

The CERT Fire Safety Role

During a disaster, the first priorities of professional firefighters are life safety and putting out **major** fires. They may be hampered by impassable roads, inadequate resources, and other factors.

As a CERT member, you can assist in fire safety by:

- Putting out small fires.
- Preventing additional fires.
- Shutting off utilities.
- Helping with evacuations where necessary.

Understanding basic fire chemistry and firefighting resources will help you carry out your fire safety roles.

Fire Chemistry

In order for fire to exist, fuel, heat, and oxygen must be present.

Put all three together, and a chemical reaction (fire) can occur. Take any element away and permanently interrupt the reaction, and the fire will not ignite or reignite.

One element—fuel—is especially important because it determines fire classification and dictates fire suppression methods.

Fire Classification

Fires are classified according to the type of fuel feeding the fire.

It is extremely important to identify the fuel so that the correct method and agent for extinguishing the fire can be selected.

Class A Fires

Class A fires are those in which the fuel consists of ordinary combustibles such as:

- Paper.
 - Cloth.
 - Wood.
 - Rubber.
 - Most plastics.
-

Fire Classification (Continued)

Class B Fires

Class B fires are fed by:

- Flammable liquids, such as oil and gasoline.
- Combustible liquids, such as charcoal lighter fluid and kerosene.

These fuels burn only at the surface because oxygen cannot penetrate the depth of the fluid. Only the vapor burns when ignited.

Class C Fires

Class C fires are energized by electrical equipment such as wiring and motors.

When the electricity is turned off and is no longer feeding the fire, the fire becomes a Class A or B fire depending on the source of the fuel.

Class D Fires

Although not normally found in residential areas, Class D fires are fueled by combustible metals such as:

- Aluminum.
 - Magnesium.
 - Titanium.
 - Potassium.
 - Zirconium.
-

Firefighting Resources

One important reason for identifying the fire classification is to select the most appropriate means of suppressing the fire.

Four types of firefighting resources are available:

- **Portable fire extinguishers:** The most common device for suppressing small fires. A well-prepared home or workplace will have at least two portable fire extinguishers. There are several types of fire extinguishers.
 - **Interior wet standpipes:** Usually found in commercial and apartment buildings. These devices:
 - Usually consist of 100 feet of 1½-inch jacketed hose with a $\frac{3}{8}$ -inch nozzle tip.
 - Deliver up to 125 gallons of water per minute.
 - Should be used by three-person teams (one person to handle the hose, one to bleed air from the line, and one to control water pressure).
 - **Confinement:** Confining an interior fire by closing doors to rooms and hallways may help to restrict the spread of smoke and heat and limits the amount of oxygen available to the fire.
 - **Creative resources:** Available materials can be used to fight fires. Examples include:
 - Swimming pool or spa water and buckets.
 - Sand or dirt and shovels.
 - A garden hose.
-

Types of Portable Fire Extinguishers

There are four main types of portable fire extinguishers.

- Water extinguisher
 - Dry chemical extinguisher
 - Carbon dioxide extinguisher
 - Specialized extinguisher
-

Water Extinguisher

Water extinguishers are used on Class A fires. Use caution to avoid scattering lightweight materials with the pressurized water and spreading the fire. Standard characteristics include:

- Capacity: 2½ gallons
 - Range: 30–40 feet
 - Pressure: 110 pounds per square inch (psi)
 - Appearance: Usually silver
-

Dry Chemical Extinguisher

Dry chemical extinguishers rated for Class B and C fires have a sodium bicarbonate base.

Multipurpose dry chemical extinguishers have a monoammonium phosphate base. They are effective for Class A, B, and C fires. Standard characteristics include:

- Capacity: Approximately 10–20 seconds discharge time
 - Range: 8–12 feet
 - Pressure: 175–250 psi
 - Appearance: Usually red
-

Carbon Dioxide Extinguisher

Carbon dioxide extinguishers, while still in use, are becoming less common. CO₂ extinguishers are used on Class B and C fires. Standard characteristics of a CO₂ extinguisher include:

- Capacity: 8–30 seconds
 - Range: 3–8 feet
-

Specialized Extinguisher

Specialized extinguishers are also less common. An example of a specialized extinguisher is the Class D dry powder extinguisher, which uses special agents to remove oxygen from a Class D fire.

Portable Fire Extinguisher Ratings

Portable fire extinguishers must be rated and approved by the State Fire Marshal and by Underwriters Laboratories.

The manufacturer's label displays the extinguisher's rating and properties, including:

- Type of extinguisher.
- Classification rating.
- Strength and capacity.

Choosing the Right Extinguisher for the Type of Fire

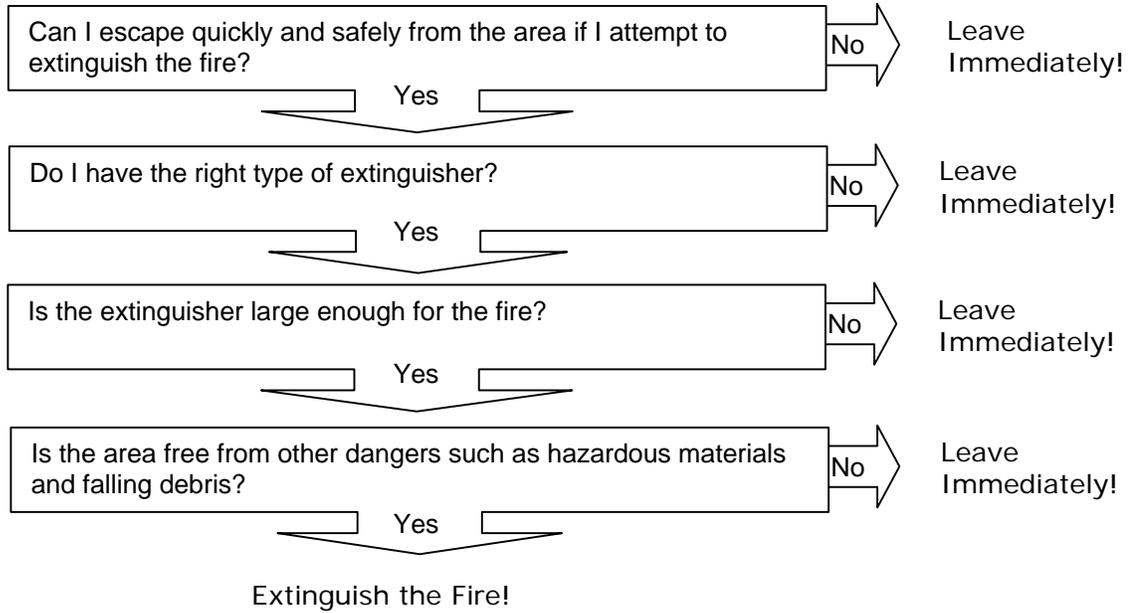
In suppressing fires, it is absolutely essential that you use the right tool for the job.

Fire Types, Extinguishing Agents, and Methods

Fire Type	Extinguishing	
	Agent	Method
Ordinary Solid Materials	Water	Removes heat
	Foam	Removes air and heat
	Dry chemical	Breaks chain reaction
Flammable Liquids	Foam CO ₂	Removes air
	Dry chemical	Breaks chain reaction
Electrical Equipment	CO ₂	Remove air
	Dry chemical	Breaks chain reaction
Combustible Metals	Special agents	Usually remove air

Deciding to Use a Fire Extinguisher

Before attempting to fight any fire with an extinguisher, ask yourself the following questions.



Lesson Summary

- Fire requires heat, fuel, and oxygen. The combination of these elements can cause a chemical exothermic reaction (fire).
 - There are four classes of fire, based on the type of fuel that feeds the fire.
 - The type and quantity of fuel dictate the best methods and equipment for extinguishing a fire.
 - The decision to extinguish a fire is based on personal safety and having the proper resources.
-