

# Classes of Fires and Types of Extinguishers

**E**ACH CLASS of fire—A, B, C, or D—has a different source. Some principles apply to putting out all fires. However, certain procedures and products are used only in extinguishing specific classes of fires. Knowing the basic skills and the materials needed can keep a minor fire from growing into a major one.



## Objectives:



1. Identify general principles for extinguishing all fires.
2. Identify the classes of fires and choose the proper extinguisher for each.

## Key Terms:



Class A fires  
Class B fires  
Class C fires  
Class D fires

## General Principles for Extinguishing All Fires

Any one or a combination of these general principles can be used to extinguish a fire:

- ◆ Cool the fire.
- ◆ Cut off the oxygen supply.
- ◆ Remove the fuel.

An example of cooling a fire is spraying water on burning wood. This lowers the temperature of the wood below that at which it will burn. An example of cutting off the oxygen supply is covering a container of burning material until all the oxygen is consumed. An example of removing the fuel is turning off the fuel valve on an oxy-acetylene torch. In any of the three instances, the fire will go out.

## Classes of Fires and Extinguishers

Not all fires are the same. Fires are classified by the types of materials that are burning. Extinguishers are labeled to correspond to the classes of fires they are designed to fight. If you use the wrong type of fire extinguisher on a fire, you can, in fact, make matters worse. Understanding the four different fire classifications is therefore very important.

**Class A fires** involve ordinary combustibles, like wood, paper, cloth, trash, and plastics. They do not contain metals, combustible liquids, or electricity. (Class A fires generally leave Ashes.)

Class A fires can be extinguished with water. A Class A extinguisher is typically either a pressurized can of water that can be sprayed on a fire or a container of water with a pump mechanism. Class A extinguishers are for use only on Class A fires. A Class A fire extinguisher is marked with a green triangle containing the letter *A*.

An alternative method of extinguishing a Class A fire is to smother it with a blanket, a gloved hand, or other material.

**Class B fires** involve flammable liquids. Typical flammable liquids are gasoline, oil, grease, paint, and acetone. Class B fires can be very difficult to control because they involve burning nonmetals in a liquid state. This classification also includes flammable gases. (Class B fires generally involve materials that Boil or Bubble.)

Electricity is not present in Class B fires. A Class B fire is extinguished with carbon dioxide (CO<sub>2</sub>) contained in a heavy cylinder and under pressure. CO<sub>2</sub> is very cold when under pressure and displaces the oxygen around the fire, causing the fire to be extinguished. It should not be sprayed on people or animals. The use of a Class B extinguisher usually results in very little mess and no damage to prop-



FIGURE 1. Class A fires.



FIGURE 2. Class B fires.

erty. However, avoid breathing CO<sub>2</sub>. Class B extinguishers may be used to extinguish both Class A and Class B fires. A Class B fire extinguisher is marked with a red square containing the letter B.

**Class C fires** involve electrical equipment. Thus, electricity is always present. It is often combined with combustible materials. An additional hazard of a Class C fire is the potential for electric shock while fighting the fire. If possible, always turn off the source of electricity before fighting an electrical fire. The fire may be extinguished, but if the electricity is not turned off, the fire may rekindle. (Class C fires deal with electrical Current.)

A Class C fire is extinguished with a dry chemical, which does not conduct electricity. The chemical is a very fine powder that smothers the fire when applied. A disadvantage is the mess the chemical makes when ejected from the extinguisher. Avoid breathing dry chemical extinguisher powder. Class C extinguishers may be used to extinguish Class A, Class B, and Class C fires. A Class C fire extinguisher is marked with a blue circle containing the letter C.

**Class D fires** involve combustible metals. Potassium, sodium, aluminum, and magnesium burn at extremely high temperatures. Unless you work in a laboratory or in an industry that uses these materials, it is unlikely you'll have to deal with Class D fires. They are uncommon in agriculture.

Burning metal is very difficult to extinguish, and only Class D extinguishers are recommended on burning metal. Class D fire extinguishers are not used on any other class of fire. The material in a Class D extinguisher is a foam product that puts out the fire by replacing the oxygen near it. Class D fire extinguishers are the most expensive. Class D extinguishing equipment is marked with a yellow star containing the letter D.

As extinguishers progress from A to D, they become more expensive to use. Water is generally the cheapest material for extinguishing a fire. However, water works well on Class A fires only. Water should not be used on Class B fires. Doing so may actually cause them to spread, as many flammable liquid fires involve petroleum products that float on water. Water must never be used on a Class C electrical fire, as the firefighter could be electrocuted. Water is not of

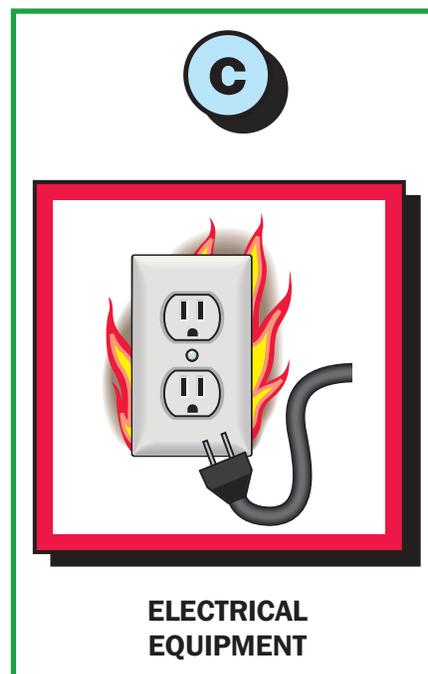


FIGURE 3. Class C fires.

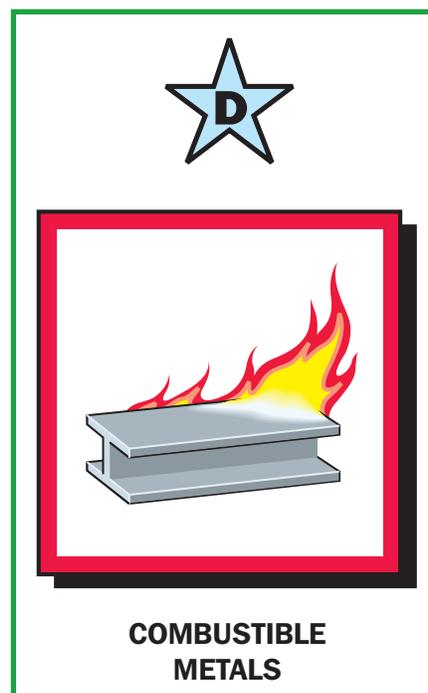


FIGURE 4. Class D fires.

value in fighting the burning metal of Class D fires. The temperatures are generally too high for water to be effective.

Fire extinguishers are clearly marked with the classes of fires they will extinguish safely. Some are suitable for more than one type of fire. A common type is the A-B-C extinguisher, which is for use in fighting Class A, B, and C fires.

Put fire extinguishers close to where they might be needed. Class A extinguishers should be located in areas where paper, wood, and other ordinary combustibles are used. Class B extinguishers should be located where flammable liquids are present. Class C extinguishers should be placed where they would be easily accessible for electrical fires. Extinguishers labeled A-B-C are good for general use because they contain a dry chemical and are effective in fighting Class A, B, or C fires.

Fire extinguishers should be located in clean, dry areas that are easy to access. They should be hung so the top is between 3½ and 5 feet above the floor and must be quick and easy to remove. Their locations should be clearly marked, and everyone familiarized with their locations and use.



**FIGURE 5.** Fire extinguishers should be readily available.

## Summary:



To extinguish any fire, lower the temperature, cut off the oxygen supply, or remove the fuel source. Fires are categorized by the type of material that is burning. Class A fires involve ordinary combustibles. Class B fires involve flammable liquids. Class C fires involve electrical equipment. Class D fires involve combustible metals.

Choose the correct type of extinguisher for the type of fire. Be sure fire extinguishers are easy to access. Know the location of fire extinguishers and how to use them.

## Checking Your Knowledge:



1. What kinds of burning materials can be extinguished with a Class A fire extinguisher?
2. What kinds of burning materials can be extinguished with a Class B fire extinguisher?

3. What type of fire can be extinguished with a Class C extinguisher?
4. What are the symbols that represent the different types of fire extinguishers?
5. Where should fire extinguishers be located?

### Expanding Your Knowledge:

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Visit the local fire department to observe the types of equipment used and the types of hand-held fire extinguishers recommended for different locations in agricultural businesses. Collect a variety of fire extinguishers, both old and new, and observe how fire extinguishers have been improved.

### Web Links:

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#### Classes of Fires:

<http://www.uh.edu/admin/srmd/fireclasses.html>

#### How Fire Extinguishers Work

<http://www.howstuffworks.com/fire-extinguisher.htm>