

Getting Started With Wood

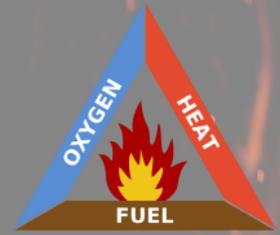
Rules to Purchase Firewood:

- Purchase your firewood in the spring, never buy your wood in the winter. Wood should be **cut and split** for a minimum of 6 months to burn properly. Wood that is kiln dried is not the same as seasoned wood.
- A cord of wood is 8' long x 4' tall x 4' deep or **128 cubic feet**.
- Dry “seasoned” firewood will crack on the end and be gray in color and be lighter in weight than comparable fresh cut wood.
- Fresh cut wood will have a moisture content of 45% while seasoned wood will have a moisture content of 20%-25%.
- Seasoned firewood will make a clear “clunk” when ends are beat together where wet wood will make a dull “thud”.
- Wood should be stored off the ground and protected from rain and snow. Ideally in a wood shed. Wood that reabsorbs moisture will eventually rot.
- Just because a tree or a limb has been on the ground for three years, does not mean it's seasoned or dry.



Starting A Fire:

- 1) To start a fire you need three things, A) oxygen, B) heat and, C) fuel. The initial heat will come from your match, the fuel is your wood and the oxygen is supplied by the draft of the appliance.
- 2) Open the bypass damper (If applicable) and air shutter on your appliance.
- 3) Begin with preheating the flue. This can usually be done with a rolled up lit newspaper, fire starters, a hair dryer or a torch. Once preheated you should notice a change in the air flow.
- 4) Start by placing smaller pieces of fuel wood on the bottom of your fireplace or stove. If possible place the wood front to back. Placing the wood front to back will help the air mix in the appliance.
- 5) Place an ample amount of dry kindling on top of the fuel wood.
- 6) Next place several pieces of tinder on top of the kindling to ignite your fire. There should be enough tinder on top to light with a single match.
- 7) When finished your wood should be at least halfway up the opening of the door.
- 8) As the fire burns from the top to bottom it will continue to ignite the wood below. This should result in a “light it and forget it procedure” and will also limit the amount of smoke that is produced from the fire.
- 9) After a good hot fire has been established you can close your bypass damper and continue to use your appliance as normal.
- 10) Your blower should come on after 30-40 minutes .



Choosing Wood

Why don't you want to burn wet wood:

- All wood has the same heating value when properly dried.
- Oven Dried wood Firewood (Generally for lab testing) will have a moisture content of 0%. This will yield an available BTU input of 8,600 Btu's/lb for hardwoods and 9,000 Btu's/lb for softwoods.
- Fresh cut wood will have a moisture content of about 50%. This will yield an available BTU input of about 4,000Btu's/lb.
- Properly seasoned firewood will have a moisture content of 20%-25%. This will yield an available BTU input of 6,200 Btu's/lb.
- Wet wood will cool the fire in your wood burning appliance. If your fire is not operating at the proper temperature then it will produce creosote. This will result in your glass staying black on your unit, and creosote build up in your chimney system. Enough creosote build up could result in smoke back into the home as the result of a clogged chimney or a chimney fire.

Expected heating value of different wood species by the cord.

*millions of btu's

Wood Species	Heat Per Cord*	Wood Species	Heat Per Cord*	Wood Species	Heat Per Cord*
Beech	27.5	Oak White	29.1	Locust	27.9
Apple	27.0	Pine White	15.9	Cedar	13.0
Oak Red	24.6	Walnut Black	22.2	Elm	20.0
Cherry	20.4	Willow	17.6	Hemlock	19.3

Vocabulary

BTU or British Thermal Unit: A measure of heat energy; the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level.

Catalytic Combustor: Is a device designed to increase combustion efficiency by lowering flue gas ignition temperature. Consists of substrate, wash coat (platinum or palladium), catalysts and casing system.

Catalyst: Once properly heated the catalyst will lower the ignition temperature of the smoke (flue gasses) and will burn them off creating more heat. Ignition temperature will drop from around 1100° to around 500°-600° Fahrenheit.

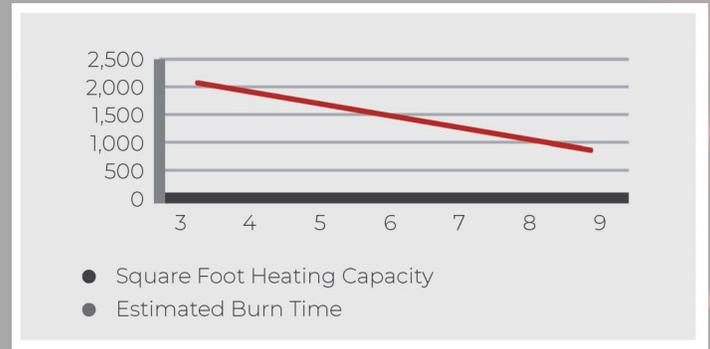


Vocabulary

Burn Times: Reasonable expectation of how long a stove will produce useable heat. Generally speaking enough coals to ignite a new batch of firewood.

Burn Times can be affected by:

- The strength of the draft of the chimney system
- The length, diameter, moisture content, and wood species of firewood
- Firebox size
- Air Shutter setting
- How well the firebox is loaded.



Cleaning: The National Fire Protection Association Standard 211 says, "Chimneys, fireplaces, and vents shall be inspected at least once a year for soundness, freedom from deposits, and correct clearances. Cleaning, maintenance, and repairs shall be done if necessary."

Heating Capacity: Is intended to give a reasonable expectation of how large of a house an appliance will heat. These are expressed in terms of square footage. These are also national numbers. They give the same heating expectation for Miami Florida as they do Portland Maine.

Tinder: Anything that will easily ignite when heat is applied. (Pine needles, news paper, fat wood, tree bark, or slithers of wood are some examples). Any small material that will light kindling. This is essentially your fire starter.

Kindling: Larger than tinder. Generally no larger than your thumb

Draft: is a force that exists in a properly designed chimney system. It pulls air into the combustion chamber and expels smoke and combustion gases from the appliance. *The ability for draft to exist depends on many factors: location and height, elbows, horizontal runs, flue size, house construction, house pressurization as well as atmospheric environmental conditions.*

Bypass damper: Used to bypass the baffles inside the stove. Commonly used to start the fire and for open door burning.

Air Shutter: The air shutter can be a knob, pull handle or slide. It is used to control the amount of air flow in your stove. This will adjust heat output and burn times. *A closed air shutter will equal longer burn times, lower heat output, more creosote formation and dirty glass (usually a dark brown color). In contrast an open air shutter will result in shorter burn times, more heat output, less creosote formation and a glass that will generally stay clean.*

Non-Catalytic Stoves: Work to burn flue gases by producing a higher firebox temperature and proper amounts of combustion air and a mixing chamber around the baffle to ignite the flue gases.



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