



Hardwood vs. Softwood

Quality Fuel is More Important than Species

Traditionally, hardwood has been the preferred fuel in wood stoves and fireplaces because it naturally has a lower moisture content, is a denser fuel, burns longer, and has hotter coals. Softwood is known for burning hotter initially, easy to light, having more pitch or sap, more sparks and sound as it burns, but burns up more quickly. The pelletizing process takes away many of these differences, and at Cypress Pacific Marketing, we test all of our pellet brands, ensuring you're receiving a consistent quality product whether it's softwood or hardwood.



After wood chips are ground into sawdust, they are dried to a consistent moisture level. The sawdust is then compressed into pellets at a common density, about 40lbs per cubic foot. It doesn't matter if the sawdust came from a softwood species, hardwood species, or a blend; they are all compressed to the same density. If you look at BTUs of different species of wood, they are very similar. Wood pellets are about 8000 BTUs per pound at 6% moisture.

Quality is Most Important

After you normalize the moisture content and density, the wood pellets have about the same heat value, but there are still some differences between pellet mills and brands. Ash content, ash characteristics, and pellet length do affect burn and maintenance requirements.



While premium pellets are all under 1% ash content, that could be anywhere from around .25% to .8%. After 10 bags of fuel (or approximately 400lbs), that could make the difference between 1lb of ash or over 3lbs of ash. With good maintenance habits, you may not even notice, but it's still three times the ash.

The ash has to go somewhere. Some ash is very high in heavy minerals that in extreme temperatures will melt and re-harden into dirty glass, forming clinkers and scale in the firepot. Some ash will collect in the firebox as heavy fly ash, while some lighter fly ash will collect in your heat exchanger. Still more could settle in your vent system, with the lightest ash being exhausted out your vent. The difference could be the species, or just the side of the mountain it was grown on. Your appliance will perform best with regular maintenance to keep ash under control.

Pellets also come in different lengths. Usually they are between .25 inches and 1.5 inches. In most pellet appliances, shorter pellets feed faster than longer pellets. As you change from one length to another, you may have to increase or decrease the feed rate of your appliance. In order to get the same burn you may need to decrease the feed rate a little for shorter pellets and increase it for longer pellets. Other than slight changes in feed rate, the burn characteristics and heat value should be very close to the same.



So which should you buy? All fuel sold by Cypress Pacific Marketing has solid third-party testing data, confirming a quality fuel that will provide great heat value. Have confidence in purchasing both hardwood and softwood blend pellets.

Pellet Benefits

Wood pellets were first engineered in the 1970s in response to an energy shortage in the U.S. and are generally manufactured from wood waste generated in saw mills, furniture manufacturing facilities, paper mills, etc. Burning wood pellets can be used as a substitute for electricity; wood-fueled fireplaces and stoves; or fossil fuels, such as propane or natural gas. Pellet fuel is burned in appliances, such as freestanding stoves, fireplace inserts, furnaces or commercial burners.

Convenience

- Clean and allergy-free. No dust or dirt is brought into the home with pellet fuel.
- Stored in less space. Four times more pellet fuel can be stored in a given space than cordwood or wood chips. A winter's supply of pellets for an average home occupies a space roughly 6' x 6' x 6', which makes them easy to store in a small area of a dry garage, basement, utility room or shed.



- Easy to use. Load once a day. Precisely regulated fuel feed automatically operates the stove according to owner-determined settings.

Efficiency

- More efficient fuel than cordwood. Pellets have five to 10 percent moisture content in comparison to 30 to 60 percent for cordwood and woodchips. This means pellets are a more efficient fuel.
- Higher Btu content than cordwood. Wood pellets have a Btu output content of 350,000 per cub. Ft. of fuel, versus 70,000 to 90,000 for cordwood or wood chips. This means pellets produce more heat.

Environmental

- All natural fuel. Once compressed and dried, pellets hold their form with natural lignin, which means no glue or binders are required.
- Cleaner burn. Pellet fuel has proven to provide the cleanest burn of any solid fuel. Pellet stoves exhaust an average of 1.2 particulate grams per hour – well below the United States EPA wood burning limit of 7.5 grams. This is because the combustion air can be easily regulated, which optimizes the burn efficiency, and because of pellet's low moisture content.

Sustainability

- Energy from waste. Pellet fuel is made of waste products, such as pallets and manufacturing excess. It is a practical way to utilize biomass materials from sustainable forest initiatives, especially for commercial applications
- Other Biomass products. Cornstalks, straw, wastepaper and even animal waste can be converted into pellets.

High quality pellets come in all colors and sizes!

There are more to pellets than just softwood or hardwood. Matching pellets to appliance is an important step in order to receive the highest heat output, cleanest combustion, and highest efficiency. Here are some things to consider when choosing your fuel.

Wood Pellet Color

When choosing a fuel, you may notice that there are many different colors of fuel. Usually the lighter fuels are softwood while the darker pellets are hardwood. The fuel in the



center of this photo is made from lodge pole pine that died from pine beetle infestation. The enzymes they secrete into the wood makes it blue, so the pellets turn out darker. Some softwood whole-tree pellets are also darker because of the bark and needles mixed with the wood. In other words, it's tough to pick a "best" pellet based on color.

Wood Pellet Length

From one brand to another, or even from one season to another of the same brand, it's very likely that the pellets you buy could be shorter or longer in length on average. This is very normal. There are several variables that determine the length of a pellet during manufacturing and any one of them could be different from brand to brand or season to season. How does this affect burn? Longer pellets will feed less fuel into the firepot with every rotation of the augur than shorter pellets. If everything else in the appliance stays the same, and the only difference in the fuel is the pellet length, the shorter pellets will provide more fuel to the firepot than the longer pellets. You will need to reduce the feed rate or increase air flow through the firepot to maintain the correct fuel to air ratio. If you don't, you could have incomplete combustion, leading to more and darker ash, blackened glass, a lazy fire, and lower combustion and heat transfer efficiency.



Wood Pellet Density

Pellet manufacturers compress the wood fiber to a consistent density of at least 40lbs per cubic foot. That means that if you fill a cubic foot container with the pellets (just pour them in), it should weigh at least 40lbs. But it's difficult to compress to that exact density consistently, so most pellet mills compress to 41lbs or 42lbs. It's not uncommon that the pellet could be as dense as 44lbs or more. If one bag of wood pellets is denser than another, it will deliver more fuel to the firepot with each rotation of the augur than the less dense pellet. If you have two brands of pellets, you can stack eight bags of one brand on top of each other next two eight bags of the other brand. The taller stack is the less dense pellet. Being less-dense or more-dense isn't bad, but it does change the fuel-to-air ration in the appliance. If you switch from a less-dense pellet to a more-dense pellet, you will need to reduce your feed rate or increase airflow through the firepot to maintain the correct fuel to air ratio.



What is the best pellet?

There are a lot of great pellets available. All Cypress Pacific Marketing pellets are tested by third party test labs to make sure you are getting a quality fuel no matter which one you select.

No really, what is the best pellet?

The higher the BTUs, the hotter the burn. The lower the ash content, the less maintenance you will need to do. Those are general rules of thumb, however length of fuel, density, and moisture content also play a part in good combustion.

Different Types of Pellet Heating Systems

There are several different types of pellet heaters available. Based on the location choices you have available to you and your heating goals, one type will most likely meet your needs the best. You may need more than one unit in your home in order to satisfy your heating needs. These are guidelines only. Your pellet heating system professional will be able to help you determine which unit will fit your specific heating needs.

Size, Design, Operation, and Features

Pellet heat systems come in many different sizes and designs. Size, in terms of heating ability, is determined by consumption rate. In other words, how many pounds of fuel does the appliance use per hour. There is usually a low and a high number, giving you the range of heat output capable by the appliance. For example, if the appliance consumes 1.5 pounds per hour on low and 4 pounds an hour on high, the consumption rate is about 12,000 to 32,000 BTUs per hour. If the efficiency of the appliance is 75%, then you'll get 9,000 to 24,000 BTUs per hour into your home. Maybe that's kind of technical, but in general that's how pellet heaters are sized.

From simple and clean styling for basements and utility rooms to elaborate enamel finishes for formal living rooms and bedrooms, pellet stove designs vary greatly. You're sure to find an appliance that fits your home's décor while meeting your heating needs.

It's important to learn about the operation of the brand or model that you're interested in. Different brands and models have different control systems, maintenance procedures, and operational features. Your appliance dealer can explain the proper procedures for operating and maintaining your appliance.

Pellet Stoves

Pellet stoves are free standing heat systems. They can be installed in almost any room and are best used as a secondary focal point, meaning you may have another focal point in the room like an entertainment center, library, or picture windows. They can be installed against a flat wall or in a corner. Venting for the appliance can usually be installed directly out an exterior wall, straight up a few feet and then turn to go out an exterior wall (if in a basement), or straight up through a ceiling and roof. Make sure you are using venting appropriate for you installation. Most pellet stoves need a non-combustible surface on the floor. Pellet stoves are also a great replacement for existing wood stoves and can usually be positioned closer to a combustible wall than the wood stove, taking up less space in the room.

Pellet Inserts

Pellet inserts are normally installed in wood burning fireplaces. If you have a wood burning insert already installed in the fireplace, that will need to be taken out. Wood burning fireplaces can be either masonry site-built fireplaces, or factory built fireplaces. Either way, you will need to take measurements of your fireplace (height, width at the front and rear, and depth at the top and bottom) with you to your local appliance dealer in order to know what appliances will fit into your fireplace. If it's been used, you'll need to clean your fireplace and chimney before installation. Normally, part of the insert will sit back into your firebox and part of the insert will sit out onto your hearth. A surround panel will finish off the space between the insert and your fireplace opening, providing a clean and finished appearance. Pellet fireplace inserts are generally vented straight up through the existing flue. A continuous stainless steel flexible liner is the most common method.

If you don't have a fireplace, but like the appearance of fireplace inserts more than a freestanding stove, many pellet inserts can be installed without a fireplace. Simply frame in a small alcove into a wall, or install a cabinet mantel, and the pellet insert can be placed in the opening and give the appearance of a fireplace. See the installation manual or ask your dealer if that type of installation is available.

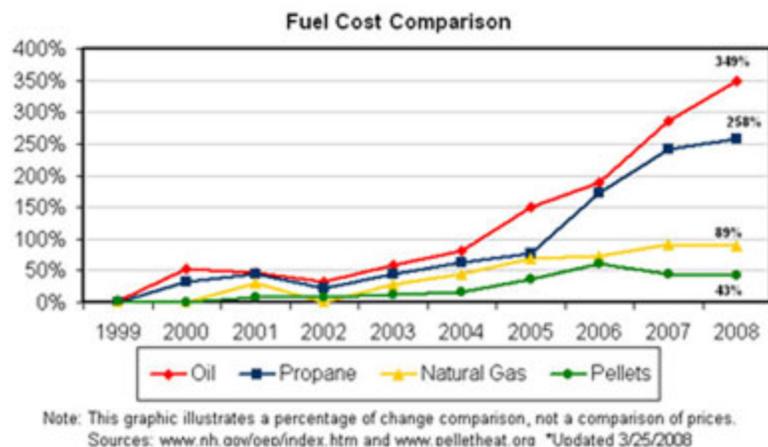
Pellet Furnaces & Boilers

A pellet furnace or boiler can be used in conjunction with your existing central heating system. These more utility styled heat systems have larger fuel storage hoppers designed to hold several days use of fuel. They are normally installed next to your existing furnace or boiler with your existing heating system set up to use the pellet system as the primary heat source, and your existing furnace or boiler as the backup system set to come on if you were away and your pellet system ran out of fuel.

Save Money with Wood Pellet Heat

Don't be a slave to the crisis of the season!

Storms, local and global economies, energy demand, even political events can greatly affect the price of energy, and lately it's been quite a ride. The ups and downs of energy can put you on unstable financial ground. Do you find yourself watching the news and stock market almost daily, trying to decide if you'll be able to afford heating your home in the winter? Did buying fuel oil in the Spring feel more like playing the slots in Vegas than ensuring affordable heat?



Wood pellet heat has been consistently the most price-stable and affordable source of warmth for your home for the last ten years.

This graph shows changes in fuel pricing since 1999, with pellet fuel costs rising substantially slower than alternatives.

Note: This graphic illustrates a percentage of change comparison, not a comparison of prices.
Sources: NH Office of Energy and Planning and the Pellet Fuel Institute
Updated 10/31/2007

Natural Heat for Your Home

Over 800,000 families across the nation have discovered the wonderful benefits and penetrating warmth of wood pellet heat. In these difficult economic times, they are also benefiting from one of the most price-stable heat sources available.

Compared to oil and other home heating sources, wood pellet heat has been a stable energy source for the past 20 years. Despite incredible growth over the last several years, pellets are still affordable.



Fuel Cost Comparisons

A fuel cost comparison spreadsheet is available online through the Pellet Fuels Institute. This on-line interactive form can help you make comparisons of relative fuel costs in your area for each of the following fuels:

- Wood pellets or other biomass fuels
- Heating Oil
- Propane
- Natural Gas
- Cordwood
- Electrical Heating
- Coal

You will need to enter your local costs for the fuels you are considering. The PFI institute site reports "national averages", but this data may not be current or appropriate for your area. Appliance efficiency also plays a role in cost-effective heating, and we are pleased to report that pellet stoves are generally among the most efficient heating appliances. We believe the PFI data for appliance efficiencies to be reasonable estimates, but can't guarantee they reflect efficiencies in your specific application.

Clicking on the link below will take you to that page of the PFI web site.

<http://www.pelletheat.org/3/residential/compareFuel.cfm>

General Questions about Wood Pellets

What are wood pellets?

Pellets are small, tightly-compacted wood products that can be burned in a pellet burning appliance, such as a stove or fireplace insert. They're manufactured at nearly 100 mills in North America, and created by compressing sawdust remnants from the lumber industry, furniture and flooring manufacturing, and from forestry by-products. Pellet fuel is also made from other agricultural waste.

How much will I save over traditional heating fuel with wood pellets?

It depends on your current heat source, your climate, the size and heat loss of your home, and how warm you like your home to be. Many of our oil and propane heating customers have cut their annual home heating costs in half during the highest petroleum prices this summer. As some energy prices dip again, it's a reminder that many traditional heat methods are hardwired to the crisis of the season. Choosing a heat source is a long term decision and wood pellet heat is proving to be the most stable, and will not only save you money, but provide long term heating security.

Why are pellets shiny?

Lignin, a naturally-occurring substance in wood, rises to the surface during wood pellet production and leaves the pellets smooth and shiny. It also acts as natural glue and is what holds the pellet together.

Can pellets go bad?

No. As long as you store them properly, you should have no problem storing them for several years.

Is there a pellet shortage?

No, but pellets can be hard to find at times. Cypress Pacific Marketing has thousands of tons of wood pellets in stock throughout the country with the capacity to meet our current dealer demand and beyond. We also have excellent long-term contracts with pellet manufacturers across North America, ensuring a reliable source of pellets for years to come.

Why is my glass turning black and firepot overfilling?

Poor combustion. That's the simple answer. You are not getting enough air into your firepot for the amount of fuel you are burning. It could be feed rate settings, a damper control, or your firepot, heat exchanger, or vent may need cleaning. Consult your heating system owner's manual for more information.

Is it possible that my pellets are bad?

Sure, but not likely. It is however, very possible that your pellets are different than the last brand you used, or if they are the same brand, they could have changed from batch to batch. You may have to adjust your feed rate setting or damper control. Consult your pellet system owner's manual for adjustment instructions.

I think my pellets are wet. How can I tell?

If the pellets won't light at all, the pellets crumble or feel moist, the bag is tight or the pellets don't move around in the bag, and the bag weighs more than 40lbs, than it's likely those pellets are water damaged and should not be put into the pellet appliance.

Questions about Fuel Selection

What pellet is best for my stove?

All of the fuel we sell at Cypress Pacific Marketing meets strict ash content, heat output, and quality guidelines and is classified as PFI Premium wood pellet fuel. However, pellets do vary in length and density, so it may take some appliance adjustment to get that perfect burn. Consult your owner's manual for specific fuel limitations or requirements before selecting a fuel for your heating system.

Why do some brands cost more than others?

Raw materials and transportation costs to get the pellets from the mills (where they're produced) to our warehouses (where they're shipped to you) vary, so the price per ton can fluctuate. As part of our effort to make pellets easily available to consumers across the country, pellets may have to travel long distances to get to you. As we expand our network, we expect to implement even more efficient delivery systems.

Which are better; hardwood or softwood pellets?

This is a much debated question, and if you are new to pellets, you may eventually form an opinion as well. The pelletizing process takes away much of the differences between hardwood and softwood, density and moisture content. BTUs can vary some, and ash content can also vary, but the quality and consistency of the fuel is more important than the species.

When is the best time to buy pellets?

Pellet manufacturers try to operate their factories all year. Stock, availability, and pricing are usually best in spring. For your convenience, we have pellets available at competitive prices all year.

How much does a furnace/boiler cost?

There are several pellet furnace manufacturers in the US and around the world, and the price varies by size and features. Typical residential furnaces start at approximately \$7,000 installed, and up. Boilers are usually a little more expensive and might cost approximately \$9,000 installed and up. Bulk pellet storage can cost anywhere from a few hundred dollars to a few thousand, depending on the systems selected. There are many ways to store bulk pellets inside, outside, and underground.

Environmental Questions

How is burning or manufacturing pellets beneficial for the environment?

By using wood byproducts that would otherwise go to waste, wood pellet manufacturers create a heating source that has very little negative impact on the environment, and closing the carbon cycle loop. Using this short-lived carbon from trees instead of fossil fuels keeps more the long-term storage of carbon in the ground. In some parts of the country, wood pellets are made from trees killed by an insect infestation. If those dead trees were left to decompose in the forests, they'd produce more greenhouse gases than they do being used for high efficiency heat.

How are pellets "green"?

People who heat their homes with wood pellets are using a clean, carbon-neutral renewable fuel that emits extremely low particulates into the atmosphere. Wood pellets contain nothing but wood. Being carbon neutral means that they close the loop of new carbon stored by trees in high efficiency heating systems without exposing the older stored carbon of fossil fuels, giving them a bigger "bang for the buck" both monetarily and ecologically.

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