



wood stoves



what are they?

They're stoves for burning wood to heat your space, water, and even to cook on. A basic stove will be of cast iron or steel (lined with fire-brick to retain heat), usually with a door at the front for loading, lighting and ash removal – but sometimes on top in small stoves.

Stoves are typically around 3 times more efficient than open fireplaces, which also suck in air to operate without smoking, creating cold draughts.

A stove contains the fire, allowing the wood to burn in a controlled manner. The air supply can be regulated to alter the heat output of the stove. The metal casing of a stove heats up and radiates heat out into the room. You can have a stove with a back boiler to provide hot water or heat radiators in other parts of the house.

Types of stove

Traditional: typically square with 1 / 2 doors, often with glass; can come with large back boilers.

Contemporary: usually efficient, but have small fireboxes, so relatively low outputs. However, in a well-insulated house this should be all you need.

Masonry stoves: have a ceramic casing that acts as a heat store to radiate heat into the room for hours after the fire is out.

Range or cooker stoves: Aga / Rayburn are really designed for running on coal or oil. true wood-burning cooker stoves include Wamsler or Esse.

Pellet stoves: burn pellets made of compressed sawdust or plant waste; can be automatically fed from a hopper. You'll need a trained person to service the stove, plus available spare parts. The pellets must be delivered at the right moisture content and you need a dry pellet store.

Workshop stoves: small, can burn workshop scraps and sawdust, turning them into heat.



Stacking split logs under cover for at least one summer reduces moisture content to c. 25%.

what are the benefits?

Wood stoves have been criticised for 3 main reasons – removal of forest, carbon emissions, and pollution, especially in urban areas.

Forests: woodland is increasing in colder regions, along with the firewood resource (and we're not advocating the burning of tropical wood). Wood fuel should be used locally (to minimise fuel to transport it), which rules out large urban areas, where most people live. So we're not saying that wood heat is for everyone, by a long stretch.

Carbon: burning wood releases CO₂ (the same amount as if the trees died and rotted) but new trees absorb it. As long as we plant new trees and maintain forest cover, then it's not possible for wood burning to increase the amount of carbon in the atmosphere.

Pollution: emissions are lower than coal, oil or gas as regards Nox, Sox (acid rain) and carbon monoxide, but worse for particulates (electricity is too expensive for heating). Fewer units of energy have to be expended to obtain one unit of energy from wood fuel than for fossil fuels (except coal, but we definitely shouldn't burn that), so there will be less pollution involved in production. 'Clean burn' wood stoves are legal in smokeless zones, but still emit particulates, which can cause health problems when added to the pollution in urban areas. Stoves don't seem to suit cities.

In rural areas, wood heating is hard to beat on pollution, carbon and price – especially if you harvest from your own land or nearby woodland. It's a renewable resource, that needs no factories, fossil fuels or synthetic materials to produce. It's a rough-and-ready business that will provide security if other sources of heating fail. It doesn't involve electricity, plastics, remote controls etc. Wood fuel is good for communities, bad for multinationals, and its use promotes self-reliance.



Basic woodstove with logs stacked next to it, plus waste paper for lighting the fire, and a copper kettle on top for making tea.



what can I do?

Your supplier should provide advice and an installer, or you can install yourself. Make a register plate for the chimney (can be a sheet of stainless) with a hole for the flue pipe; seal flue and plate with fire cement, put fire string round door (both from plumbers' merchants or online).

If you have access to sheet steel and cutting / welding equipment, you could even build your own, but don't underestimate the work needed to build an efficient stove.

Hearth: stand the stove on a non-combustible slab extending at least 150mm at the sides and 300mm at the front. Keep stove at least 400mm from combustibles.

Flue / chimney: old chimneys will need re-lining, as tar could be deposited, causing a fire hazard, plus gases could seep through into living areas. Chimneys must be swept every year to remove creosote and tar and avoid chimney fires. Line and insulate your chimney to reduce the risk of chimney fire. The colder flue gases get the more tar they deposit and it is this tar that causes chimney fires. Where there is no existing chimney you can still install a stove using twin wall insulated flue pipe.

Firewood: 5 tonnes of wood per year is more than enough for a basic stove in your main living area – but that's assuming it's in use most of the time from October to April; unseasoned wood is heavier because of the water content.

You can buy logs split, or cords (lengths over 1m) and cut and split them yourself, in which case you'll need a chainsaw or a crosscut saw, and a splitting axe from a farm / garden equipment supplier (ask about protective clothing and health & safety). Trees are best felled in the winter when moisture content is lower, then cut and split to dry better. Store under cover for at least one summer, which should reduce moisture content to around 25%. Ash is probably the best firewood, as it has the lowest moisture content when green (c. 35%), but beech, cherry and hawthorn are also good. Don't use second-hand construction timber, unless you're sure it's untreated, as it will release toxic fumes; and not chipboard, plywood or mdf – even for kindling, as it contains formaldehyde. Bring some logs in and stack them next to the stove (not touching) – this will dry them more.

Lighting the stove: leave a layer of ash, add paper, dry kindling (you don't need firelighters) followed by a few small, dry logs. There will be an air inlet to adjust air flow – have this open at first, and slowly shut it down as the fire becomes more established. Many stoves have a primary and secondary air supply. Often, the primary air vent is near the base of the stove with the secondary vent nearer the top. To light the stove, open the primary air supply up. When it is lit then close the primary air down and use the secondary air to control the fire. Because the secondary air supply comes in from above this makes for more efficient combustion of the wood. Wood ash contains potash, and can be used as a fertilizer (best applied at the end of the growing season, and not on alkaline soil).

NB: stoves should definitely never be used just for aesthetics – e.g. a wood stove burning, but also with radiators running from a gas-fired boiler.

resources

- see lowimpact.org/wood-stoves for more info, courses, links & books, including:
- Andy Reynolds, *Heating with Wood*
- Lars Mytting, *Norwegian Wood*
- Dilwyn Jenkins, *Wood Pellet Heating Systems*
- Will Rolls, *the Log Book*
- hetas.co.uk – trade body for solid fuel
- nacs.org.uk – Nat. Assoc. of Chimney Sweeps
- woodheat.org – huge resource
- whatstove.co.uk – independent stove reviews
- nef.org.uk/logpile – useful info



Pellet stove, showing controls & bag of pellets.

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