What kinds of stoves are there?

While **boilers** supply heat to the entire house or several buildings, **stoves** are used to heat one or two adjacent rooms. In the case of wood-burning stoves, the following types can be distinguished:

- **Chimney stoves** (also known as room heaters) are mostly free-standing and are not walled in. The stoves, which are usually made of metal, are one of the most popular kinds of wood-fired stoves in many countries. These stoves can store only a little heat and have to be replenished often.
- **Tiled or storage stoves** are often firmly installed in the house. They have a large storage mass (e.g. tiles, chamottes), which allows them to release the stored heat slowly. Fuel has to be added less frequently.
- **Open and glass-enclosed fireplaces** have a firebox that is usually walled in at the back and, in part, on the sides. Open fireplaces in particular generate many pollutants and little heat – which is why they should be used only rarely.

Pellet stoves are also placed in the living room, but, in contrast to wood-fired stoves, they are fired with wood pellets. As the fuel and air supply are controlled automatically, pellet stoves make a lot less work for the user and offer a comparatively low-emission form of combustion. They have to be refilled every 1-4 days.

Did you know?
In combination with a water heat exchanger, a stove can support the central heating system.

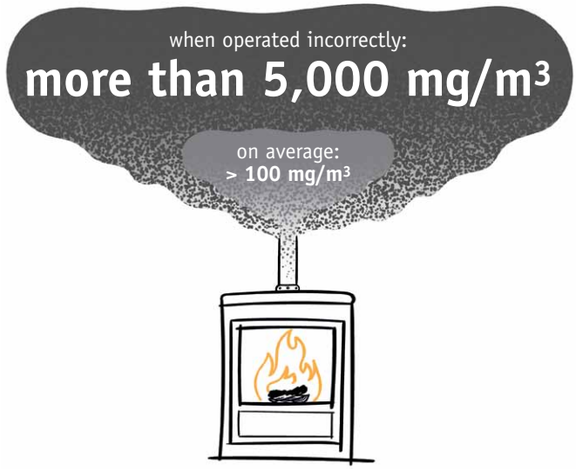
For further information on our project, as well as on how to operate stoves correctly, please visit our website.
www.clean-heat.eu

Heating with wood – environmentally friendly?

Did you know?
In Europe, stoves and boilers are the main source of particulate matter and soot.

As a renewable fuel, wood can be a good alternative to heating with oil, gas and coal. However, burning wood generates harmful substances such as particulate matter and soot. Particularly in the case of stoves, the actual emission of pollutants is usually much higher than the level stated by the manufacturer. **The way the stove is operated has a great impact:** incorrect operation can result in a drastic increase in emissions.

How much particulate matter is emitted?
Stoves, on average, in comparison to an old stove with simple technology, which is operated incorrectly:



It's in your hands!
With proper operation and by choosing the right fuel, you can reduce pollution. What's more, you'll save fuel costs and avoid generating smoke and a bad smell in your neighbourhood.

About Clean Heat

With our project Clean Heat, we aim at a significant reduction of particulate matter and soot caused by private wood burning. Together with our Danish partner DEC (Danish Ecological Council), we press ahead with technical and political solutions and provide information for consumers.

Clean Heat is co-financed by the LIFE programme of the European Commission. The project has started in autumn 2015 and will run until 2019.

More informationen about the project available at:
www.clean-heat.eu

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Environmental Action Germany is an officially approved charitable organization that works for environmental and consumer protection. We are independent, entitled to take legal action and have been campaigning to preserve nature and biodiversity for more than 40 years. **www.duh.de/spenden**

We work according to the guidelines of Transparency International Germany and DZI for reliable donation receiving organizations.

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clean heat

Stoves and the like
What you should know about heating with wood.

A project from Deutsche Umwelthilfe THE DANISH ECOLOGICAL COUNCIL

Did you know?

About 65 per cent of the energy consumed in households is used for heating.

Households should regularly check how they can generally reduce their heat consumption – e.g. by means of energy-efficient upgrades such as a modern heating system, new windows or better external insulation.

What do I have to keep in mind when buying a stove?

- The **decision to buy a stove** should be carefully considered due to their comparatively high emissions, and clean alternatives, e.g. low-emission biomass boilers, heat pumps or solar thermal systems, should be taken into consideration.
- **If you need to purchase a new stove, talk to a specialist dealer or a chimney sweep before buying.** They will know which kind of heating system will suit your household, what requirements the stove and chimney have to meet and will give you tips regarding its operation.
- **Electronic combustion air regulation** is useful as it improves the burning process. The same applies to **exhaust gas purification**: it helps to reduce emissions and should become standard, especially in highly polluted areas.
- **Pay attention to the right size and heat output of the stove.** Because if your stove is too big, the heat will literally be escaping „out of the window“.

What kind of wood can I use?

- **It’s best to use wood from sustainably managed forests.**
- For pellet stoves: use **pellets of the highest quality**.
- Ensure that your wood is **well ventilated and protected against moisture**.
- **Make sure the moisture content of the wood is correct** (max. 25 per cent). This can be determined with a wood moisture meter from a DIY store. Even dirty or mouldy wood can result in more pollutants being emitted. If the wood is too dry (moisture content below 10 per cent), e.g. if it was stored too long in warm rooms, it will burn too fast. That’s why it should spend some time covered up outdoors.


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- For optimum combustion, the logs must not be too thick or too thin. They should have a **diameter of approx. 6-12 cm** and be long enough that they can be stacked with a gap of a few centimetres from the stove wall. Use smaller logs only for lighting the fire.
- **Important:** Do not burn treated wood or waste! This generates extremely toxic substances, which also settle in your immediate environment.

How do I heat with wood properly?

In contrast to automated pellet stoves, using traditional wood-burning stoves, which are fired with logs, is much more demanding: the optimum amount of wood must be regularly replenished and the air supply correctly adjusted.

First, read the operating instructions carefully. They will give you important details on how to operate your specific stove. In general, however, the following applies:

① Lighting the fire

- A lot of combustion air is needed, especially when first lighting the fire. **So always fully open all air flaps.** Only when combustion is in full swing should the air supply be reduced as indicated in the operating instructions.
- Use **professional lighting aids** such as wood wool fire starters with wax. Cardboard or paper is not suitable because the ash they generate can hinder the supply of air.
- As a rule, it is recommended that you **„light from above“**, as this causes the upper part of the firebox to heat up more quickly and causes fewer pollutants.


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② Adding fuel to the fire

- Put more fuel on the fire **at the right moment**: when the visible yellow flames have nearly gone out and there are still enough embers present (generally about every 30 minutes).
- Make sure that you don’t overload the stove and **regularly add small amounts of wood**. Guideline: 0.15 kg wood per kilowatt of nominal heat output of the stove (see the operating instructions or the type plate).
- **Clean combustion requires oxygen:** don’t throttle the air supply too much. The stove interior should remain bright and have no black soot deposits.
- Caution: **open the stove door slowly** to avoid that smoke is emitted to your living room.

③ Maintenance

- Dispose the **completely cooled ash** in your household waste. Avoid raising dust, so that you don’t inhale ash particles that are harmful to health.
- The chimney has to be **cleaned regularly**. Depending on how often you use your stove, it should be cleaned between one to four times a year, as recommended by the chimney sweep.
- **What you yourself can do:** regularly check the door seal, the firebox lining and the grate, and if need be, replace any defective parts.


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