



**Emergency Procedures  
&  
Fire Precautions**

# OBJECTIVES

- Types of alarms, signals, lights and pa announcements used on site
- The importance of alarm points, escape routes and assembly points
- Causes of fire and how they can spread
- Methods of extinguishing a fire
- Different types of extinguishers
- When personal action can be used to prevent the spread of fire

# REGULATIONS

- The Construction (Health, Safety and Welfare) Regulation 1996 requires measures both to prevent fires happening and to ensure all people on construction sites (including visitors) are protected if fires do occur.
- The Construction (Design and Management) Regulation 1994 (CDM) also requires those designing, planning and carrying out projects to take construction fire safety into account.

# FIRE ELEMENTS

Fire, or burning, is the rapid combination of a fuel with oxygen (air) at high temperature. A fire can reach temperatures of up to 1000°C within a few minutes of starting. For a fire to start there are three requirements:

1. Combustible substances (the fuel)
2. Oxygen (usually air)
3. Source of heat (spark, friction or match)

Fires can spread rapidly and once established, even a small fire can generate sufficient heat energy to spread and accelerate the fire to surrounding combustible materials. Fire prevention is largely 'good housekeeping' and common sense.

## The Fire Triangle



# CLASSES OF FIRE

Fires are commonly classified into five groupings according to fuel type as listed below:

**Class A** – Fires involving solid fuels - can be extinguished by water

**Class B** – Fires involving flammable liquids - should be extinguished by foam or carbon dioxide

**Class C** – Fires involving flammable gases - should be extinguished by dry powder

**Class D** – Fires involving flammable metals - should be extinguished by dry powder

**Class E** – Fires involving cooking oils and fats - should be extinguished by wet chemical, dry chemical or foam based with special additives

# FIRE HAZARDS

There are Five main hazards produced by fire.

1. Oxygen depletion
2. Flame/Heat
3. Smoke
4. Gaseous combustion products
5. Structural failure of buildings

# EMERGENCY PRECAUTIONS - 1

## Means of Raising the Alarm

There are three basic fire emergency precautions that can be taken to prevent casualties. The first of these is that there must be **a means of raising the alarm** on all construction sites.

If a fire breaks out the alarm should be raised as soon as the first person discovers it.

There are number of different way in which the alarm can be raised.

### *For example:*

- A simple shout
- Manual fire bells
- A klaxon
- Automatic systems

Whatever means of raising the alarm is used, can it be heard by everyone working on the site over the normal background noise.



# EMERGENCY PRECAUTIONS - 2

## Means of Escape

The second basic fire emergency precaution is that there must be a **means of escape** on all construction sites.

Construction sites can pose particular problems because the routes in and out may be incomplete and there may be obstructions present.

These obstructions will differ depending on the type of site being worked on. Each site should have an emergency evacuation procedure.

Any emergency plan should be made available to workers before work starts. It should be up-to-date and should state clearly what to do if a fire breaks out on site.





# EMERGENCY PRECAUTIONS - 3

## Adequate Fire Fighting Equipment

The equipment required should depend on:

- The risk of fire occurring
- Likely consequences if it does

Fire fighting equipment can range from a single fire extinguisher on low risk sites to complex fixed installations on large and high risk sites. Whatever equipment is needed make sure that:

- Fire equipment is located where it is really needed and easily accessible
- The location of fire fighting equipment and how to use it is clearly indicated
- Is the right type of equipment available
- Is the equipment maintained and in good working order

Remember personal safety must always come before your efforts to contain a fire.

If it's a small fire it could be extinguished quickly and safely. However, your efforts to contain a fire that's getting out of control could prove fruitless, so when you finally decide to make your escape you could have difficulty in finding your way through the smoke and the fumes.

Remember, smoke and fumes from a fire are just as lethal as the fire itself.



Fire fighting equipment, including extinguishers, fire buckets of sand, or water and fire resistant blankets should be readily available in buildings. In larger premises you'll find automatic sprinklers, hose reels, and hydrant systems.

The table below shows each type of fire extinguisher and the use to which they should be put.

Type of extinguisher	Colour	Main use
Water	Red	Wood, paper or fabrics
Foam	White or cream	Petrol, oil, fats, and paints.
Carbon dioxide	Black	Electrical equipment.
Dry powder	Blue	Liquids, gases, electrical equipment.
BCF halon	Green	Motor vehicles and electrical equipment

# TYPES OF FIRE EXTINGUISHERS

**KNOW YOUR FIRE EXTINGUISHER COLOUR CODE**

Classification of Fire Risk	WATER	FOAM	CO <sub>2</sub> GAS	POWDER	HALON
<b>A</b> Paper, Wood Textile and Fabric	✓	✓		✓	✓
<b>B</b> Flammable Liquids		✓	✓	✓	✓
<b>C</b> Flammable Gases			✓	✓	✓
 Electrical Hazards			✓	✓	✓
 Vehicle Protection		✓		✓	✓

**FLAMMABLE GAS FIRES MUST BE EXTINGUISHED BY THE EMERGENCY SERVICES ONLY**



Note: The colour coding given may not be immediately obvious. Older extinguishers may have their whole body painted in the appropriate colour (e.g., black ones are filled with Carbon Dioxide).

Recent European legislation dictates that new extinguishers must be coloured red whatever substance they contain, but will carry 5% of the colour the extinguisher would have been in the original system e.g. a carbon dioxide extinguisher will be red with a black stripe, triangle or lettering. Care should therefore be taken when choosing an extinguisher that the correct type is being used prior to attempting to extinguish a fire.

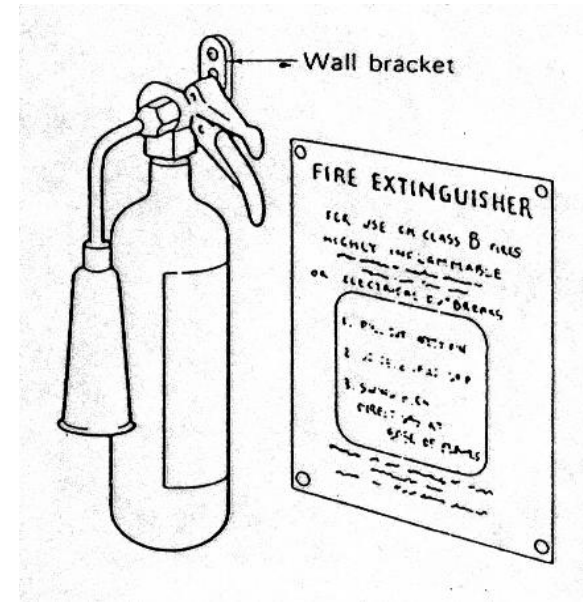
# FIRE EXTINGUISHER SAFETY

- Never use a fire extinguisher unless you have been trained to do so.
- Don't use water or water type extinguishers on electrical fires due to the risk of electric shock and explosion.
- Don't use water or water type extinguishers on oils or fats, as this too can cause an explosion.
- Don't handle the nozzle when using carbon dioxide extinguishers as this can cause freeze burns to the hands.
- Don't use the carbon dioxide extinguisher or halon types in a confined space or small room, as this could cause suffocation.
- Always read the operating instructions on the extinguisher before use.

Where possible, fire extinguishers should be supported by brackets firmly fixed to the wall at a convenient height or in a portable container.

The following information should be clearly displayed at each location point:

- 1.Type of fire for which the extinguisher is suitable;
- 2.How to operate the extinguisher.



# FIRE BLANKETS

Fire blankets are used to smother a fire. They are woven from fire resistant fibres and could be used when a person's clothing is on fire by wrapping the blanket around the person.

**DO NOT COVER THE PERSON'S FACE!**

A fire should be attacked immediately on discovery using the correct technique provided, providing there is no personal danger.

**NOTE: The alarm should be raised ASAP.**



## Fire blanket Use for smothering fires

### Kitchen Fires

1. Cover burning material completely by placing centrally on fire
2. Switch off heat
3. Leave covered until cool

### Clothing Fires

1. Smother flames

**Discard After Use!**

# EMERGENCY DRILLS

Routine emergency fire drills and, if necessary, toxic gas alerts should be carried out at regular intervals.

Fire action notices should be clearly displayed where everyone on-site will see them.

This might be:

- At the site entrance
- In the canteen area
- At fire points



The image shows a fire action notice sign. At the top is a blue circle with the text 'Fire action'. Below it is a large blue rectangular sign with white text. The sign is titled 'Fire Action' and contains instructions for what to do if a fire is discovered and what to do when a fire alarm is heard. At the bottom of the sign is a white horizontal line. Below the blue sign is a red circle with a diagonal slash, indicating a prohibition. Below that is a red rectangular sign with white text that reads 'Do not take risks' and 'Do not return to the building for any reason until authorised to do so'.

**Fire action**

## Fire Action

**Any person discovering a fire**

- 1 Sound the alarm
- 2 [ ] to call the fire brigade
- 3 Attack the fire if possible using the appliances provided

**On hearing the fire alarm**

- 4 Leave the building by [ ] route
- 5 Close all doors behind you
- 6 Report to assembly point

[ ]

**Do not take risks**

Do not return to the building for any reason until authorised to do so