

A photograph of several firefighters in full protective gear, including helmets and oxygen tanks, working at a large fire at night. They are positioned in front of a large fire, with one firefighter in the foreground spraying a powerful stream of water. The scene is illuminated by the bright orange and yellow flames of the fire. The text "Fire Chemistry and Suppression" is overlaid in white serif font on the center of the image.

Fire Chemistry and Suppression

Ignition

The Fire Triangle

In order for combustion to occur all elements of the “Fire Triangle” must be present.



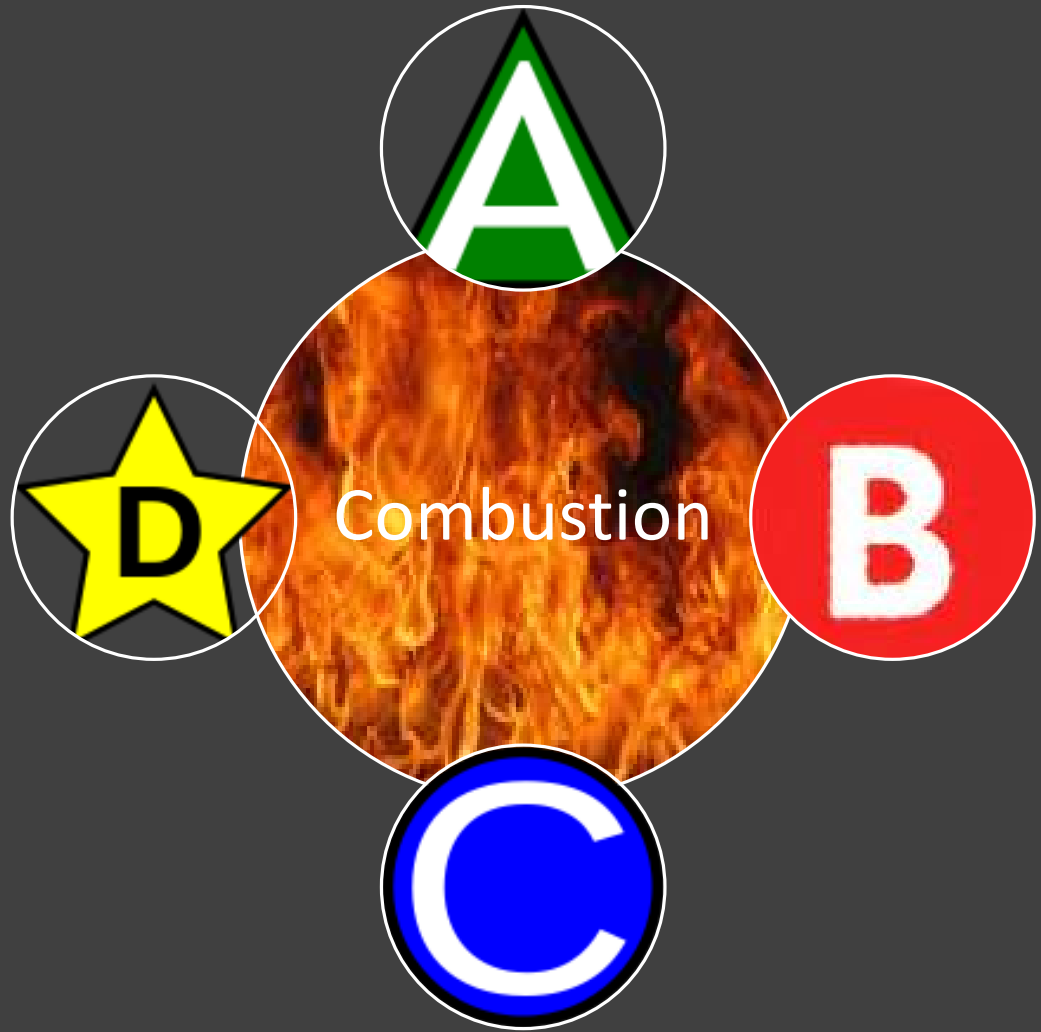
Chemical Reaction

- ❖ In essence Fire Suppression is about controlling the chemical reaction of the fire.
- ❖ This can be accomplished by affecting 1 of the elements of the Fire Triangle.
- ❖ If 1 of the components can be affected or removed the fire can be extinguished.

Classification of a Fire

- ❖ Fires are classified based upon the fuel source
- ❖ Fire extinguishers are designed for specific fire classifications.
- ❖ It is important to be able to recognize the fire classification because.....
- ❖ The **WRONG** extinguisher on the **WRONG** fire classification can be **FATAL**.

Fire Extinguishers



Class A



Wood

Paper

Cloth



Class B



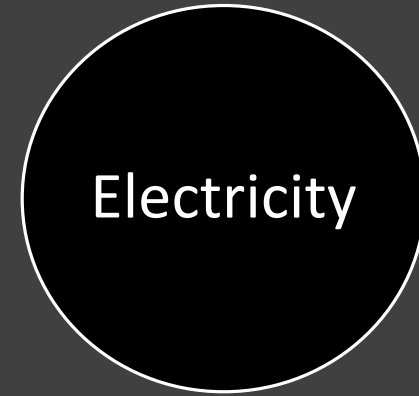
Gas

Liquid

Oil



Class C



Class D



Potassium

Aluminum

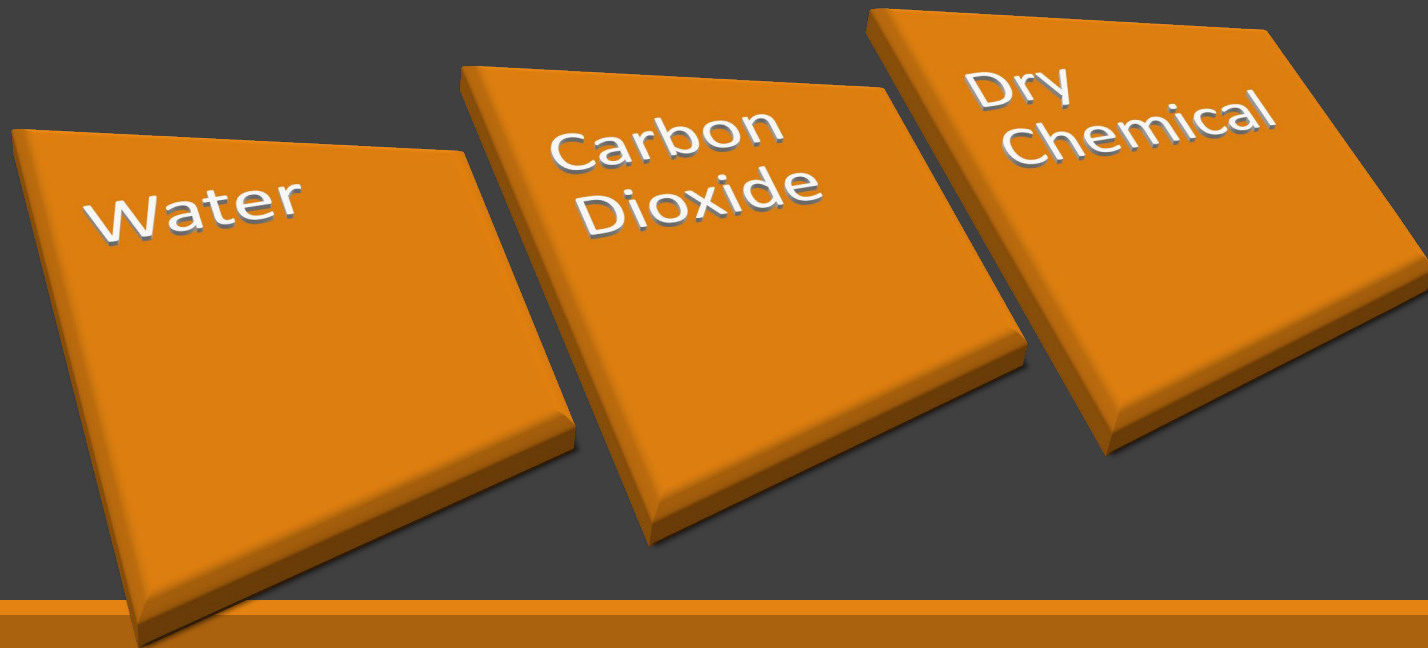
Magnesium



Fire Extinguisher Types:

Right Extinguisher for the Right Fire!

3 Most Common Types:



Air Pressurized Water Extinguisher

Usually large containers (approx. 2 feet tall) and weight about 25 pounds when full.

Ordinary water inside a pressurized container.

Best used on Solid materials Class A fires.

Using on liquids can cause fire to spread.

Using on electrical fires can increase risk of electrocution.

Many Class D fires are water reactive and will increase the chemical reaction, often times violently.

Removes HEAT from the reaction



Carbon Dioxide Extinguisher



- ❖ Range in size from 5 to 100 lbs.
- ❖ Larger sizes have heavy “horn” at time of nozzle.
- ❖ Due to pressure inside bits of dry ice can shoot out from nozzle.
- ❖ Best used on Class B and Class C fires.
- ❖ CO₂ is a non-flammable gas which displaces the oxygen in the chemical reaction.

Why wouldn't a CO2 extinguisher work on a Class A fire effectively?

- ❖ Reduces Oxygen , not heat, will not be able to displace enough O2 to be effective
- ❖ Class A fires may have smoldering embers which can re-ignite the fire

Dry Chemical



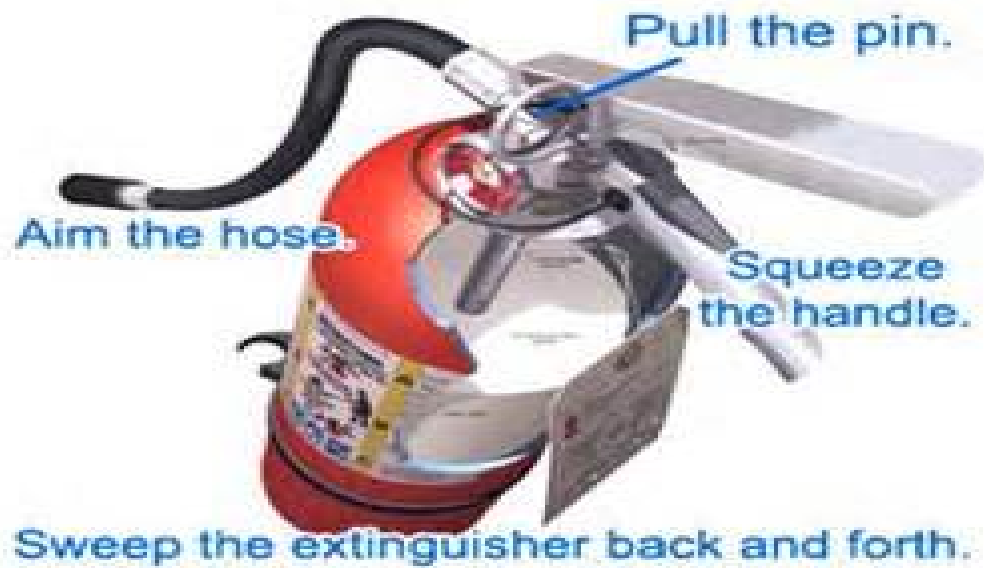
Labeled:

❖ DC

❖ ABC

❖ BC

- ❖ Dry Chemical coats the fuel with a thin layer of dust.
- ❖ Interrupts the chemical process
- ❖ Highly effective for fire suppression



To operate an extinguisher: *(Check your fire extinguisher's label for detailed instructions.)*

Pull
Aim
Squeeze
Sweep



Things to Think About

- ❖ What is Burning? (Do I have the right tool?)
- ❖ How fast is it spreading? (Do I have time to escape if I need to?)
- ❖ Where is it burning? (Do I have an escape route?)

If the answer is **NO** to any of the questions then **DO NOT** attempt to extinguish the fire.

**SAFETY
FIRST!!!!!!!!!!!!**

Questions?

THANK YOU!