



## **Smoke alarms**

**Fire prevention is always your primary protection** from fire on boats but a smoke alarm can be your next line of defence, particularly if you sleep aboard. A routinely checked smoke alarm of the right type, can warn you very quickly if there is a fire and give you time to escape. These guidelines tell you about choosing the best types of smoke alarms for your boat, the best place to fix them and how to maintain them for maximum levels of protection. Even as a day boater if you feel at risk from being surprised by fire, please read on.

## **Detecting fire**

**Fires happen when you least expect them** and will put you in most danger when you are in deep sleep. Boats are often full of combustible materials and highly flammable fuels, which means that fire can spread rapidly, damaging property, injuring and killing people.

**But the real killers are smoke and toxic fumes** which kill very rapidly. If you are asleep, your survival will almost certainly depend upon being woken very quickly before the smoke and fumes reach you.

**Being alerted to a fire will help you escape.** If there is a fire, a reliable smoke alarm can warn you and your family early enough to allow you to escape. Smoke alarms are cheap, and readily available in chandleries, high-street stores, supermarkets, DIY stores and online suppliers. They are easy to fit and maintain.

## **Choosing a smoke alarm**

There are a variety of models to choose from. This section describes the types of smoke alarm that are commonly available and it incorporates advice from experts as to the best choices of alarms for boats.

*Their recommendation is to choose an optical alarm with a long-life battery, a hush button and one that meets either BS 5446:2000 Part 1, or BS EN 14604:2005, preferably also carrying a certification mark.*

## **The two types of detector on smoke alarms**

There are two main types of detector (or sensor) on smoke alarms, - ionisation and optical (also known as photoelectric cell). The products are often named after them, i.e. optical alarms or ionisation alarms.

Optical alarms are the best choice for boats. They are more effective at detecting slow-burning fires (such as smouldering wood, burning foam-filled furniture, overheated wiring etc). Optical alarms are less

likely to go off accidentally, and so are best for confined environments, a feature of most boats. Although they are more expensive currently, online shopping may offer a wider choice and price range.

Ionisation alarms are more readily available in high street shops. They use a radio-active isotope and are very sensitive to flaming fires, (ones that burn fiercely such as chip-pan fires) and they will detect this type of fire before the smoke gets too thick.

If you think your boat is at risk from both slow-burning and flaming fires you should consider installing one of each, indeed there are some units available with the two types of sensor in the same housing. However, if you can't have both it's still safer to have one smoke alarm than none at all.

## **The different features available on smoke alarms**

### **Alarms with 10-year batteries**

*Every year people are killed in fires because flat or missing batteries prevent the alarm from alerting the victims to the developing danger* and this is why alarms with lithium or long-life batteries are best for boats.

Alarms sold as 10-year or long-life units will probably have lithium batteries provided as a sealed-in power pack. Both ionisation and optical long-life alarms are slightly more expensive than ones with replaceable batteries, but you will save on the cost of replacing alkaline or standard batteries over time. However, be prepared to replace the alarm sooner than 10 years on a boat, because the damp atmosphere in the cabin may affect its lifespan.

### **Standard battery alarms**

Although slightly cheaper than lithium battery types, these run off 9-volt batteries that you will need replace at least once a year, or probably more often because of the damp cabin atmosphere. The alarm will beep regularly when the battery needs replacing.

### **Hush or silence button**

This is a crucial feature on a boat if you don't want lots of false alerts. When the 'hush button' is pressed, it silences the alarm for a short time such as if activated when cooking. The alarm may remind you that it's been silenced by 'chirping' and/or by displaying a red light.

### **Interconnecting or linked alarms**

Some alarms connect to each other so that, when one senses smoke, all the alarms sound. If you choose to fit more than one alarm on your boat, we recommend installing one that can be interlinked. This makes sure everyone hears the alarm. These alarms are also useful for anyone who thinks they may need extra help to be woken from deep sleep or for some people with hearing difficulties. Interconnection can be by 12v bell wire or simple wireless systems.

If anyone aboard has impaired sight, hearing, reach or mobility, specific advice in selecting the right type of alarm or adaptation may be available directly from alarm manufacturers or specialist suppliers.

## **Battery alarm with emergency light**

If the alarm goes off, the emergency light may illuminate the escape route.

## **Multi-sensor detectors**

These are designed to react to more than one element or property of a fire. They can increase performance and reduce false alerts. Currently available alarms have either optical and ionisation combinations or they have a smoke detector and carbon monoxide (CO) detector mix.

Alarms with CO sensors are designed to protect people from CO caused by domestic appliances (boilers, stoves, etc) or from exhaust fumes (outboard engines, generators, etc). CO is the highly toxic gas that stops the body from absorbing oxygen properly.

These alarms are at the more expensive end of the DIY domestic smoke alarm market. CO has different characteristics compared to smoke, so you may need more advice from the supplier for fitting it in a boat.

## **Mains-powered alarm**

Unless your craft is on permanent shoreline supply, or you are confident of having sufficient capacity in your boats battery and inverter system to meet all your 230v AC main electricity needs, these alarms are probably not for you. They have to be 'hard-wired in' and should be installed by a competent person.

## **Mains-powered alarm which plugs into a light socket**

These are probably the least suitable option for a boat due to the low headroom height in boats combined with the need for mains voltage.

## **Choosing with confidence**

Currently there are no standards for alarms for boats specifically. Boats present a challenging environment for alarms particularly with high humidity, temperature extremes and vibration levels. So to give you the most confidence in its reliability, choose an alarm meeting British Standard (BS) 5446:2000 Part 1, or BS EN 14604:2005. Check for a British Standard 'Kitemark' or a LPCB 'Horseshoe' mark showing that the claim of meeting a Standard has been independently certified.

## **How many smoke alarms do you need?**

The more suitable and routinely tested alarms you have installed the more confident you can be about the early detection of a developing fire and about hearing an alarm when this happens. If you have more than one alarm consider linking alarms as described on page 2.

No areas of the boat to be protected should be further than 5m from an alarm. In the case of large vessels, such as some narrow boats, the dimensions of the vessel may mean a slower reaction time for a single alarm and so you may need to install multiple units for maximum protection.

## **Where to fit smoke alarms**

- The ideal place is along the centreline of the boat in the same cabin space where a heating or cooking appliance is in use, but not too close.

- It also needs to be mounted on a well insulated part of the ceiling avoiding cold spots.
- If you can, try to avoid putting it any closer than 300mm to any vertical surface.
- *If headroom is a problem and you really have no choice*, mount it on a wall between 150mm – 300mm below the ceiling height, but not directly above a ventilator or opening window.
- Make sure it is easy to reach so you can test it routinely and so that you can press the hush button with ease.
- Always put smoke alarms where you will be able to hear them, particularly when you're asleep or when doors are closed. Try testing the alarm in place before you fix it in position.

### **Where not to put a smoke alarm**

Don't fix a smoke alarm:

- in the galley or bathroom, where it could be accidentally triggered by cooking fumes or steam; or,
- where you can't hear it while you're asleep; or,
- too close to a cooker or heater where the alarm will produce false alerts; or,
- flush to the ceiling and try to avoid positioning the alarm close to any roof ventilator.

### **Maintaining smoke alarms**

You must look after your smoke alarms. *On average, 90 of the 460 people killed in fires in homes each year had a smoke alarm that didn't work – usually because the battery was flat or missing.*

- Press the test button on each alarm as part of your boarding routine. If you live aboard or stay onboard for longer than a week, it is best to get into the habit of testing alarms every week.
- If the alarm ever starts to 'beep' regularly, check out the reason as soon as possible.
- Twice a year, and after any redecoration or other work that has produced a dusty environment, open the case and gently vacuum the inside to remove dust from the sensor. If it does not open, vacuum through the holes in the case.
- If at a regular check, the battery terminals shows signs of damage and 'furring up', it is best to replace your smoke alarm with a whole new unit.

### **Make a fire action plan now**

**Having a reliable alarm is just the first step, if you have a fire aboard and** if you are not confident about how you and your family would react to the smoke alarm going off at night on your boat then you need to make a fire action plan. See [www.boatsafetyscheme.com/ fire](http://www.boatsafetyscheme.com/fire) leaflets for more details.