



How to operate Woodburners & Domestic Fires

Enjoy the heat, not the smoke!

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Auckland has an air pollution problem. The fine particles from smoke have a bad effect on people's health. The Auckland Regional Council (ARC) and Auckland residents must reduce the level of fine particles in the air and smoke. For targets to be met, domestic fires must be operated in a way that minimises smoke. It means that many people will need to change the way they use their domestic fires.

Domestic fires need to be operated without causing smoke, ash or smells. Causing nuisance to your neighbours is NOT allowed.

Using Domestic fires

Many homes burn wood as a source of heat and enjoyment. It's economical, renewable and can heat your home well, if used properly. The efficiency of domestic fires will vary: open fires will actually draw heat from your home and are very inefficient. A woodburner or domestic fire that isn't being used properly can produce excessive smoke which wastes energy, builds up dangerous creosotes and creates air pollution. Inefficient woodburners and open fires can also be fire hazards.

This guide offers plenty of information on how to safely enjoy your domestic fire, get the best heat out of your firewood and decrease the smoke.

Why keep the air clear?

Smoke pollution affects everyone. It is harmful to the health of domestic fires users and the health of others in the community. The effects depend on the extent of a person's exposure to smoke, age and current state of health. People who are more at risk are:

- Babies and very young children.
- Those suffering from existing cardiac or respiratory conditions, such as asthma.
- Those with vascular complications from diabetes.
- Frail, elderly people.

Excessive smoke from domestic fires is unpleasant and detracts from people's wellbeing and happiness.

Basic steps to remember

When lighting a domestic fire, make sure you:

- Stack wood loosely in the firebox so air can circulate
- Never use wet or green wood
- Use enough kindling
- Don't put too much firewood in at first.

Once alight, make sure you:

- Keep the fire burning brightly
- Keep the air control open for at least 30 minutes
- Burn smaller logs rather than trying to burn a single, large log
- If you add logs, open up the air control to high for at least 20 - 30 minutes before turning down
- Be careful not to block air supply to the base of the fire with a badly positioned log
- Don't damp down the fire
- Don't burn rubbish in the fire.

How smoky is your chimney?

In a well maintained domestic fire that is being operated correctly, visible smoke from the chimney will reduce to a heat haze or faint smoke within about 10 minutes of lighting or putting wood on the fire.

An efficient fire will have bright swirling flames and red glowing embers with little or no smoke coming from the chimney. It may take some practice to get the cleanest burn from your chimney.

Check your chimney

Use this handy chimney checker to see how well you are operating your domestic fire. When you have got your fire going, brave the cold and go outside and look at the smoke coming from your chimney.

- If the smoke looks like the picture on the right - congratulations! - you are operating your fire well.
- If it looks like the two pictures on the left, your domestic fire is producing extra smoke that is making our air quality worse - affecting our health and wellbeing.
- Have another look at this brochure to see the simple things you can do to enjoy the heat, not the smoke.



Photo: Western Australia, Department of Environment and Conservation

How to burn smarter

Here are some tips on keeping your domestic fire burning efficiently so you get the best value from your firewood and really cut down the smoke.

- **Only burn dry, well-seasoned wood that has been split properly.** Green wood is a major culprit in the creation of smoke that pollutes the air and creosote that clogs your chimney. The moisture content of wood must be less than 25 percent. Dry wood has large cracks in the end of the log while wet wood is heavy and makes a dull thud when two pieces are hit together.
- **Don't use wood that has been rained on or is damp.** If it got wet in the rain, take small amounts inside to dry out before putting it on the fire.
- **Only start the fire with paper, dry kindling or an approved commercially available fire lighter.** Never use petrol, kerosene, charcoal or a propane torch. These can be extremely dangerous. A fire can get out of hand quickly if it is started with fuels other than wood.
- **Burn fires bright and hot.** A smouldering fire creates more smoke and less heat.
- **Regularly remove ashes from the burner or fireplace.** Store them outside in a covered metal container, in a safe area away from the side of the house to avoid creating a fire hazard.
- **If the glass front on your woodburner is coated with 'gunk',** it means you are not burning your fire hot enough.

- **If your woodburner is smoking excessively, get it checked.** Make sure you know about your own model of burner and how it operates. Ask a domestic fire supplier if you are not sure.
- **After starting the fire leave the air controls open for at least 30 minutes.** This helps build up a good high temperature, which makes the wood burn well. Do this again when you add more wood. Extended periods of smoky emissions occur if you turn down the air supply and reduce the amount of air getting into the fire box.
- **Don't bank up the fire overnight. Keep a supply of kindling handy to re-start the fire in the morning.** Overnight burning does not add significant warmth to a well insulated home, but greatly increases polluting emissions.
- **Don't put a full load of wood into a domestic fire when there are only a few glowing embers** as it causes excessive smoke for long periods - build it up again first.
- **Don't burn plastic, disposable nappies, electrical cables, treated or painted timber, particle board, chipboard, hardwood and fibreboard, plywood, rubber products and waste oils.** These materials are prohibited because they produce very harmful chemicals when burnt.
- **Don't burn domestic rubbish, glossy paper or magazines and wrappers in your domestic fire.** They produce harmful chemicals and creosote and cause offensive or objectionable smoke.

Collecting and storing firewood

The quality of your firewood is a major factor in how well your domestic fire operates, so the way you store it is vital!

Think ahead and get your wood supply in the summer. Freshly cut wood needs to be stored for 8-12 months to allow it to season properly for good burning. Stack it loosely off the ground in a criss-cross pattern to let dry air circulate around it.

For best results store seasoned wood in a dry place with the top covered.

Logs dry faster when split, so split wood into pieces less than 4 inches or 11cm thick before you store it away. These are also the best size to use in your domestic fire, especially woodburners.

Woodburner size and installation

Most woodburners perform best at or close to their maximum output. If you often run your burner at low settings (damped down), your burner may be oversized. For example, a room 6m x 4m by 3m high will need a 3.6kw heater.

If you are buying a new woodburner, or replacing one, it is important to ensure it meets emission standards (refer to Airfacts 10: Rules on Woodburners & Domestic Fires) and that it is the right size for the rooms that are being heated. It also needs to be installed correctly. The chimney/flue is an important component of the woodburner installation and needs to be long enough to draw sufficient air for proper combustion of the fuel.

Check with your local council or a domestic fire retailer if you think your burner may not be correctly installed.

A woodburner will perform better when located towards the centre of the home and not against an outside wall.

Save \$\$\$

A fully insulated home requires 50% less heating.

Energy Efficiency

Heat pump	300% to 400%
Electric heater	100%
Pellet burner	Average 80%
Flued gas heater	Average 70%
NES compliant woodburner	65% to 80%
Heat recirculating open fire	35 to 50%
Open fire	Less than 15%

Look after your woodburner

Keep your woodburner well maintained and serviced – make sure the chimney/flue is cleaned every year. This helps your fire burn more efficiently. Make sure you replace broken fire bricks and keep the burner in good repair. Make sure the flue is insulated and is high enough to let smoke and gases disperse and avoid fire risk from the build up of creosote.

DIY repairs to woodburners are NOT recommended as this may also cause smoke or safety problems.

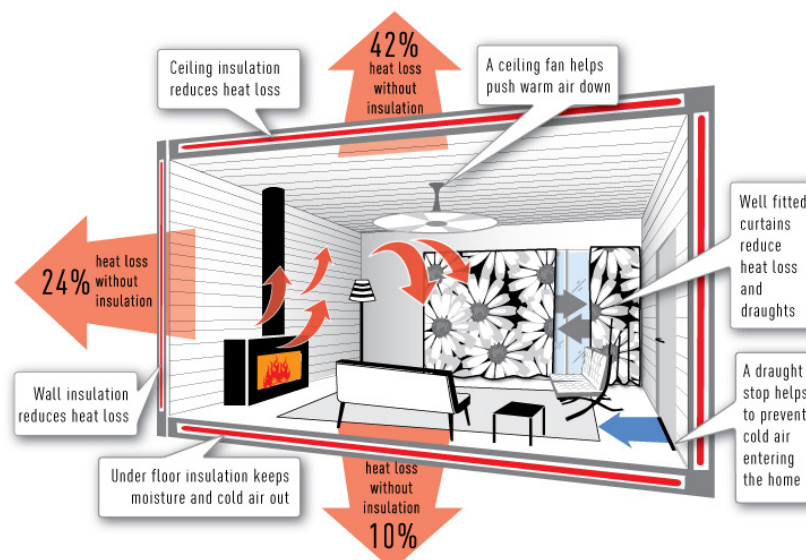
If the woodburner is difficult to start or smoke puffs out when the door is opened then the flue is probably clogged with creosote and needs to be swept.

If your current burner is more than 10 years old it may need replacing so think about other cleaner forms of heating – upgrade to an alternative that discharges low, or no, levels of pollutants. Alternatives include heat pumps, flued gas or pellet fires. Unflued gas heaters are NOT recommended because they make your house damp and release harmful chemicals inside your home.

Insulation and other options

Without insulation you will lose 42 percent of heat through the ceiling, 24 percent through the walls and 10 percent through the floor. Remember that the floor is the coldest part of a room, children are closer to the floor and can spend a lot of time playing on the floor. Under floor insulation will also help stop moisture moving up into the house.

If you get the design and insulation right for your house you won't need as much heating and can consider installing a smaller, more efficient heating system. Good insulation and design also makes other forms of heating very cost effective too. For other tips on saving energy see the Energy Efficiency and Conservation Authority website www.eeca.org.nz.



When building or renovating, consider the options for passive solar design and solar water heating – they are incredibly energy efficient!

For further information on domestic fires, please visit www.arc.govt.nz or phone 09 366 2000 or refer to *Airfacts 10: Rules on Woodburners & Domestic Fires*.

Acknowledgement: We gratefully acknowledge Tasman District Council for permission to use their Good Practice Guide for Operating Wood Burners.

FOR WAYS TO HELP THE ENVIRONMENT, JOIN THE BIG CLEAN UP,
www.arc.govt.nz OR PHONE 0800 JOIN IN (56 46 46)