

FACT SHEET



Smoke Alarms—Ionisation or Photoelectric?

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.

There are two types of residential smoke alarms: Ionisation and Photoelectric.

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 smoldering 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.



Ionisation smoke alarms are more prone to nuisance alarms.

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 smoldering fires. Most residential dwelling fires, whether flaming or smoldering, tend to produce large amounts of visible smoke. Photoelectric smoke alarms should be installed in sleeping areas and paths of travel to sleeping areas.



Photoelectric alarms are superior to ionisation alarms in detecting visible smoke.

More information over page...../



Fires that are most likely to occur while occupants are sleeping are smoldering fires.



Flaming fires mostly start in the kitchen.

Facts to help you choose

- The type of fires in residences that are most likely to occur while occupants are sleeping are smoldering fires. The greatest risk to life or injury occurs when occupants are sleeping.
- Photoelectric smoke alarms are much faster at detecting smoldering 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 smoldering 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 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.

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Also see:

[Purchasing a Smoke Alarm](#)

[Smoke Alarm Installation and Maintenance](#)

[10 Steps to Home Fire Safety](#)
