

# How to Select and Properly Use a Fire Extinguisher



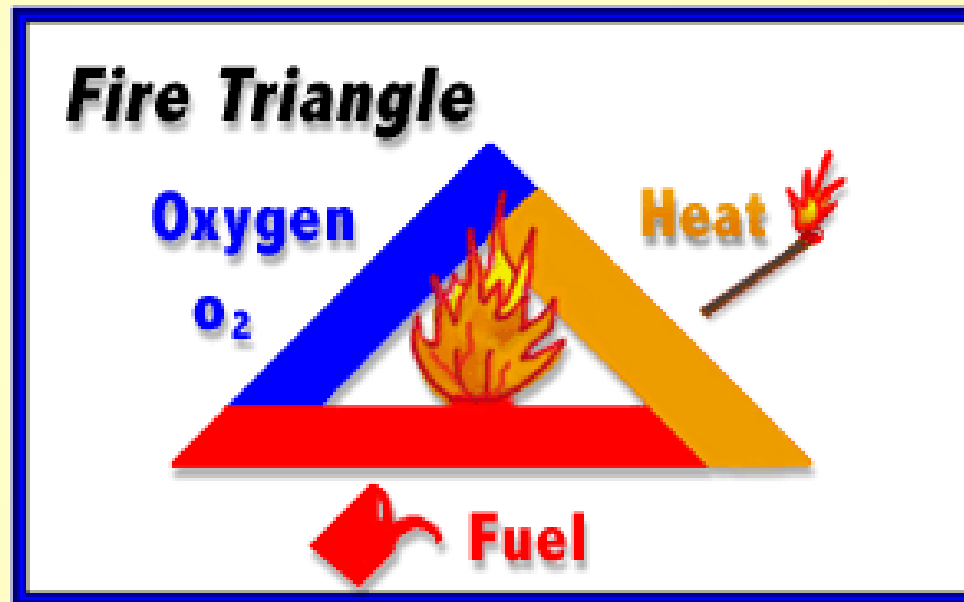
Syracuse University ~ Safety Department

# Chemistry of a Fire

## Extinguishment Theory

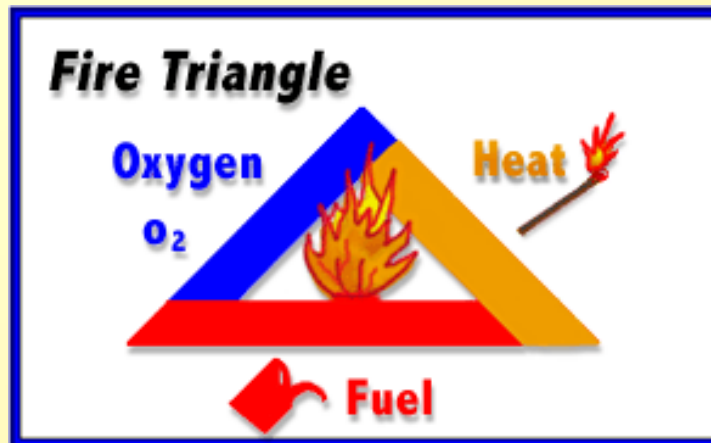
To inhibit the chemical chain reaction:

- **Remove Heat**
- **Remove Fuel**
- **Reduce Oxygen**



# Chemistry of a Fire

The fire triangle illustrates the elements that must be present in order for a fire to sustain burning. First, a fire needs oxygen to sustain combustion or in other words to be able to breathe. Second, enough heat must be available to raise the material to its ignition temperature. Third, the material that is burning is considered the fuel of the fire. Therefore, the components of the fire triangle and the elements needed for a fire to be present are fuel, oxygen, and heat. The chemical chain reaction between the three components creates the phenom of fire. If you eliminate just one of the three elements, you can extinguish the fire. This is very important, especially when discussing the types of fire extinguishers versus the classes of fire categories.



# Extinguisher Selection VS. Fire Classification



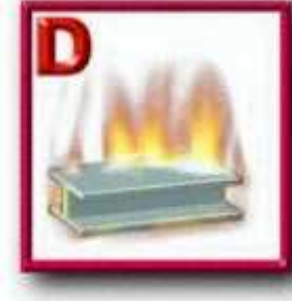
Wood, Paper,  
Plastic, Cloth



Flammable Liquids,  
Grease, Gas



Electrical



Combustible  
Metals

*The classifications are important to understand since each type of fire extinguisher is designed for a specific class of fire. Picking the wrong type of extinguisher for the type of fire could make the situation much worse.*

<u>Extinguisher</u>	<u>Class A</u>	<u>Class B</u>	<u>Class C</u>	<u>Class D</u>
<b>Water Extinguisher</b>	Yes	No	No	No
<b>CO2 Extinguisher</b>	No	Yes	Yes	Yes
<b>ABC Extinguisher</b>	Yes	Yes	Yes	Yes
<b>K Extinguisher</b>	Yes	Yes	No	No

# Extinguisher Characteristics

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## Water Extinguisher

- Class A Fires (wood, paper, cloth)
- 30 – 40 ft. range
- Lasts 60 seconds



## CO<sup>2</sup> Extinguisher

- Class B Fires (grease, oil, gas)
- 3 – 8 ft. range
- Lasts 10 – 30 seconds
- Cools or removes heat from the fire

# Extinguisher Characteristics



## ABC Extinguisher

- Class A, B, C fires (dry chemical)
- 5 – 20 ft. range
- Lasts 10 – 20 seconds
- Smothering effect on fire by removing oxygen.



## K Extinguisher

- Class B Fires (cooking oil)
- 8 – 15 ft. range
- Lasts 30 – 45 seconds
- Cooling and smothering effect on fire.

# Portable Fire Extinguisher Use

## P.A.S.S Method



### **Pull the pin**

This will allow you to squeeze the handle in order to discharge the extinguisher



### **Aim at the base of the fire**

Aiming at the middle will do no good. The agent will pass through the flames.



### **Sweep side to side**

Cover the entire area that is on fire. Continue until fire is extinguished. Keep an eye on the area for re-lighting.



### **Squeeze the handle**

This will release the pressurized extinguishing agent

## When **NOT** to Use a Fire Extinguisher

- If you don't have the correct type or a large enough extinguisher.
- If the fire is producing a large amount of smoke.
- If the fire is more than 2 ft. high or is moving rapidly.
- The final rule, and most important—**Always** place yourself between the fire and an exit. **Never** try to use an extinguisher without an escape route.