

# FIRESIDE

## Hearth & Home Shop



### SELECTING A GAS FIREPLACE, GAS STOVE, LOG SET, OR INSERT

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### TYPES OF GAS APPLIANCES

The three most common gas appliances used in this area are **VENTED**, **VENT FREE**, and **DIRECT VENT**. When you are considering a new unit for your home, you should understand the pros and cons of each.

1. **Vented Gas Appliances:** Vented gas fireplaces use room air for combustion (unless a provision has been made to bring outside air to the unit). This air will commonly be drawn in through the front of the unit. Once combustion is complete, by-products are directed into the unit's exhaust vent and conveyed outside. Vented gas appliances consume 35-75% more gas than a vent free or direct gas product. Although they produce significant heat, and some of the heat is directed into the home, most will go up the chimney. For this reason, this type of appliance should not be purchased for heat. Instead, a vented gas unit is for people who want the ambiance of a fire in their home. Vented gas appliances give the most realistic look of all gas appliance types—the closest there is to a wood fire.
2. **Vent Free Gas Appliances:** Vent free units use room air for combustion (unless there is a provision to bring outside air to the unit). Unlike vented or direct vent appliances, combustion by-products from vent free units are expelled into the room—hence the term “vent-free” (a more accurate term is “room-vented”). Room venting is possible because these units are designed to minimize the amount of carbon monoxide and soot produced. For safety, vent free appliances are equipped with an Oxygen Depletion Sensor (ODS), which is designed to turn off the gas before carbon monoxide reaches dangerous levels. (However, it's a good idea to install a carbon monoxide detector no matter what type of fuel-burning appliance you have.). Vent free appliances operate at a measured efficiency range of 90.7%. However, with the ventilation requirements this figure is actually lower, and can drop into the 70% range. While many appliances advertise efficiencies of 99.7%, it should be kept in mind that this is combustion efficiency, not overall appliance efficiency. In addition, these appliances are available only up to 40,000 BTUs.

While the initial cost of vent free appliances is usually the lowest of the three types, the consumer needs to keep in mind the following limitations and cautions associated with these products:

- The unit should be used for a limited number of hours each day (usually 2-4 hours of every 24);
  - An allowance should be made for fresh air to enter the home to serve as dilution air for the unit and ventilation (for example, cracking open a window). Many appliance manufacturers now recommend that there be permanent air entry points into the home to provide this fresh air. This is a critical factor in today's more insulated homes, as often there is not sufficient air available for the unit to operate properly;
  - The appliance should never be used when the occupant is sleeping or away from home;
  - Moisture production should be considered. A by-product of gas combustion is the production of water vapor. For each 100,000 BTUs of gas used by the unit, one gallon of water vapor is produced. The average vent free appliance will release one gallon of water vapor over every 2 ½-3 hours of operation. This moisture may cause window fogging, mildew, mold, and other issues. The better insulated or weatherized the structure, the more important this factor becomes. This is not a problem with vented or direct vent appliances because these products vent moisture to the outside;
  - Although vent free gas appliances produce low amounts of carbon when new, as the unit is used, the burner system can get clogged from dust and fibers in the room air. This causes the pollutant production level to rise, and there is a dramatic increase in the carbon by-products that enter the home. Regular maintenance is therefore critical with a vent free appliance;
  - Due to the use of room air for combustion, consumers of vent-free products are often bothered by a gas smell or odors associated with the combustion of less-ventilated air (these include the unpleasant odors of "burned" pet dander, candle emissions, potpourri, or new carpet);
  - Consumers with allergy or respiratory problems should be aware that many individuals with these conditions have difficulty tolerating vent free products;
- Some states have outlawed vent free units, or prohibit their use in bedrooms or in institutions for the frail or elderly. Consumers should be aware of the laws regarding these units in their state.
3. **Direct Vent Gas Appliances:** Direct vent gas products are rapidly becoming the number one gas appliance for today's consumers. This appliance is unique because it does not use room air for combustion. Instead, the unit's vent pipe supplies combustion air. The pipe is either a pipe within a pipe, or in the case of an insert, two pipes. The double pipe system uses one section of the pipe to draw outside air, while the other vents exhaust to the outside. A benefit of this venting system is that it is next to impossible (with a properly manufactured, listed, and installed appliance) for combustion by-products (such as carbon monoxide) to enter the room. The direct vent appliance also functions without a blower (although blowers are available for these units), and will serve well during periods of power outages. The unit transfers heat via a process known as convection, which more evenly heats the home. The measured efficiency of a direct vent appliance is approximately 74-87%, and these units can be used to heat large areas or even entire homes. They tend to operate at a lower hourly cost than either vented or vent free products, and can be operated while the occupant is asleep or away from home—up to 7 days a week, 24 hours a day. Many of these appliances are furnace-rated by the government.

For further information about the pros and cons of gas appliances, please see the following websites:

[www.cpsc.gov/cpscpub/pubs/452.html](http://www.cpsc.gov/cpscpub/pubs/452.html)

[www.homebuying.about.com/od/gaslogs](http://www.homebuying.about.com/od/gaslogs)

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