

## Briquettes

### Biomass briquettes

Making briquettes from biomass is a high efficient way to save your energy bill as well as to dispose of biomass waste. As a kind of renewable energy, the biomass briquettes, such as wood briquettes, saw dust briquettes or charcoal briquettes, made by briquetting machine, is widely used both in industry and civil scale for heating as a substitute of conventional fossil fuel - coal in particular.

Biomass briquettes can be made from wood, sawdust, crop straw, grass, civil waste and animal waste.

A briquette is manufactured by a briquetting machine, also known as briquette maker or briquette press.



**How does a biomass briquetting machine work?** Take making wood briquettes for example, under circumstance of high pressure and temperature, the lignin, which is a kind of polymer in the wood, originally working as a support of wood cell wall, will turn to a sort of plastic matter that bind the wood fibres together. That is also why any glue, or binder namely is not necessary in briquetting process, and it is also the reason why the outside of a wood briquette is smooth and shining.

### Benefits of briquettes?

The briquettes, known as a compact heating fuel, has several advantages over the traditional fossil fuel:

- **Better burning efficiency.** Heat value is highly concentrated in briquettes because of its compactness so that more thermal heat can be produced compared with other fuel with the same size. From our years of experience as well as feedback from customers, the biomass briquettes, especially wood briquettes are 40% higher in term of burning efficiency.
- **Reduction in biomass volume.** Briquetting can reduce the size of the biomass feedstock up to 90%. This results in high bulk density. Unlike raw biomass material whose density is about 60-180kg/m<sup>3</sup>, the briquettes have a much higher density of around 1200kg/m<sup>3</sup>.
- **Smoke and ash free.** One of the reasons why you can burn biomass briquettes or wood briquettes in a fireplace or stove at home is that they produce no smoke or very subtle ash based on the specific material used for making the briquettes. As manufacture technology and relevant fuel energy standardization revamp, to burning biomass fuel: pellets, briquettes and suchlike is getting more and more clean and environmental friendly.
- **Easy get easy keep.** Chances are when you own a saw mill, a furniture factory or a farm, you might have been in trouble dealing with those biomass by-products. One of the easiest way to solve your problem is making them into biomass briquettes. No matter what shapes of briquettes you get: square, hexagon, round, etc. they are always convenient to pack and transport.

Briquettes are cheap, easy to delivery, recyclable, and use biomass which otherwise may be wasted.

## Cardboard briquettes

Briquetting paper or cardboard is a great way to source renewable energy. It also means more floor space will become available due to the compaction taking place and there will be less of a fire hazard risk.

Paper and cardboard are very easily recycled materials meaning a good return can be expected on well-made briquettes.

Briquettes can also be turned into biomass heat when they are properly moulded. If the paper and cardboard waste isn't the correct size the briquettes may crumble.

Sourced from <https://www.fercell.com/recycling/briquetting/paper-cardboard>




## How to choose a briquetting machine?

Given that briquetting industry is expanding different designs of briquetting machines are coming available. By and large three kind of briquette press can be observed in the market: stamping type briquette press, screw press briquetting machine, and hydraulic briquetting machine, each type has its unique power driven pattern. An integrated machine that can produce both briquettes and pellets is emerging. This dual function machine is just an improved type of stamping briquette press.

Briquette machines are available for making charcoal briquettes, wood briquettes, straw briquettes, paper briquettes, and cardboard briquettes.

Below is a comparison of the three types of biomass briquetting machine that are mainstream on the market:

### Briquetting machine review

	hydraulic briquetting machine	stamping type briquetting machine	screw press briquetting machine
Raw material size/mm	3 - 20 mm	3 - 20 mm	3-5mm
Raw material moister required	6% - 18%	10% - 20%	8% - 12%
Product profile	 Φ=70mm	 Φ=70mm Pellet: 8mm, 10mm, 22mm, 30mm	 Φ=40mm, 50mm, 60mm, 70mm
Product density/ g/cm <sup>3</sup>	0.8 - 1.2	0.9 - 1.3	1 – 1.3
Capacity/ kg/h	125	800 - 1200	180 - 1000
Energy consumption/ kW/t	40 - 60	40 - 50	70-80
Mould lifetime	1000h - 1500h, cooling not required to mould	1000h - 1500h, cooling required to mould	1500-2000

PLC	yes	Yes, and vibration resistance	N/A
noise	Lower than 70db	Higher than 85db	Around 80db
Working environment	Dust free	Dust free	With smoke and ash
Users	High requirement with automatic control and working environment, complicated raw material component	High requirement with capacity (1 - 5 t/h)	Typically, the briquettes will be further processed to charcoal briquettes

Source <http://www.biofuelmachines.com/Briquetting-Machine.html>

Each type makes specification compliant briquettes. The difference is in the users' requirement.

While the waste paper has been polluted and there are many toxic substances contained, so it is not good for people to have a direct contact with it again. Thus, it is a good choice to have a try to make biomass pellets from the waste paper.

Another form of paper is the cardboard. The amount of paper and cardboard in the country is enormous, and the paper and cardboard waste that go the landfill sometimes are exported to other countries. Recycling paper and cardboard is quite the obvious option, but why not be creative and use them heating your house. It is best to try and use it locally instead as the great materials for pellet mill. The waste paper can be turned into pellets to power boilers. Apart from being used in large scale boilers, in some cases, they can potentially be used in small home pellet stoves or boilers.

When waste paper is made into [biomass pellets](#), it can be used as one green and renewable energy resource with a wide application. The waste paper pellet is a high efficient fuel that plays an important role in family heating, cooking, generating electricity, or as industrial fuel. They can discharge as high calorific value as possible, little smoke and ash left. That is to say, the utilization of waste paper pellets can not only create great economic benefit, but also save a lot of labor.

### The Benefits of Paper Pellet

1. Quality: Paper pellets are made to meet the quality demands of the energy system. They are very dense, and the Btu content is similar to coal. The dry processing gives them extremely low moisture content.
2. Cost: The price of paper pellets is one direct benefit and a main lure for customers. Transportation is the highest cost component, therefore, the distance of your industry from the pellet manufacturer may be the biggest determinant of its economic value.
3. Environment: Paper pellets have less sulfur and produce less carbon monoxide than coal, which makes them a little more attractive. Compared to wood, paper has less formaldehyde. Besides, using recycled paper for pellets is effective in reducing landfill waste.
4. Lubrication: Paper pellet dust can lubricate the burning system. It is found that paper pellets absorb some of the moisture on coal, allowing the coal to flow more easily on its way to burning.

[Paper pellets](#) are typically mixed with coal or wood before being conveyed into the boiler. Co-burning paper pellets takes a little more effort than burning a single kind of fuel. Yet, for the company that wants to save money, develop the region's economy, and improve some of its fuel handling, it may

be the right choice for the fuel needs. To process the waste paper, the pellet mill is necessary. There are some essential matters to be paid attention to.

[www.environmental-expert.com/articles/how-to-turn-waste-paper-into-biomass-pellets-391871](http://www.environmental-expert.com/articles/how-to-turn-waste-paper-into-biomass-pellets-391871)

I used to be a "papermaker". Wood pulp is expensive and clay is cheap so the goal was to put as much clay and other fillers like starch in the paper as we could. Since the fillers don't burn, you will get lots of ash. The leftover sludge from papermills is sometimes burned in solid fueled boilers and on occasion the clay will build up solid deposits on the tubes. In general burning large amounts of paper is probably not a good thing for a pellet stove.



