

FIRE EXTINGUISHER TRAINING

Calcasieu Mechanical Contractors

Fire extinguishers are divided into four categories, based on different types of fires.

- Each fire extinguisher also has a numerical rating that serves as a guide for the amount of fire the extinguisher can handle.
- The higher the number, the more fire-fighting power.

- **Class A** extinguishers are for ordinary combustible materials such as paper, wood, cardboard, and most plastics. The numerical rating on these types of extinguishers indicates the amount of water it holds and the amount of fire it can extinguish. Geometric symbol (green triangle)
- **Class B** fires involve flammable or combustible liquids such as gasoline, kerosene, grease and oil. The numerical rating for class B extinguishers indicates the approximate number of square feet of fire it can extinguish. Geometric symbol (red square)
- **Class C** fires involve electrical equipment, such as appliances, wiring, circuit breakers and outlets. Never use water to extinguish class C fires - the risk of electrical shock is far too great! Class C extinguishers do not have a numerical rating. The C classification means the extinguishing agent is non-conductive. Geometric symbol (blue circle)
- **Class D** fire extinguishers are commonly found in a chemical laboratory. They are for fires that involve combustible metals, such as magnesium, titanium, potassium and sodium. These types of extinguishers also have no numerical rating, nor are they given a multi-purpose rating - they are designed for class D fires only. Geometric symbol (Yellow Decagon)
- **Class K** fire extinguishers are for fires that involve cooking oils, trans-fats, or fats in cooking appliances and are typically found in restaurant and cafeteria kitchens. Geometric symbol (black hexagon)

Some fires may involve a combination of these classifications.

Your fire extinguishers should have ABC ratings on them.

Here are the **most common types of fire extinguishers**:

• **Water extinguishers** or APW extinguishers (air-pressurized water) are suitable for **class A fires only**. [Never use a water extinguisher on grease fires](#), electrical fires or class D fires - the flames will spread and make the fire bigger! Water extinguishers are filled with water and are typically pressurized with air. Again - water extinguishers can be very dangerous in the wrong type of situation. Only fight the fire if you're certain it contains ordinary combustible materials only.

• **Dry chemical** extinguishers come in a variety of types and are suitable for a combination of **class A, B and C fires**. These are filled with foam or powder and pressurized with nitrogen.

- **BC** - This is the regular type of dry chemical extinguisher. It is filled with sodium bicarbonate or potassium bicarbonate. The BC variety leaves a mildly corrosive residue which must be cleaned immediately to prevent any damage to materials.
- **ABC** - This is the multipurpose dry chemical extinguisher. The ABC type is filled with monoammonium phosphate, a yellow powder that leaves a sticky residue that may be damaging to electrical appliances such as a computer

Dry chemical extinguishers have an advantage over CO2 extinguishers since they leave a non-flammable substance on the extinguished material, reducing the likelihood of re-ignition.

• **Carbon Dioxide (CO2) extinguishers** are used for **class B and C fires**. CO2 extinguishers contain carbon dioxide, a non-flammable gas, and are highly pressurized. The pressure is so great that it is not uncommon for bits of dry ice to shoot out the nozzle. They don't work very well on class A fires because they may not be able to displace enough oxygen to put the fire out, causing it to re-ignite.

CO2 extinguishers have an advantage over dry chemical extinguishers since they don't leave a harmful residue - a good choice for an electrical fire on a computer or other favorite electronic device such as a stereo or TV.

These are only the common types of fire extinguishers. There are many others to choose from. Base your selection on the classification and the extinguisher's compatibility with the items you wish to protect.

It is vital to know what type of extinguisher you are using. Using the wrong type of extinguisher for the wrong type of fire can be life-threatening.

Fire needs fuel, oxygen and heat in order to burn. In simple terms, fire extinguishers remove one of these elements by applying an agent that either cools the burning fuel, or removes or displaces the surrounding oxygen.

Fire extinguishers are filled with water or a smothering material, such as CO₂. By pulling out the safety pin and depressing the lever at the top of the cylinder (the body of the extinguisher), this material is released by high amounts of pressure.

How a FIRE EXTINGUISHER Works:

At the top of the cylinder, there is a smaller cylinder filled with compressed gas. A release valve acts as a locking mechanism and prevents this gas from escaping. When you pull the safety pin and squeeze the lever, the lever pushes on an actuating rod which presses the valve down to open a passage to the nozzle. The compressed gas is released, applying a downward pressure on the fire-extinguishing material. This pushes the material out the nozzle with high amounts of pressure.

Although the temptation is to aim the extinguisher at the flames, the proper way to use the extinguisher is to aim it directly at the fuel.

Water Extinguishers...

Water extinguishers are filled with regular tap water and are typically pressurized with air. The best way to remove heat is to dump water on the fire but, depending on the type of fire, this is not always the best option.

Dry Chemical Extinguishers...

Dry chemical extinguishers are filled with either foam or powder, usually sodium bicarbonate (baking soda) or potassium bicarbonate, and pressurized with nitrogen. Baking soda is effective because it decomposes at 158 degrees Fahrenheit and releases carbon dioxide (which smothers oxygen) once it decomposes. Dry chemical extinguishers interrupt the chemical reaction of the fire by coating the fuel with a thin layer of powder or foam, separating the fuel from the surrounding oxygen. Depending on what type of flammable metals you are dealing with will decide which type D fire extinguisher you will require.

- Copper extinguishing medium should be used when you are dealing with lithium and lithium alloy metals.
- Sodium chloride extinguisher should be used when you are dealing with magnesium, sodium, potassium, uranium and powdered aluminum.

Carbon Dioxide (CO₂) extinguishers...

CO₂ extinguishers contain carbon dioxide, a non-flammable gas, and are highly pressurized. The pressure is so great that it is not uncommon for bits of dry ice to shoot out. CO₂ is heavier than oxygen so these extinguishers work by displacing or taking away oxygen from the surrounding area. CO₂ is also very cold so it also works by cooling the fuel.

Before using your fire extinguisher, be sure to read the instructions... before it's too late.

Although there are many different types of fire extinguishers, all of them operate in a similar manner.

A typical fire extinguisher contains 10 seconds of extinguishing power. This could be less if it has already been partially discharged.

Always read the instructions that come with the fire extinguisher beforehand and become familiarized with its parts.

****Once the fire is out, don't walk away! Watch the area for a few minutes in case it re-ignites. Recharge the extinguisher immediately after use. ****

Use this acronym as a quick reference: **P A S S**

Pull the Pin at the top of the extinguisher. The pin releases a locking mechanism and will allow you to discharge the extinguisher.

Aim at the base of the fire, not the flames. This is important - in order to put out the fire, you must extinguish the fuel.

Squeeze the lever slowly. This will release the extinguishing agent in the extinguisher. If the handle is released, the discharge will stop.

Sweep from side to side. Using a sweeping motion, move the fire extinguisher back and forth until the fire is completely out. Operate the extinguisher from a safe distance, several feet away, and then move towards the fire once it starts to diminish. Be sure to read the instructions on your fire extinguisher - different fire extinguishers recommend operating them from different distances. **Remember: Aim at the base of the fire, not at the flames!!!!**

Inspect fire extinguishers at least once a month (more often in severe environments).

Fire extinguisher maintenance is important for everyone's safety.

What is the difference between a fire extinguisher inspection and fire extinguisher maintenance?

INSPECTION

An inspection is a “quick check” to give reasonable assurance that a fire extinguisher is available, fully charged and operable. The value of an inspection lies in the frequency, regularity, and thoroughness with which it is conducted. The frequency will vary from hourly to monthly, based on the needs of the situation. Inspections should always be conducted when extinguishers are initially placed in service and thereafter at approximately 30-day intervals.

MAINTENANCE

Fire extinguishers should be maintained at regular intervals (at least once a year), or when specifically indicated by an inspection. Maintenance is a “thorough check” of the extinguisher. It is intended to give maximum assurance that an extinguisher will operate effectively and safely. It includes a thorough examination and any necessary repair, recharging or replacement. It will normally reveal the need for hydrostatic testing of an extinguisher.

You must ensure that:

- The extinguisher is not blocked by equipment, coats or other objects that could interfere with access in an emergency.
- The pressure is at the recommended level. On extinguishers equipped with a gauge (such as that shown on the right), the needle should be in the green zone - not too high and not too low.
- The nozzle or other parts are not hindered in any way.
- The pin and tamper seal (if it has one) are intact.
- There are no dents, leaks, rust, chemical deposits and/or other signs of abuse/wear. Wipe off any corrosive chemicals, oil, gunk etc. that may have deposited on the extinguisher.

Some manufacturers recommend shaking your dry chemical extinguishers once a month to prevent the powder from settling/packing.

Fire extinguishers should be pressure tested (a process called hydrostatic testing) after a number of years to ensure that the cylinder is safe to use. Consult your owner's manual, extinguisher label or the manufacturer to see when yours may need such testing.

If the extinguisher is damaged or needs recharging, replace it immediately!

IMPORTANT: Recharge all extinguishers immediately after use regardless of how much they were used.