

Number of Fire Extinguishers Required

The following information is provided for guidance purposes, and should not be relied upon for the purposes of a fire risk assessment, in which case, British Standard 5306-8:2012 should be referred to.

Fire extinguishers are 'rated' on their ability to extinguish test fires. In the case of class A, a wooden crib of specific size and length is ignited, and the amount of burning crib that can be extinguished is measured.

Traditionally, the 'basic' extinguisher for general use is the 9-litre water, which can extinguish 1.3m of the standard wooden crib fire, and is rated 13A (the decimal place is dropped). Ratings are marked on extinguisher bodies, e.g. 13A, 70B.

British Standard 5306 contains formulae for calculating the number of class A extinguishers as follows: floor area (m²) x 0.065 divided by the extinguisher rating.

This is a little complicated for the layman, so to simplify things, as a rule of thumb in factories, offices and shops etc, one 13A extinguisher covers 200 square metres of floor area.

To calculate how many 13A extinguishers are required, divide the floor area by 200, and round up.

Example: floor area 1300 square metres:

$$1300 \div 200 = 6.5 \text{ Round up to } 7$$

7 x 13A rated extinguishers.

There should be a at least 2 extinguishers per floor with a minimum combined A rating of 26A which would cover up to 400 square metres.

Where it is desirable to have smaller, lighter extinguishers, foam, or water with additives, can be used to reduce weight whilst maintaining fire fighting capability. e.g. 6 Litre AFFF foam spray extinguishers are usually rated at 13A, but are approximately 30% lighter than 9 litre water.

Specialised extinguishers should also be provided to cover classes B (Liquids), D (Metals), E (fires involving electrical apparatus) and F (cooking oils and fats), e.g. foam, carbon dioxide or powder.

Siting Of Fire Extinguishers

Normally, extinguishers should be permanently mounted on brackets or stands in conspicuous positions where persons following an escape route can easily see them, e.g. close to exits.

The intention is to encourage people to move towards the exit, rather than go further into danger. It is usual to locate extinguishers adjacent to fire alarm call points, so

people can actuate the fire alarm before picking up an extinguisher.

Extinguishers should be sited so that it is not necessary to travel more than 30m to reach one.

Extinguishers provided for special fire risks should be sited near to the risk, but not so near as to be inaccessible or place the operator in undue danger from fire. E.g. In a kitchen, next to the door rather than next to the cooker.

Mounting Fire Extinguishers

Small extinguishers weighing up to 4 kg should be mounted with the carrying handle about 1.5m from the floor, whilst larger, heavier extinguishers should be mounted with their handles at about 1m. Care should be taken to ensure that extinguishers being dislodged and falling onto people do not cause injury.

Signs

The health & Safety (Safety Signs & Signals) regulations 1996 requires that where extinguishers are placed in positions hidden from direct view, their location should be indicated by signs and, where appropriate, directional arrows. BS5499 goes further and states that if an extinguishers location is detracted from, e.g. a filing cabinet is right next to it, then a sign should be erected.

Excessive Temperatures

The contents and/or operation of extinguishers is affected by temperature, and extinguishers conforming to BS EN 3 are marked with their operating temperature range. Extinguishers should not be exposed to temperatures outside this range.

It is possible to obtain water and foam extinguishers containing anti-freeze.

Fire Extinguisher Maintenance

Fire extinguishers require stringent maintenance to ensure they will work when needed, or are more importantly, safe. Fire extinguishers are pressurised vessels that can explode when corroded or damaged, and have been know to cause serious injury and even death.

There are 2 types of maintenance procedures:

- Basic inspection by the user; and
- Maintenance by competent person.

1. British Standard 5306-3:2009 covers the maintenance of portable fire extinguishers, and recommends that "*regular visual inspections of all portable fire extinguishers be carried out by the user or user's representative. The frequency of inspections by the user should be not less than monthly and, when circumstances require, inspections should be carried out more frequently*".

Inspections should include checks that each extinguisher:

- *Is located in the designated place;*
- *Is unobstructed, visible and its operating instructions face outwards;*
- *Has operating instructions which are clean and legible;*
- *Is not obviously damaged;*
- *Has a reading in the operable range or position of any pressure gauge or indicator fitted;*
- *Has seals and tamper indicators which are not broken or missing.*

The Home Office booklet 'Fire Safety: An Employer's Guide' issued for the Fire Precautions (Workplace) Regulations suggests "*good practice is to check for correct installation and apparent function on a weekly basis.*" Free download available here

<http://www.lhcfp.co.uk/Employersguidetofiresafety.pdf>

2. Maintenance should be carried out by a competent person (usually a specialist contractor) 12 months after installation of a new extinguisher, and at 12 monthly intervals thereafter. The following chart shows the basic types & frequency of maintenance:

Extinguisher type	Basic service	Extended service	Overhaul and recharge
Water and foam	Annually	5 yearly	
Powder	Annually	5 yearly	
CO2	Annually		10 yearly