



Fire Extinguishers: Types, Uses, and Safety

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What is Fire

Fire is a very rapid chemical reaction between oxygen and a combustible material, which results in the release of heat, light, flames, and smoke.



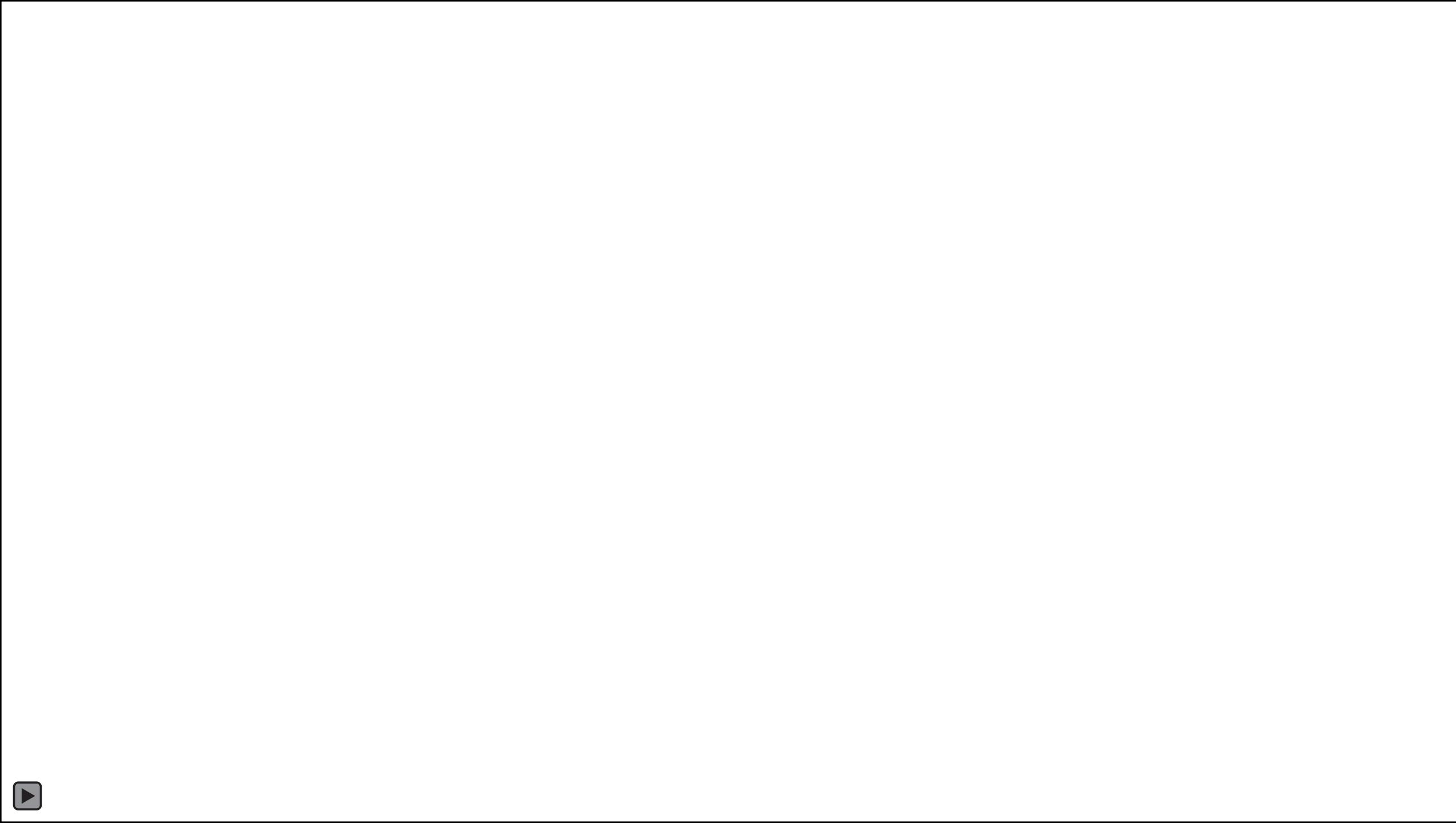


Fire Triangle



For fire to exist, the following four elements must be present at the same time:

- Enough oxygen to sustain combustion.
- Enough heat to raise the material to its ignition temperature.
- Some sort of fuel or combustible material.
- The chemical reaction that is fire.





Stages of Fire

Ignition:

- Fire just starts, small flames, low heat.
- Easily controlled with a fire extinguisher.

Growth:

- Fire spreads to nearby materials, heat and smoke increase rapidly.
- Extinguishers may still work if fire is accessible and small..

Fully Developed:

- Fire reaches maximum intensity.
- Extinguishers are ineffective; requires firefighters.



Stages of Fire

Decay :

- Fire starts to die due to lack of fuel/oxygen.
- Danger remains from smoke and toxic gases.



Types of Fire

Class A : Ordinary Combustibles

- **Fuel:** Wood, paper, cloth, rubber, plastics, trash.
- **Characteristics:** Leaves ash after burning.
- **Extinguishing Method:** Water, foam, or dry chemical.

Class B : Flammable Liquids & Gases

- **Fuel:** Petrol, diesel, oil, kerosene, alcohol, propane, LPG, paints, solvents.
- **Characteristics:** Spreads quickly, produces intense flames.
- **Extinguishing Method:** Foam, dry chemical powder, (never water).



Types of Fire

Class C : Electrical Fires

- **Fuel:** Electrical equipment (wiring, circuit breakers, motors, appliances).
- **Characteristics:** Caused by electrical faults.
- **Extinguishing Method:** CO₂, DCP (never water or foam until power is cut).

Class D : Combustible Metals

- **Fuel:** Magnesium, titanium, sodium, potassium, aluminum powder.
- **Characteristics:** Burns at very high temperature, reacts violently with water.
- **Extinguishing Method:** Special dry powder (metal fire extinguishers)



Types of Fire

Class K : Cooking Oils & Fats

- **Fuel:** Vegetable oils, animal fats (deep fryers, commercial kitchens).
- **Characteristics:** Very high ignition temperature, re-ignition risk.
- **Extinguishing Method:** Wet chemical extinguishers (creates a soapy foam layer).



Types of Fire

Symbols found on fire extinguishers & what they mean

	Water	Foam spray	ABC powder	Carbon dioxide	Wet chemical
Wood, paper & textiles 	✓	✓	✓	✗	✓
Flammable liquids 	✗	✓	✓	✓	✗
Flammable gases 	✗	✗	✓	✗	✗
Electrical contact 	✗	✗	✓	✓	✗
Cooking oils & fats 	✗	✗	✗	✗	✓



CO₂ Fire Extinguisher

Content: Filled with CO₂, a non-flammable gas under extreme pressure

How it works:

- Displaces oxygen, removing the oxygen element of the fire triangle.
- High-pressure discharge creates dry ice, which also cools the fire

Suitable for: Class B (flammable liquids) and Class C (electrical) fires only

Important:

- CO₂ is not recommended for Class A fires because they may continue to smolder and re-ignite after the CO₂ dissipates.
- Never use CO₂ extinguishers in a confined space while people are present without proper respiratory protection.





Multi-purpose - Dry Chemical Extinguishers

Content: Dry Chemical fire extinguisher

How it works:

- Coats fuel with a thin layer of fire-retardant powder
- Separates fuel from oxygen

Suitable for: Usually rated for Class B and C fires. Some are multi-purpose (ABC) for Class A, B, and C fires

Important:

- May leave a powder residue that can damage sensitive equipment or electronics.
- After use on Class A fires, monitor the area as smoldering may continue.





Fire Extinguisher Use

Most fire extinguishers operate using the following P.A.S.S. technique:

1. PULL: Pull the pin. This will also break the tamper seal.

2. AIM: Aim low, pointing the extinguisher nozzle (or its horn or hose) at the base of the fire.

NOTE: Do not touch the plastic discharge horn on CO₂ extinguishers, it gets very cold and may damage skin.

3. SQUEEZE: Squeeze the handle to release the extinguishing agent.

4. SWEEP: Sweep from side to side at the base of the fire until it appears to be out. Watch the area. If the fire re-ignites, repeat steps 2 - 4



Fire Extinguisher Use

HOW TO USE A FIRE EXTINGUISHER



PULL SAFETY PIN



AIM AT THE BASE OF FIRE



SQUEEZE THE LEVER



SWEEP SIDE TO SIDE

Thank you for your attention
&
support

