy situation has changed and homeowners, faced with the rising cost of oil, gas, and electricity, are reconsidering the benefits of wood. Now, living room fireplaces that went unused for years are now being put back into use to provide supplemental heat.

But using the fireplace can actually waste, instead of save, heat, and increase, instead of decrease, your energy costs. The Department of Energy offers the following suggestions on how to get the most out of your fireplace.

### Why Fireplaces Are Often Inefficient Heating Systems

Though an efficient fireplace can make a room cozy and warm, most fireplaces provide little to no additional heat for the following reasons:

**First**, only ten percent of the heat a normal fireplace produces actually gets into the room; the rest goes right up the chimney. This happens because a fireplace depends on an updraft to keep the fire burning and to remove smoke.

**Second**, this flow of air not only takes the heat from the fire up the chimney, it also sucks warm air produced by your regular heating system out of the room. A fireplace can actually waste up to 20 percent of heat that your regular heating system produces. This is because, when your furnace is on, a considerable amount of heated air from the rest of the home flows into the fireplace and goes wastefully up the chimney. Then the temperature in the other rooms of the house goes down, and the furnace uses more fuel to raise it to the level controlled by the thermostat.

**And finally**, fireplaces heat mainly by radiation — that is, heat is generated when the rays from the fire strike something, such as a person or grouping of chairs. The

air in between is warmed only indirectly. (For this reason, you will notice that when sitting in front of a fireplace, while the front of you may be warmed by the fire, the back of you will remain cold.)

### Choosing An Efficient Fireplace

There are two types of fireplaces: masonry or prefabricated metal. Masonry fireplaces are made of brick, stone, or adobe. Prefabricated metal fireplaces come in free-standing and wall units. Of the two, metal fireplaces are more efficient than masonry fireplaces, because the metal hood and flue radiate more heat into the room. They can also be placed in the middle of the room for better heat distribution. However, the metal units do not hold heat as well as the masonry units and cool quickly, once the fire is out.

If the plan to build a masonry fireplace, you can keep the masonry look but get a more efficient system by installing a pre-fabricated heat-circulating metal firebox inside the masonry construction (see Figure 1).

A system of cool air inlets built into the base of the hearth draws air into the unit. Two baffles direct the air against the back and sides of the hot metal box. The warm air is then circulated upward into the room through air outlets located above the fireplace opening. When properly installed, these units circulate more heat into the room than the masonry construction because the metal absorbs less heat. In existing fireplaces, these fireboxes must be custom-built and installed.

### How To Increase The Efficiency Of Existing Fireplaces

A number of devices are available that capture some of the heat that could otherwise be lost up the chimney, and circulate it into the room. These devices include heat extractors, exchangers and

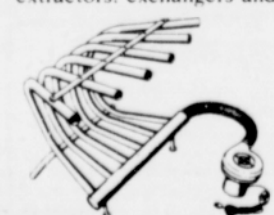


Figure 2. Hollow Tube Heat Extractor

savers. Some of these devices employ a blower to draw cool room air through hollow tubes (see Figure 2), rectangular chambers, or passage ways near the fire. The air is heated by the fire as it goes under, behind, and then over the fire; the air is then blown back into the room. Others depend on natural convection. Air enters the hollow tubes, chamber, or passageway, rises as the fire heats it, then is directed back into the room.

### Reducing Room Air Loss

Placing a heat-tempered glass firescreen in front of the fireplace opening will help decrease the amount of room air carried up the chimney. When the doors of the firescreen are closed, very little air can enter the fireplace except through air inlet dampers at the bottom of the unit. The heat of the fire radiates through the glass to the room. The fireplace screen also helps cut on the amount of heated room air that escapes through the open fireplace damper after the fire has died out.

Here are some additional tips for lessening heat loss from your fireplace when the furnace is operating.

-Lower the thermostat setting to 50°-55°F. Some warmed air will still be lost, but the furnace won't have to use as much fuel to heat the rest of the house to these temperatures as it would to raise the heat to 65 degrees.

-Close all doors and warm air ducts in the room where the fireplace is located and open a window near the fireplace about an inch. Air needed by the fire will come through the open window and the amount of heated air drawn from the rest of the house will be reduced.

-Have separate outside air ducts installed to provide the air needed for the fire. These ducts will reduce the amount of room air needed to supply this air for the fire.

-To avoid a large amount of heat loss through the fireplace damper, keep it open just enough to prevent the fireplace from smoking. Close the damper tightly once the fire has died out.

-Inspect and clean the inside of your chimney regularly.

Here is a publication that will provide a thorough background on the selection and installation of fireplaces as well as other woodburning systems:

**Fireplaces and Chimneys**  
U.S. Department of Agriculture  
Available from:  
Superintendent of Documents,  
U.S. Government Printing  
Office, Washington, DC  
20420, Stock No. 001-000-  
01520-6.

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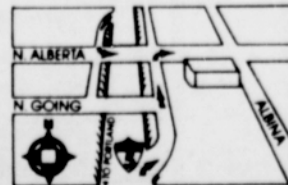
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