

Smoke Alarms

Version 3 - May 2006

Smoke alarms are a normal part of many Australian homes, where they have been responsible for saving lives. Regulations vary from state to state, but in most states it is now mandatory to install at least one hard-wired smoke alarm in new homes and in some states it is required to have at least one battery operated smoke alarm in all existing homes.



What Does a Smoke Alarm Do?

The purpose of a smoke alarm is to sense the presence of smoke in the home and to audibly alert the occupants, to give them time to escape to a safe place.

What Types are There?

Generally in Australia there are two types of operating principles (the method used to sense smoke and fire):

1. **Photoelectric** and
2. **Ionisation**

Photoelectric

Photoelectric smoke alarms have a chamber with a light source and visible smoke entering the chamber makes the light scatter (like the dust in the air in a sunbeam of light), and in sufficient quantity to make the alarm sound.

Photoelectric smoke alarms are superior to ionisation smoke alarms in detecting the visible smoke produced by smouldering fires. Most residential dwelling fires, whether flaming or smouldering, tend to produce large amounts of visible smoke. Photoelectric smoke alarms should be installed in sleeping areas and paths of travel to sleeping areas

Ionisation

Ionisation alarms detect the presence of large quantities of very small particles entering the ionisation chamber, which when in sufficient quantity will cause an alarm to sound.

Sufficient quantities of very small particles are generally only produced by flaming fires or from very hot surfaces. Ionisation alarms are more responsive to fires that start as, or quickly escalate into a flaming stage. This type of fire often produces less visible smoke. Fires that start as a smouldering fire produce large visible particles, but the amount of smoke may not be enough to cause the ionisation alarm to respond.

Ionisation smoke alarms are more prone to nuisance alarms from cooking (toasters, open grillers, birthday cake candles and the like) and should not be installed near kitchens.

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Facts to Help You Choose

- The type of fires in residences that are most likely to occur while occupants are sleeping are smouldering fires. The greatest risk to life or injury occurs when occupants are sleeping.
- Photoelectric smoke alarms are much faster at detecting smouldering fires than ionisation smoke alarms. Research has shown that photoelectric smoke alarms typically respond to smoky fires within a few minutes while the level of smoke is still low and the air breathable, allowing more time to escape safely.
- Most ionisation alarms take longer to respond to smouldering fires and depending on the material may not alarm until the fire bursts into flames. By this time there is a greater risk of reduced visibility and breathing problems making escape more difficult and at worst impossible.
- The fast-flaming and clean burning fires that ionisation alarms detect quickly are not as common in domestic situations but when they do occur, nearby material usually catches fire quickly starting to generate visible smoke that a photoelectric smoke alarm will detect.
- Flaming fires will mostly start in the kitchen but often someone is present and may do something about it. Even if no one is present, photoelectric smoke alarms usually detect these fires providing sufficient warning to occupants.

Power Supply Options

Most Smoke alarms are available with the following power supply options:

- Hard-wired 240 volt powered with 9 volt back up battery (battery needs replacing annually).
- Hardwired with 240 volt powered with lithium rechargeable battery back up (battery lasts life of the alarm).
- Battery powered 9 volt (battery life typically one year - needs changing annually).
- Battery powered 10-year lithium (battery lasts the life of the smoke alarm).

Hard wired smoke alarms have a more reliable power source but must be installed by a licensed electrician. Other options available include interconnected models, which when any one alarm detects smoke all connected smoke alarms will sound, providing a warning throughout the home. Special models for use in caravans, and models incorporating an emergency light are also available.

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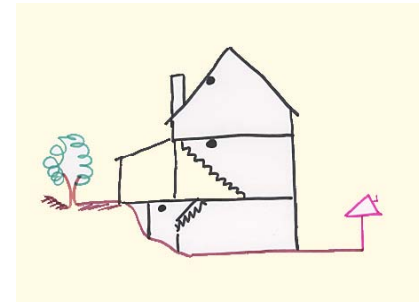
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How Many Do I Need?

Legislation since 1995 in all states requires new residences to be fitted with a smoke alarm wired to the mains electricity. Some states have also legislated that all residences require a minimum of one battery operated smoke alarm. NB: The fitting of one alarm will only provide a minimum level of protection.

A better level of protection can be gained by installing a smoke alarm in each bedroom, in corridors and hallways that lead to exits and the living area. Installing a heat alarm in the kitchen is also a good idea. FPAA recommends that smoke alarms installed in corridors and hallways between sleeping areas and exits are photoelectric smoke alarms.

Australian and International research indicates that more than 90% of children under the age of 16 will not wake from deep sleep from a smoke alarm sounding in their bedroom. This is why multiple interconnected smoke alarms are a great way to maximise the chance of waking sleeping children or other occupants with a hearing impairment. An interconnected smoke alarm in the master bedroom will alert parents who can then assist others to escape.

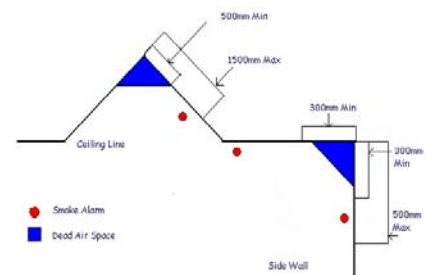


Alarms for the Hearing Impaired

Warning devices are available for the hearing impaired and information on these alarms can be obtained from deaf associations in each state.

How Do I Install My Smoke Alarm?

If you can handle a screwdriver, you can install a battery operated smoke alarm. They are simply fastened to the ceiling with two small screws. Mains powered smoke alarms must be installed by a licensed electrician. For effective operation smoke alarms should be located away from corners.



Do Not Place Alarms:

- In turbulent air from fans, doors, windows, air conditioners etc. Rapid air movement may prevent smoke from reaching the alarm.
- In dead air spaces such as the peak of an "A" frame ceiling. "Dead Air" at the top may prevent smoke from reaching the alarm in time to provide early warning. In rooms with simple sloped, peaked or gabled ceilings, install smoke alarms on the ceiling 90cm (3feet) from the highest point of the ceiling. Read and follow the manufacturer's instructions.

Note: For complex ceiling structures, consult a fire safety expert for the number of alarms required and the best locations.

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What Maintenance is Required?

Monthly: Smoke Alarms require regular testing.

They are equipped with a test button that should be depressed (by the use of a broom handle or similar) until the alarm sounds.

Six Monthly: Every six months the alarm should be checked for excessive dust. Smoke alarms should *never* be painted.

Yearly: every year alarms should be vacuumed to remove dust and in most cases the battery should be replaced.

Ten Yearly: Every 10 years all smoke alarms should be replaced.

When Do I Replace the Battery?

When batteries are low, the smoke alarm will sound a short "BEEP" at least every minute. This is your reminder to replace the batteries. Except for smoke alarms fitted with rechargeable or long life lithium batteries, we suggest you replace your batteries annually, for example when you change your clock to daylight saving time, or on some notable anniversary.

How Do I Choose Between Brands?

Only smoke alarms that have been certified as meeting the requirement of the Australian Standard and carry the Standards Australia Tick Mark or are ActivFire listed or both should be used.

Where Can I Buy a Smoke Alarm?

- Fire Protection Companies - FPAA member companies can provide advice, service and sell smoke alarms to the public.
- Department Stores
- Hardware Stores
- Electrical Retailers

Some public fire brigades also sell smoke alarms.

Caution is advised in dealing with telephone canvassers and door-to-door vendors.

Disposal of your old Smoke Alarm:

As previously noted smoke alarms should be replaced every 10 years and therefore consideration needs to be given to disposal of your old unit.

Old **photoelectric** smoke alarms may be disposed of with household waste in any quantity.

Local legislation may allow your old **Ionization** smoke alarms to be disposed of with household waste in a quantity not exceeding 10 units. Any more than 10 units would require being treated as radioactive waste and disposed of in accordance with local legislation.



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Plan and Practice Your Escape

In a real fire, it is likely that you will only have one to two minutes from the sounding of the alarm to when your life is seriously threatened by fire or smoke. If you have been asleep you will be less likely to respond quickly and effectively.



It is therefore essential that your family prepares and practices an escape plan. You should:

- Draw up a rough floor plan of your house
- Plan two ways out of each room
- Select and indicate a meeting place outside of the home (eg the letterbox)

Teach your family to:

- Check closed doors for fire before opening (use the back of the hand).
- Crawl low (smoke and heat will build from ceiling down)
- Close doors behind them as they exit (this helps to limit the spread of the fire and smoke)

Practice your escape plan using these techniques.

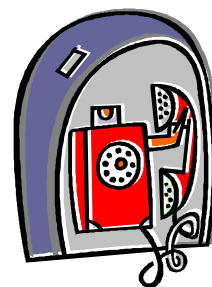
Escape from upper stories will require special attention. Plan for an escape from an upper window, e.g. via a lower roof, pergola or carport. If these options are not available, other improvised methods should be considered.



In your escape plan, give special consideration to the very young, the aged, and the infirm.

In a real fire, once clear of the house:

- Call the fire brigade from the nearest telephone away from the building on fire.
- Account for all people in the house.
- If anyone is missing, tell the fire brigade.



DO NOT re-enter the house unless the fire brigade advises it is safe to do so.

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