

ABCs of Portable Fire Extinguishers

A fire extinguisher is a storage container for an extinguishing agent such as water or chemicals. It is designed to put out a small fire—not a big one. An extinguisher is labeled according to whether the fire on which it is to be used occurs in wood or cloth, flammable liquids, electrical, or metal sources. Using the wrong type of extinguisher on a fire can make the fire much worse.

The labels A, B, C, or D are used to indicate the type of fire on which an extinguisher is to be used. Most fire extinguishers will have a pictograph label telling you which classifications of fire the extinguisher is designed to fight. Pictures shown on the extinguisher in blue represent the type of fire on which an extinguisher is to be used. Pictures shown in black with a red slash across represent the type of fire on which the extinguisher is NOT to be used. For example, a simple water extinguisher might have a label like the one below, indicating that it should only be used on Class A fires.



CLASSIFICATION OF FUELS

Fires are classified according to the type of fuel that is burning. If you use the wrong type of fire extinguisher on the wrong class of fire, you can, in fact, make matters worse. It is therefore very important to understand the four different fire classifications.

	<p style="text-align: center;">ORDINARY  COMBUSTIBLES</p>	<p>Class A – Ordinary combustibles</p> <p>Class A fires involve solid combustible materials that are not metals such as wood, paper, textiles, and some plastics. (Class A fires generally leave an Ash.) The background of the symbol will be either Metallic or Green, if in color.</p>
	<p style="text-align: center;">FLAMMABLE  LIQUIDS</p>	<p>Class B - Flammable or combustible liquids & gases</p> <p>Class B fires involve flammable or combustible liquids and gases such as gasoline, diesel fuel, paint, paint thinners, and propane. (Class B fires generally involve materials that Boil or Bubble.) The background of the symbol will be either Metallic or Red, if in color.</p>
	<p style="text-align: center;">ELECTRICAL  EQUIPMENT</p>	<p>Class C - Energized electrical equipment</p> <p>As long as it's "plugged in" it would be considered a class C fire. Examples include fires involving fuse boxes, circuit breakers, appliances, and machinery. (Class C fires generally deal with electrical Current.) The background of the symbol will be either Metallic or Blue, if in color.</p>
	<p style="text-align: center;">COMBUSTIBLE  METALS</p>	<p>Class D - Combustible metals</p> <p>Unless you work in a laboratory or in an industry that uses these materials, it is unlikely you'll have to deal with a Class D fire. A Class D fire involves combustible metals such as sodium, potassium, magnesium, and titanium. It takes special extinguishing agents (Metal-X, foam) to fight such a fire. The background of the symbol will be either Metallic or Yellow, if in color.</p>

	<p>COMBUSTIBLE</p> <p>K</p> <p>COOKING</p>	<p>Class K – Cooking media</p> <p>Class K fires involve cooking appliances that use cooking media such as vegetable or animal oils and fats. Extinguishers that are suitable for Class K fires are identified by the letter “K”.</p>
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TYPES OF FIRE EXTINGUISHERS

It is vitally important to always use the right type of fire extinguisher when putting out a small fire. Leave big fires to the Fire Department. Different types of fire extinguishers are designed to fight different classes of fire. The three most common types of fire extinguishers are:

- Water (APW)
- Carbon Dioxide (CO₂)
- Dry Chemical (ABC,BC,DC)
- Wet Chemical

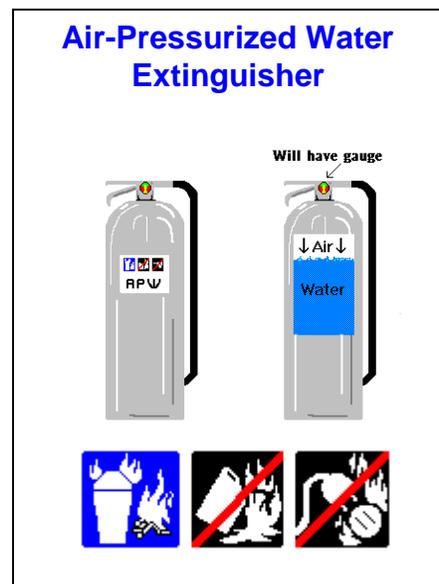
Air-Pressurized Water Extinguisher

APW stands for "air-pressurized water." APWs are large, silver extinguishers that are filled about two-thirds of the way with ordinary tap water, then pressurized with normal air. In essence, an APW is just a giant squirt gun. APWs stand about 2 feet tall and weigh approximately 25 pounds when full.

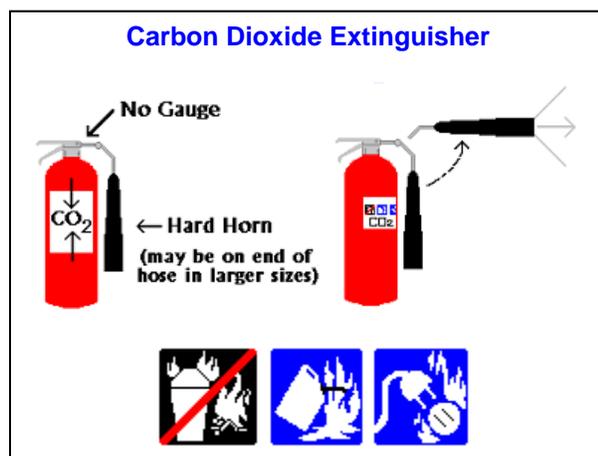
APWs are designed for **Class A** (wood, paper, cloth) fires **only**.

Never use water to extinguish flammable liquid fires. Water is extremely ineffective at extinguishing this type of fire, and you may, in fact, spread the fire if you try to use water on it.

Never use water to extinguish an electrical fire. Water is a good conductor, and there is some concern for electrocution if you were to use water to extinguish an electrical fire. Electrical equipment must be unplugged and/or de-energized before using a water extinguisher on it.



Carbon Dioxide Extinguisher



Carbon Dioxide (CO₂) extinguishers are filled with non-flammable liquid carbon dioxide that turns to a gas when expelled under extreme pressure. You can recognize a CO₂ extinguisher by its hard horn and lack of pressure gauge. The pressure in the cylinder is so great that when you use one of these extinguishers, bits of dry ice may shoot out the horn. CO₂ cylinders are red and range in size from 5 lbs to 100 lbs or larger. In the larger sizes, the hard horn will be located on the end of a long, flexible hose.

CO₂s are designed for Class B and C (flammable liquid and electrical) fires only.

Carbon Dioxide is a non-flammable gas that extinguishes fire by displacing oxygen, or taking away the oxygen element of the fire triangle. The carbon dioxide is also very cold as it comes out of the extinguisher, so it cools the fuel as well. **CO₂s may be ineffective at extinguishing Class A fires** because they may not be able to displace enough oxygen to successfully put the fire out. Class A materials may also smolder and re-ignite.

CO₂s will frequently be found in laboratories, mechanical rooms, kitchens, and flammable liquid storage areas.

Dry Chemical Extinguisher

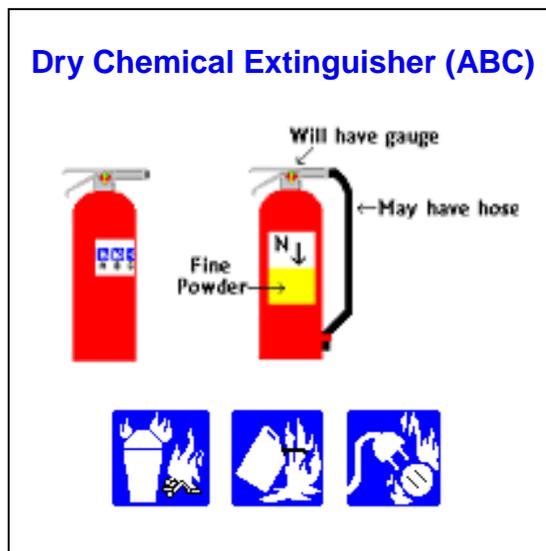
Dry chemical extinguishers come in a variety of types. You may see them labeled:

- "DC" short for "dry chem"
- "ABC" indicating that they are designed to extinguish class A, B, and C fires, or
- "BC" indicating that they are designed to extinguish class B and C fires.

It is extremely important to identify which types of dry chemical extinguishers are located in your area.

Read the labels and know their locations! You don't want to mistakenly use a "BC" extinguisher on a Class A fire, thinking that it was an "ABC" extinguisher.

An "ABC" extinguisher will have a label like this, indicating that it may be used on class A, B and C fires.



Dry chemical extinguishers put out fire by coating the fuel with a thin layer of dust, separating the fuel from the oxygen in the air. The powder also works to interrupt the chemical reaction of fire, so **these extinguishers are extremely effective at putting out fire.**

Wet Chemical ('wet potassium salts')



Wet Chemical Extinguishers are used in Class A, C, and K fires. *Class K* is a new classification and involves fires that have combustible vegetable or animal non-saturated cooking fats in commercial cooking equipment. Most class K extinguishers contain a solution of potassium acetate, sometimes with some potassium citrate or potassium bicarbonate – the same liquid agent used in most kitchen fire suppression systems. Wet chemical fire extinguishers have been specifically designed to combat fires in restaurant kitchen cooking appliances. Newer, more efficient cooking appliances, plus the use of non-saturated cooking oils require a fire extinguishing agent which will not only smother a fire but provide a cooling effect. This cooling effect is better realized with a wet chemical agent than with previously recommended dry chemicals.

The extinguishers spray the agent out as a fine mist. The mist acts to cool the flame front, while the potassium salts saponify the surface of the burning cooking oil, producing a layer of foam over the surface. This solution thus provides a similar blanketing effect to a foam extinguisher, but with a greater cooling effect. The saponification only works on animal fats and vegetable oils, so class K extinguishers cannot be used for class B fires. The misting also helps to prevent splashing the blazing oil.

RULES FOR FIGHTING FIRES

Fires can be very dangerous and you should always be certain that you will not endanger yourself or others when attempting to put out a fire. For this reason, when a fire is discovered:

- Assist any person in immediate danger to safety, if it can be accomplished without risk to yourself.
- Activate the building fire alarm system or notify the fire department by dialing 911 (or designating someone else to notify them for you). When you activate the building fire alarm system, it will automatically notify the fire department and get help on the way. It will also sound the building alarms to notify other occupants, and it will shut down the air handling units to prevent the spread of smoke throughout the building.
- Only after having done these two things, if the fire is small, you may attempt to use an extinguisher to put it out.

However, before deciding to fight the fire, keep these rules in mind:

Know what is burning. If you don't know what is burning, you don't know what type of extinguisher to use. Even if you have an ABC extinguisher, there may be something in the fire that is going to explode or produce highly toxic smoke. Chances are, you *will* know what's burning, or at least have a pretty good idea, but if you don't, let the fire department handle it.

Do Not Fight the Fire If:

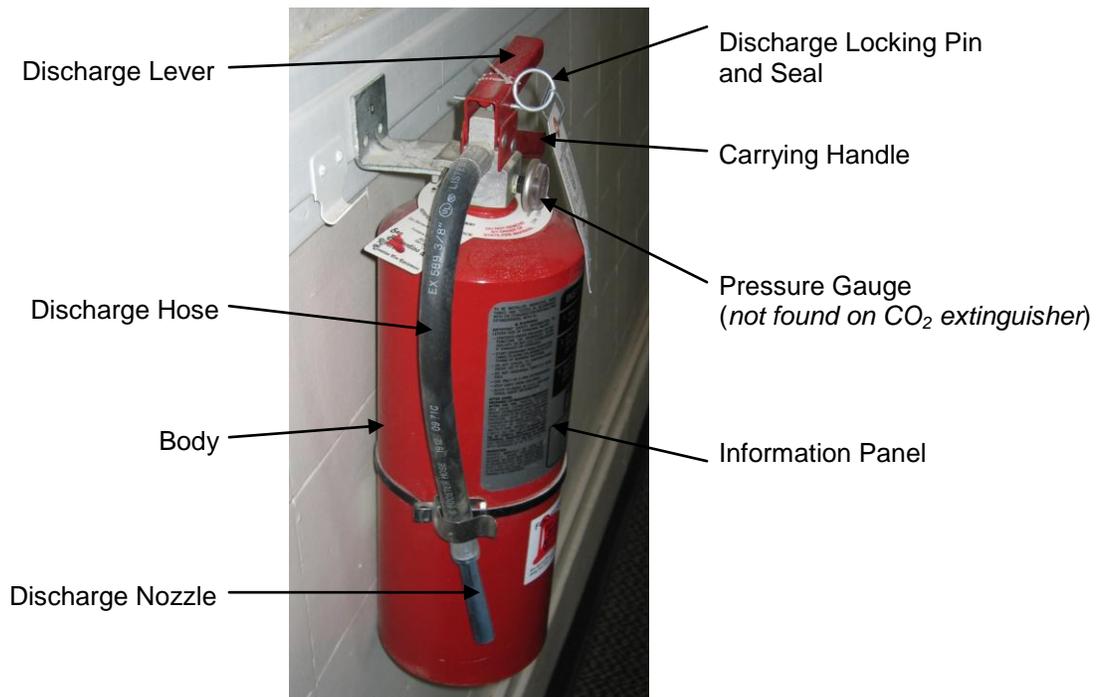
- **The fire is spreading rapidly beyond the spot where it started.** The time to use an extinguisher is in the incipient, or beginning, stages of a fire. If the fire is already spreading quickly, it is best to simply evacuate the building, closing doors and windows behind you as you leave.
- **You don't have adequate or appropriate equipment.** If you don't have the correct type or large enough extinguisher, it is best not to try to fight the fire.
- **You might inhale toxic smoke.** If the fire is producing large amounts of smoke that you would have to breathe in order to fight it, it is best not to try. Any sort of combustion will produce some amount of carbon monoxide, but when synthetic materials such as the nylon in carpeting or foam padding in a sofa burn, they can produce highly toxic gases such as hydrogen cyanide, acrolein, and ammonia in addition to carbon monoxide. These gases can be fatal in very small amounts.
- **Your instincts tell you not to.** If you are uncomfortable with the situation for any reason, just let the fire department do their job.

The final rule is to always position yourself with an exit or means of escape at your back before you attempt to use an extinguisher to put out a fire. In case the extinguisher malfunctions, or something unexpected happens, you need to be able to get out quickly, and you don't want to become trapped. Just remember, **always keep an exit at your back.**

Always be sure the fire department inspects the fire site, even if you think you've extinguished the fire.

WARNING: Portable fire extinguishers discharge faster than most people think --- many within 15 to 30 seconds.

FIRE EXTINGUISHER ANATOMY



HOW TO USE A PORTABLE FIRE EXTINGUISHER

Remember the word . . . PASS.	
<p><i>Keep your back to an exit and, depending on the size of your extinguisher, stand 10 to 20 feet away from the fire. Follow the four-step PASS procedure. If the fire does not begin to go out immediately, leave the area at once.</i></p>	
P	<p>...Pull the pin. This unlocks the operating lever and allows you to discharge the extinguisher.</p>
A	<p>...Aim the extinguisher nozzle or hose at the base of the flames.</p>
S	<p>...Squeeze trigger while holding the extinguisher upright.</p>
S	<p>...Sweep the extinguisher from side to side, covering the area of the fire with the extinguishing agent. Watch the fire area. If the fire reignites, repeat the process.</p>
<p>WARNING: Portable fire extinguishers discharge faster than most people think – many within 15 to 30 seconds.</p>	

