

FIRE SAFETY

Requirements for Combustion

In order for a fire to exist, three factors must be present. If any one of the factors is removed or suppressed, the fire will go out. These three factors make up a fire triangle.



- **Fuel** In order to have a fire, there must be something to burn.
- **Oxygen** Oxygen is the part of the air which is necessary for anything to burn. Many fire extinguishers work by removing this factor from a fire, thereby smothering the fire.
- **Heat** The heat required to start a fire is also referred to as the “kindling temperature”. In order for a substance to start burning, heat energy is required. Once the fire has started, it usually produces enough energy by itself to maintain the fire. Substances with a high kindling temperature require sustained heating before they will start to burn, such as coal. Substances with a low kindling temperature ignite very easily, such as gasoline.

Classes of Fire

There are four main classes of fires; these classes are based on the type of fuel used. Fire extinguishers are labeled based on the class of fire that they can be used on. For example, a Class A fire extinguisher can only be used on a Class A fire, never on a Class C fire.

- **Class A Ordinary Combustible Fires**
 - Most common type of fire
 - Fuel is materials such as wood, paper or textiles
 - Water type extinguisher used to lower the amount of heat present
 - Class B and C type extinguishers will also work to put out Class A fires

- **Class B Flammable Liquid Fires**
 - Fuels such as gasoline, grease, oil or paint
 - Dry chemical or foam type fire extinguishers used to smother the fire by removing the oxygen
 - Never use a Class A fire extinguisher as most liquid fuels will float on top of the water and spread the fire to a larger area
- **Class C Electrical Fires**
 - Any fire that involves a piece of electrical equipment and where electricity is present
 - Carbon dioxide or dry chemical fire extinguishers used to smother the fire by removing the oxygen
 - Never use a Class A fire extinguisher because water conducts electricity
 - Never use a Class B fire extinguisher because the foam type contains water
- **Class D Combustible Metal Fires**
 - Fires involving magnesium, aluminum, zinc, zirconium, lithium, potassium or metal hydrides
 - Dry powder fire extinguisher (soda-ash, sodium chloride granules and graphite powder, copper powder)

Fire Extinguishers

Fire extinguishers can be purchased as either single class type extinguishers, or more commonly as a multi-class (ABC) type extinguisher. There is no multi-class type extinguisher that includes Class D.