







## FIRE EXTINGUISHER BASICS

There are five different types or classes of fire extinguishers, each of which extinguishes specific types of fire. Newer fire extinguishers use a picture/labeling system to designate which types of fires they are to be used on so users can quickly identify the classes of fire on which the extinguisher will be effective. Older fire extinguishers are labeled with colored geometrical shapes with letter designations.

|          |   |                                    |  |
|----------|---|------------------------------------|--|
| <b>A</b> |  | <b>Common Combustibles</b>         | <b>Wood, paper, cloth etc.</b>             |
| <b>B</b> |  | <b>Flammable liquids and gases</b> | <b>Gasoline, propane and solvents</b>      |
| <b>C</b> |  | <b>Live electrical equipment</b>   | <b>Computers, fax machines (see note!)</b> |
| <b>D</b> |  | <b>Combustible metals</b>          | <b>Magnesium, lithium, titanium</b>        |
| <b>K</b> |  | <b>Cooking media</b>               | <b>Cooking oils and fats</b>               |

## FIRE EXTINGUISHER RATINGS



Located on the fire extinguisher label is the UL rating or in Canada the ULC rating. These ratings are broken down into Class A and Class B:C ratings that provide a comparison relative to the extinguishing effectiveness of the unit. For example, an extinguisher that is rated 4A:20B:C indicates the following:

- The “A” rating is a water equivalency rating. Each “A” is equivalent to 1 1/4 gallons of water. 4A = 5 gallons of water.
  - The “B-C” rating is equivalent to the amount of square footage that the extinguisher can cover, handled by a professional. 20 B:C = 20 square feet of coverage.
  - The “C” rating indicates it is suitable for use on electrically energized equipment. When analyzing these ratings, note there is not a numerical rating for Class “C” or Class “D” fires. Class “C” fires are essentially either a Class “A” or a Class “B” fire involving energized electrical equipment where the fire extinguishing media must be non-conductive. The fire extinguisher for a Class “C” fire should be based on the amount of the Class “A” or Class “B” component.
- For extinguisher use on a Class “D” fire, the relative effectiveness is detailed on the extinguisher nameplate for the specific combustible metal fire for which it is recommended.

## FIRE EXTINGUISHER CLASSIFICATIONS

Class “A” Extinguishers will put out fires in ordinary combustibles, such as wood and paper. The numerical rating for this class of fire extinguisher refers to the amount of water the fire extinguisher holds and the amount of fire it will extinguish.

Class “B” Extinguishers should be used on fires involving flammable liquids, such as grease, gasoline, oil, etc. The numerical rating for this class of fire extinguisher states the approximate number of square feet of a flammable liquid fire that a non-expert person can expect to extinguish.

Class “C” Extinguishers are suitable for use on electrically energized fires. This class of fire extinguishers does not have a numerical rating. The presence of the letter “C” indicates that the extinguishing agent is non-conductive.

Class “D” Extinguishers are designed for use on flammable metals and are often specific for the type of metal in question. There is no picture designator for Class D extinguishers. These extinguishers generally have no rating nor are they given a multi-purpose rating for use on other types of fires.

Class “K” Extinguishers are used on fires involving cooking media (fats, grease, and oils) in commercial cooking sites such as restaurants. These fire extinguishers work on the principle of saponification. Saponification takes place when alkaline mixtures, such as potassium acetate, potassium citrate, or potassium carbonate, are applied to burning cooking oil or fat. The alkaline mixture combined with the fatty acid creates a soapy foam on the surface that holds in the vapors and steam and extinguishes the fire.



### Multi-Classifications

This label shows this extinguisher may be used on ordinary combustibles, flammable liquids, or electrical equipment fires.

This is the new labeling style with a diagonal red line drawn through the picture to indicate what type of fire this extinguisher is NOT suitable for. In this example, the fire extinguisher could be used on ordinary combustibles and flammable liquids fires, but not on electrical equipment fires.

## TYPES OF FIRE EXTINGUISHERS

**Dry Chemical** extinguishers are usually rated for multiple purpose use. They contain an extinguishing agent and use a compressed, non-flammable gas as a propellant.

**Halon** extinguishers contain a gas that interrupts the chemical reaction that takes place when fuels burn. These types of extinguishers are often used to protect valuable electrical equipment since they leave no residue to clean up. Halon extinguishers have a limited range, usually 4 to 6 feet. The initial application of Halon should be made at the base of the fire, even after the flames have been extinguished.

**Water** extinguishers contain water and compressed gas and should only be used on Class “A” (ordinary combustibles) fires.

**Carbon Dioxide (CO<sub>2</sub>)** extinguishers are most effective on Class “B” and “C” (liquids and electrical) fires. Since the gas disperses quickly, these extinguishers are only effective from 3 to 8 feet. The carbon dioxide is stored as a compressed liquid in the extinguisher; as it expands, it cools the surrounding air. The cooling will often cause ice to form around the horn where the gas is expelled from the extinguisher. Since the fire could re-ignite, continue to apply the agent even after the fire appears to be out.

## HOW TO USE A FIRE EXTINGUISHER

Even though extinguishers come in a number of shapes and sizes, they all operate in a similar manner. Here's an easy acronym for fire extinguisher use:



## LOCATION

Most Fire Codes require that owners/employers select and distribute fire extinguishers based on the classes of anticipated workplace fires and also on the size and degree of the hazard that would affect their use. The following chart contains requirements for classes of fires and travel distance to an extinguisher.

| Fire Class | Travel Distance                                |
|------------|--|
| Class A    | 75 feet (22.9 m) or less                       |
| Class B    | 50 feet (15.2 m)                               |
| Class C    | Based on appropriate A or B Hazard             |
| Class D    | 75 feet  |
| Class K    | Within 30 feet of commercial cooking equipment |

Extinguishers need to be conspicuously located and available in the case of fire. They also should be located along normal paths of travel and near exits. Portable fire extinguishers that are not wheeled should be installed on the hanger or bracket supplied or placed in cabinets or wall recesses.

The locations of fire extinguishers must be identified so they are readily available. Height requirements for mounting extinguishers depend on the weight of the unit. If the unit weighs less than 40 pounds, it should be installed so the top of the extinguisher is no more than 5 feet above the floor. If the unit weighs more than 40 pounds, it should be installed so the top of the extinguisher is no more than 3.5 feet above the floor. At no point should the extinguisher be less 4 inches from the floor.

Rule of thumb – Mount portable extinguishers between your knee and shoulder

### **INSPECTION, TESTING & MAINTENANCE**

Portable fire extinguishers must be visually inspected monthly. The inspection should assure that:

1. Fire extinguishers are in their assigned place;
2. Fire extinguishers are not blocked or hidden;
3. Fire extinguishers are mounted in accordance with NFPA Standard No. 10 (Portable Fire Extinguishers);
4. Pressure gauges show adequate pressure (a CO<sub>2</sub> extinguisher must be weighed to determine whether leakage has occurred);
5. Pin and seals are in place;
6. Fire extinguishers show no visual sign of damage or abuse;
7. Nozzles are free of blockage.

Maintenance, inspection, and testing of portable fire extinguishers are the responsibility of the owner.

Maintenance should be done at least annually or more often if conditions warrant.

Record must be kept of the annual maintenance date and keep these records for one year after the recorded date or the life of the shell of the extinguisher.

Hydrostatic testing of portable fire extinguishers is done to protect against unexpected failure. This can be caused by internal corrosion, external corrosion, damage from abuse, etc.

Hydrostatic testing must be performed by trained personnel with proper test equipment and facilities.

Fire extinguishers, correctly used on the type of fire they are intended for, can have a large role in stopping major fire damage and dollar losses. However, it should be noted that it may not be possible to extinguish every fire with fire extinguishers. When personal safety is in jeopardy, personnel should not attempt to extinguish the fire but should evacuate the building. In all instances, the fire department should be called immediately if a fire occurs.

**ONLY USE PORTABLE FIRE EXTINGUISHERS IN THE EARLY STAGE OF FIRE, AFTER THE FIRE DEPARTMENT IS CALLED AND THERE IS NO DANGER FROM FLAMES OR SMOKE**