

Loss Prevention Standards – Cross Classes

Fire Extinguishers - Selection, Location and Servicing

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**Guidance on the selection, location, and
servicing of fire extinguishers.**



Fire Extinguishers – Selection, Location and Servicing



Introduction

Fire extinguishers play an invaluable fire safety role in the workplace. Whilst primarily installed to assist in the safe evacuation of staff, visitors and other persons in the event of fire, they also provide critical safety protection for persons working in hazardous environments, confined spaces, and within healthcare facilities where full emergency evacuations are not always possible.

The use of fire extinguishers, by suitably trained operatives, can also make a significant contribution in controlling fire during the early stages, helping to minimise damage to buildings and contents, trading disruption and impacts to Environmental Sustainability & Governance programmes.



Legal Requirements

In England and Wales, the relevant legislation is the Regulatory Reform (Fire Safety) Order 2005. In Scotland, the relevant legislation is two-fold, being Part 3 of the Fire (Scotland) Act 2005 and the Fire Safety (Scotland) Regulations 2006. In Northern Ireland, the relevant legislation is the Fire Safety (Northern Ireland) Regulations 2010.

Whilst the legislation differs in areas, the main purpose is to ensure the risks of fire in commercial buildings, which includes common areas of residential apartment buildings and houses of multiple occupancy, are risk assessed, minimised and the occupants will be safe should a fire occur. This includes the provision and maintenance of appropriate firefighting equipment, and ensuring equipment provided for firefighting purposes is accessible, simple to use and adequately signed.

More information can be found in the Aviva Loss Prevention Standard - [Fire Safety Legislation](#).

Standards

In the UK, the construction of fire extinguishers in the workplace is covered mainly by British Standard – **BS EN 3: Portable fire extinguishers**, which covers fire extinguishing appliances from 1 kg to 12 kg and 2 to 9 lt capacity and specifies the expected performance and testing requirements. Smaller disposable fire extinguishers are covered by standard - **BS 6165: Specification for small disposable fire extinguishers of the aerosol type**.

The commissioning, installation, colour codes and maintenance of portable fire extinguishers are detailed in **BS 5306: Fire Extinguishing Installations** in the following parts:

BS 5306-3: Code of Practice for the Commissioning and Maintenance of Portable Fire Extinguishers. This part provides guidelines for the initial commissioning of fire extinguishers, maintenance schedules and handling of obsolete extinguishers.

BS 5306-8: Fire Extinguishing installations and Equipment on Premises. Selection and Positioning of Portable Fire Extinguishers. This part provides guidance on the numbers and types of fire extinguishers to be installed, providing calculation methods to determine the required number of fire extinguishers.

BS 5306-10: Recommendations for Colour Coding to indicate the Extinguishing Media Contained in Portable Fire Extinguishers. This part provides recommendations for fire extinguisher colour indication and colour coding.

Classification of Fires

Fires are classified in to six classes - A, B, C, D, F and electrical:

- **Class A fires** – are fires involving organic solids like paper, wood, etc.,
- **Class B fires** – are fires involving flammable liquids such as petrol diesel or oils,
- **Class C fires** – are fires involving flammable gases,
- **Class D fires** – are fires involving burning metals (e.g., aluminium swarf),
- **Class F fires** – are fires involving cooking oils such as used in deep fat fryers,
- **Electrical fires (the letter E is not used. Instead, the symbol of an electric spark is displayed as shown below).** Electrical fires are not given their own full class, as they can fall into any of the classifications, reflecting the nature of the material or liquid that has been ignited by the electrical fault.



Fire extinguishers specified for use in tackling lithium-ion battery fires are also now available. These appliances are not currently compliant with British Standard **BS5306: Fire Extinguishing Installations**, and whilst potentially providing some benefit require very early application and are unlikely to fully extinguish a developing fire involving lithium-ion batteries or prevent the batteries reigniting. The volatility of lithium-ion battery fires and their explosive characteristics also presents significant injury risks to persons tackling such a fire in proximity, and as such their use should be carefully considered within the premises Fire Risk Assessment.

Types of Fire Extinguisher

There are six main types of Fire extinguisher.

- 1) **Water** – Effective for use on Class A fires. Water conducts electricity and water fire extinguishers should not be used on live electrical equipment.
- 2) **Water Mist** – These fire extinguishers are suitable for Class A, B, C, D & E fires. They are filled with deionised water and emit a super fine spray when discharged. The spray absorbs the heat from the fire and can also block oxygen to the seat of the fire, helping bring the fire under control. They leave little residual trace and are suitable for use on electrical fires.
- 3) **Foam** - These fire extinguishers are suitable for Class A & B fires. They are also suitable for fires involving shallow frying pans but not suitable for deep fat frying. Foam is not suitable for use on live electrical equipment.
- 4) **Powder** - These fire extinguishers are suitable for Class A, B, C, D (guidance should be sought from the supplier based on the metals present in the premises to ensure the most appropriate powder type fire extinguisher is provided) & electrical fires.
- 5) **Carbon Dioxide** - Effective for use on Class B & E fires. Carbon Dioxide is an asphyxiating gas and care should be taken when using the fire extinguishers in enclosed spaces.
- 6) **Wet Chemical** - These fire extinguishers are suitable for Class A, F & some B fires.

Colour coding of Fire Extinguishers

The type of fire extinguisher is identified by a colour coding as indicated below:

- Water fire extinguishers are coloured signal red.
- Other fire extinguishers will be predominantly signal red with a label, band or circle covering at least 5% of the surface area of the fire extinguisher in a second colour indicating the contents of the appliance.

Type	Old Code	BS EN 3 Colour Code	Fire Class
Water	Signal Red	Signal Red	A
Water Mist	White and Red	Red and White	A, B & F
Foam	Cream	Red with a cream panel above the operating instructions	A, B, & electrical if dielectrically tested
Dry Powder	French Blue	Red with a blue panel above the operating instructions	A, B, C & electrical
Carbon Dioxide (Co ₂)	Black	Red with a black panel above the operating instructions	B & electrical
Halon*	Emerald Green	No longer produced or used in the UK	A
Wet Chemical	Yellow	Yellow background with red wording	A & F (Some class B fires as advised by a competent person)
Specialist Powder	French Blue	Red with a blue panel above the operating instructions	D (As advised by a competent person)

Fire extinguishers that do not use the above colour coding do not conform to the British Standard **BS 5306-10: Recommendations for Colour Coding to indicate the Extinguishing Media Contained in Portable Fire Extinguishers** and therefore cannot display the British Standard Institute's Kitemark. It should however be noted that British Standards are a guide rather than prescriptive legislation, and providing the premises Fire Risk Assessment notes the types of fire extinguishers, and comments on their suitability and appropriate training is provided, they can be acceptable. Best practice advice within this Loss Prevention Standard is to select fire extinguishers which conform to British Standards wherever possible.

Former fire extinguisher standards required the whole of the body of the fire extinguisher to be painted the appropriate colour. Whilst there becoming increasingly rare, they remain legal to use and do not need to be replaced unless the fire extinguisher is defective.

*Fire extinguishers colour-coded green are vaporising liquids (Halons) and have been illegal, with some exceptions such as aircraft and military applications since the end of 2003. If present, they need to be disposed of safely.

Fire Rating

All fire extinguishers capable of extinguishing Class A, B or F fires carry a fire rating which is indicated by a number and letter (e.g., 13A, 55B). The number is indicating the size of fire it can extinguish under test conditions. The larger the number, the larger the fire it can extinguish. The letter indicates the fire classification as above. Fire extinguishers for Class C, D and electrical fires do not carry a numerical rating.

All fire extinguishers capable of extinguishing Class F fires have a rating based on 4 benchmark tests using 5, 15, 25 and 75 litres of sunflower oil.

Choosing Fire Extinguishers

Guidance on the numbers and types of fire extinguishers to be installed is provided within **BS 5306-8: Fire Extinguishing Installations and Equipment on Premises. Selection and Positioning of Portable Fire Extinguishers**.

To assist with the selection of the appropriate number, type, positioning and commissioning of fire extinguishers, the services of an experienced, competent, and accredited company should be considered. **BAFE scheme SP101 Competency of Portable Fire Extinguisher Organisations and Technicians** is a UKAS accredited third-party scheme that can help with the selection of competent companies with effective management and quality control systems. Using a BAFE accredited company also helps ensure compliance with British Standard guidance and reduces the risks of inadequate or inappropriate fire extinguisher types and location. For more information click [here](#).

The following factors should also be considered when siting fire extinguishers:

- In general terms there should be at least two Class A rated fire extinguishers sited on each floor of the building and the total Class A rating for all fire extinguishers on that floor should not be less than $0.065 \times \text{floor area (m}^2\text{)}$ and not less than 26A.

- In respect of Class B fire risks, the number of recommended fire extinguishers is based on the anticipated maximum spillage area in m². This can vary considerably depending on the volumes held and the storage method. For instance, a retail shop holding one or two small bottles containing flammable liquids presents a significantly reduced risk in comparison to a storage facility housing large quantities of flammable liquids in bulk containers. The minimum quantity and rating for each fire extinguisher can therefore range considerably from a single 6kg fire extinguisher for very small hazard exposures to numerous 9kg fire extinguishers or wheeled fire extinguishers for vary large hazard exposures.
- In respect of Class F fires, the size and number of fire extinguishers can range from a single 5F fire extinguisher for very small items of frying equipment to two x 75F fire extinguishers for larger appliances. Fixed, automatic fire extinguishing systems should however be considered for larger frying risks over 0.4 m² surface area. Other types of fire extinguishers should not be sited near the cooking equipment where cooking oils or fats are the major risk concern.
- Fire extinguishers should normally be sited on escape routes, such as in corridors, stairways, landings, and lobbies on all floors, and are often located with other safety equipment such as below manual fire alarm call-points.
- Fire extinguishers should be positioned in conspicuous areas where they can be seen and reached quickly. The best place is near a door leading to a place of safety and near specific fire risks as identified in the premises Fire Risk Assessment. Consistency in the location of fire extinguishers throughout the premises is recommended.
- If fire extinguishers cannot be positioned in conspicuous areas, appropriate signage should be displayed confirming their location.
- Fire extinguishers should be either mounted on wall brackets or on floor stands. Wall mounted fire extinguishers should be positioned so that the carrying handle is 1m from the floor for fire extinguishers weighing more than 4kg, or 1.5m for fire extinguishers weighing less than 4kg.
- Fire extinguishers should be located within reasonable distance from any fire risk as detailed below:
 1. Class A: 30m
 2. Class B: 10m
 3. Class C: 30m
 4. Class D: Competent advice should be obtained on a case-by-case basis.
 5. Class F: 10m
 6. Electrical: 10m

These recommended travel distances may need to be reduced if the escape route features doorways – seek competent advice.

- The method of operation should be similar for all fire extinguishers, where possible.
- The occupiers should be capable of handling all the types and sizes recommended.
- They should not be placed over cookers or heaters or in places of extreme temperatures, hot or cold.
- Where different types of fire extinguishers for different risk types are sited together, they should be properly labelled to prevent confusion.
- Fire extinguishers should be fitted with suitable jet or spray nozzles or flexible hoses to suit the risk involved.

P50 Fire Extinguishers

P50 fire extinguishers are low maintenance appliances that require a ten-year refill/service and have a twenty-year life cycle. They are fully compliant with BS EN3 part 7, however, do not currently meet with British Standard BS 5306 parts 3 or 8. They are also not currently recognised by BAFE within their accreditation scheme **BAFE SP101 Competency of Portable Fire Extinguisher Organisations and Technicians**, and therefore would not be selected, commissioned, installed, and/or maintained etc., under the BAFE SP101 scheme.

Whilst the use of P50 fire extinguishers presents cost saving opportunities and are becoming increasingly common in lower risk environments, their usage should be carefully considered in the premises Fire Risk Assessment and any decision to use P50 fire extinguishers should reflect the fire hazards present, the layout of the building, the combustibility of the buildings construction materials, internal features and contents, the number of persons likely to be present in the building and any vulnerability characteristics of the occupants that might slow or hinder evacuation, escape distances and other salient factors.

Inspection and Servicing

All fire extinguishers will require periodic inspection and servicing. Depending on local conditions, such as the likelihood of vandalism or the environment where fire extinguishers are located, regular visual checks to ensure they are present and remain serviceable are recommended. In normal conditions a monthly check by the responsible person, or someone designated by the responsible person should be sufficient, however in public places, weekly or daily checks may be necessary. Visual inspections should include an assessment of the overall condition of fire extinguishers, pressures gauges, whether fully/partially discharged, dents, appropriate location, signs of tampering such as broken seals or hoses, legibility of operating instructions, wall brackets for damage or wear.

Servicing should be carried out at least annually and undertaken by a 'Competent Person', defined in BS 5306 Part 3: as a person with the qualifications, training, and experience, with access to the relevant tools, equipment and information, manuals and knowledge of any special procedures recommended by the manufacturers of the fire extinguishers, to carry out the relevant maintenance procedures. The BAFE SP101 scheme stipulates competent persons accredited to the scheme have passed a BS5306 recognised examination and be subject to three yearly recognised refresher training.

Fire extinguishers should be discharge tested every 5 years for water, foam, and powder and 10 years for CO₂. Such testing ensures fire extinguishers function correctly and are in good condition internally.

After a fire extinguisher has been used, even if only partially, it should be recharged according to the manufacturer's instructions.

In-house fire extinguisher servicing is acceptable, provided those carrying out the servicing have been trained and certificated by an accredited organisation e.g., Fire Industry Association (FIA) or British Fire Consortium (BFC).

Training

A suitable number of people should be trained in the safe and effective use of fire extinguishers. Priority should be given to those persons who are more likely to use a fire extinguisher, or who are considered more at risk possibly due to their working location, unusual or increased workplace hazards, limited escape routes, evacuation policies as found in some healthcare facilities etc.

Personnel should be instructed not to attempt to extinguish a fire involving escaping gas due to the explosion potential and risks of injury. This should be clearly addressed within the premises Fire Risk Assessment and appropriate training and information provided to the relevant personnel.

Because of the risk of reduction of visibility and breathing impairment when dry powder fire extinguishers are discharged within buildings, BS 5306-8 recommends powder fire extinguishers should not be specified for use indoors unless justified within a risk assessment. This should also be clearly addressed within the premises Fire Risk Assessment and appropriate training and information provided to the relevant personnel.

People with no training should not be expected to attempt to use a fire extinguisher. However, all staff should ideally know the location and basic fire extinguisher operating procedures.

Routine refresher training should be undertaken and recorded.

Key Action Steps

- Ensure that all new fire extinguishers obtained comply with BS EN3 and BS 5306 and are correctly specified by a competent person, preferably from a company who are members of a third-party accreditation scheme, such as **BAFE Scheme SP101 Competency of Portable Fire Extinguisher Organisations and Technicians**.
- Provide suitable training and information, ensuring staff can identify the different types of fire extinguisher types and their respective uses and limitations.
- Position appropriate fire extinguisher types on escape routes in clear locations on floor stands or wall brackets.
- Clearly sign fire extinguishers, their intended use, and their limitations.
- Do not mix fire extinguishers which have different operating methods.
- Ensure only Class F fire extinguishers are in proximity to cooking ranges when cooking oils or fats present the main fire hazard.
- All fire extinguishers should be subject to an ongoing and suitable system of inspection and servicing. General inspections can be completed by nominated personnel. Servicing and maintenance should however be undertaken by a competent person.
- Consider the use of protective sleeves or cabinets for any appliances which may be used in hostile environments e.g., corrosive atmospheres, high levels of dust etc.

Checklist

A generic [Fire Extinguisher Checklist](#) is available, which can be tailored to the organisation's needs.

Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners, including:

- Portable fire extinguishers: [SECOM](#)

For more information please visit:

<https://www.aviva.co.uk/risksolutions/specialistpartners/>

Sources and Useful links

Further information on the subjects discussed in this Loss Prevention Standard can be found using the links below.

- [British Standard BS5306 – Fire Extinguishing Installations and Equipment on Premises.](#)
- [British Standard BS EN 3 - Portable Fire Extinguishers.](#)
- [The Regulatory Reform \(Fire Safety\) Order 2005.](#)
- [The Fire Safety \(Scotland\) Regulations 2006.](#)
- [The Fire \(Scotland\) Act 2005](#)
- [The Fire and Rescue Services \(Northern Ireland\) Order 2006.](#)
- [BAFE Scheme SP101 Competency of Portable Fire Extinguisher Organisations and Technicians.](#)

Additional Information

Other related Aviva Loss Prevention Standards that might be of interest include:

- [Arson Prevention](#)
- [Fire Safety Inspections](#)
- [Gaseous Fire Extinguishing Systems](#)
- [Emergency Response Teams](#)
- [Fire Safety Legislation - The Regulatory Reform \(Fire Safety\) Order 2005](#)
- [Environmental, Social and Governance](#)
- [Contamination Following a Fire](#)

To find out more, please visit [Aviva Risk Management Solutions](#) or speak to one of our advisors.

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