

5.11 FIRE FIGHTING EQUIPMENT

Technical equipment designed to rescue people and protect valuable goods and natural resources from fire is called fire fighting equipment.

Examples

The basic apparatus are fire trucks, fire-fighting trains, fireboats, and fire-lighting airplanes and helicopters.

Types of fire fighting equipments and its uses

It is important to have fire safety equipment at hand both at home and at work. You never know when a fire is going to start, and so having fire extinguisher could save your life.

Here is an overview of the different types of fire fighting equipment that are currently available.

1. Fire Extinguishers

A fire extinguisher is one firefighting equipment, which is used to extinguish fire. The different types of fire extinguishers are given below

- ❖ Carbon dioxide extinguishers (CO₂)
- ❖ Foam extinguishers.
- ❖ Powder extinguishers.
- ❖ ABC fire extinguishers
- ❖ Wet chemical extinguishers.
- ❖ Fire blankets.

CO₂ Fire extinguisher

Principle

Carbon dioxide is extracted from the atmosphere and stored at high pressure in the liquid state within a fire extinguisher. When the extinguisher is let off, the liquid is released into the air neutralizing the oxygen and disable the fire's ability to spread.

Construction

CO₂ fire extinguisher cylinders are red. They range in size from 5 lbs to 100 lbs or larger (1lb=pound; 11lb=0.454 Kg).

- (i) It consists of a steel cylinder in which the liquefied CO₂ gas is filled as shown in Fig.5.11.1
- (ii) A control valve is provided to allow a clear passage for CO₂.

(iii) In addition to this it is also provided with a discharge horn, which is designed to stop the entrainment of air with CO_2 and to reduce the velocity.

(iv) The function of dip tube is to deliver liquid carbon dioxide outside the bottle. It protects CO_2 from evaporation and freezing.

Working

(i) Take the extinguisher as close as possible to the fire.

(ii) Hold the horn with left hand.

(iii) Open the control valve.

(iv) Direct the jet at the base of the fire with sweeping action from as close as possible to the fire.

(v) If flammable liquids aim the horn at the base of the fire and move across the area, be careful not to splash the burning liquid with the powerful jet of the CO_2 extinguisher.

(vi) If electrical equipment, switch off the power (if safe to do so) and then direct the hose straight at the fire.

(vii) CO_2 is very cold as it comes out of the extinguisher, so it cools the fuel as well.

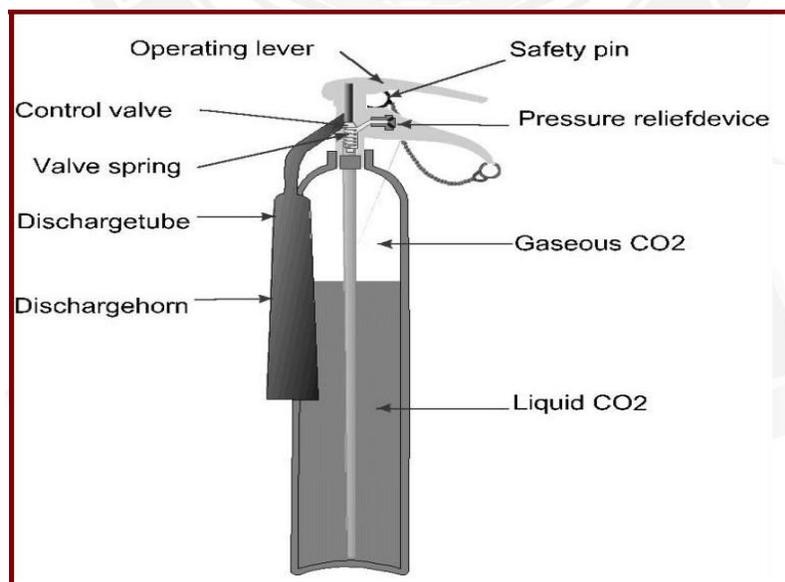


Fig:5.11.1- CO_2 Fire extinguisher

Advantages

- (i) CO₂ gas is electrically non conductive and therefore safe for fighting fires in electrically powered equipment.
- (ii) CO₂ does not contaminate food, valuable materials and leaves no residue.
- (iii) CO₂ is non-corrosive and nonconductor of electricity.
- (iv) No residues left after application and no deterioration will happen with age of the appliance.

Disadvantages

- (i) CO₂ is highly suffocating 9% concentration causes unconsciousness within minutes.
- (ii) Very little cooling effect. So there is danger of re-ignition
- (iii) When discharged, solid CO₂ particles present and generate sufficient static electricity to produce spark.
- (iv) A CO₂ fire extinguisher may be ineffective in extinguishing a class A fire because it may not be able to displace enough oxygen to successfully put the fire out.

Uses of CO₂ fire extinguisher

- (i) CO₂ fire extinguisher are designed for Class B and C (Flammable Liquids and Electrical Sources) fires.
- (ii) CO₂ fire extinguisher will frequently be found in laboratories, mechanical rooms, kitchens, and flammable liquid storage areas.
- (iii) Low and high pressure CO₂ is used for the fire protection of machinery spaces, pump rooms, cargo holds, paint stores and galley exhaust ventilation ducts on board ships.

Fire Hoses

The fire hoses let out a powerful stream of water that extinguishes large fires. The hoses usually come in a fire hose reel, which holds 30 metres of tubing. This makes the hose easy to unravel so a fire can be fought quickly. Fire brigades can also attach different nozzles to the end of the hose to fight a variety of fire situations. A fire hose is one of the standard types of firefighting equipment, and it is efficient against even the largest fires.

Fire Buckets

A fire bucket is considered the simplest piece of fire fighting equipment, but still serves a purpose. The standard red bucket has the word 'Fire' written on it and it is made of metal or plastic. It can be filled with water or you can fill it with a flame smothering powder like Flamezorb.

Fire Blankets / Welding Blankets

- Fire blankets are used to smother small fires that start in the workplace or at home. Economy fire blankets or white kitchen blankets are a good choice for a small kitchen or for a caravan.
- These blankets have a special pull tab that allows you to open them quickly.
- Welding blankets are used to protect welders from sparks and splatter. These blankets come in three different weights and sizes.

Flamezorb

- ❖ Flamezorb is a powder that effectively smothers fires.
- ❖ It's non-toxic and easy to clean up.
- ❖ Each bag of Flamezorb has enough powder to fill a ten litre fire bucket.
- ❖ If you work in an area like a garage forecourt where there is a high potential of spillage, Flamezorb is good to have around.

Fire sprinklers

- ❖ The fire sprinklers are the latest fire protecting devices used in hotels, houses etc.
- ❖ It consists of a sprinkler.
- ❖ During fire, the liquid filled bulb bursts and it allows the water to pass through the plug.
- ❖ This water is sprinkled through the sprinkler and fire is extinguished.