

Fire Extinguishers



Most fires start small and contained and they are best dealt with during that initial stage with the use of Fire Extinguishers.

In the European Union, fire extinguishers are split into 6 different Classes and are distinguished in 6 Types. It is important to learn each of these types and classes, since the use of the wrong extinguisher may at best waste time and at worst cause a flashover effect.

Classes

Each class refers to a different kind of fuel source a fire may be feeding off of. You can check the type of your fire extinguishers by looking at the labels placed on them. The categories for extinguishers in the European Union are:

A → Common Combustibles. The most common materials that can be found in any installation be it at home, work or otherwise. Examples of these would be wood, paper, clothing, furniture etc.

B → Flammable Liquids. Includes liquids such as gasoline, LNG, LPG and other liquid chemicals and solvents (check the labels on the back of your substances' containers or refer to the MSDS to identify which liquid substances are flammable)

C → Flammable Gases. Includes gases such as Hydrogen, Methane, Acetylene, Ethylene etc. (always check the labelling or the MSDS to identify any flammable gases you may own)

D → Combustible Metals. Combustible metals are defined as any metal composed of distinct particles or pieces, regardless of shape, size or chemical composition that will burn. Examples of such metals would be potassium, lithium, magnesium and magnesium alloys, sodium etc.

E → Electrical Equipment. Any equipment that uses electricity and/or remains under current in order to work. Examples, computer devices, printers, electrical panels etc.

F → Cooking. Fires using cooking materials as a fuel source like cooking oil and fats.

* You can check the category from the extinguisher's own label. Always make sure to check before buying or placing one where you need, to ensure you have the proper extinguisher available in case of emergency.

Types:



WATER FIRE EXTINGUISHERS → These extinguishers are spraying water at the fire, which extinguishes the flames and the burning materials, preventing the fire from re-igniting. They are best used to put out fires burning on common materials (Class A) and are most used in areas with concentrated paper or wood biomass (e.g., offices, wood workshops)

FOAM FIRE EXTINGUISHERS → Foam fire extinguishers can put out fires from common combustibles but are also suitable for putting out liquid and cooking fires (Class B and F) which is usually why they are preferred over the simple Water Extinguishers. When used, the foam covers the surface of the liquid, preventing flammable vapor from reaching the air and thus starving the fire of fuel (refer to the **Triangle of Fire**).

DRY POWDER FIRE EXTINGUISHERS → This type of extinguisher is considered a go-to type for workshops, factories, and other production installations, since it can be used to combat fire outbreaks of most Classes (namely A, B, C and E). This type of extinguisher can be used on electrical equipment of up to 1000V

M28 & L2 POWDER EXTINGUISHERS → The M28 is a Dry Powder fire extinguisher specifically designed to combat fire outbursts on metals (Class D) and particularly alkali metals such as Sodium, Potassium, Magnesium and Aluminum when in the form of swarf or powder. Upon contact with the metal's surface the powder creates a crust. The dry powder used is based on sodium chloride, treated with flow and moisture repellent additives.

Since the M28 is not suitable for Lithium Fire, the L2 Dry Powder Extinguisher is used which is based on Graphite, Magnesium Aluminum Silicate, and Magnesium Stearate. The L2 has the same effect on metal surfaces as the M28.

CARBON DIOXIDE → Carbon Dioxide extinguishers are filled with non-flammable carbon dioxide gas under extreme pressure and are used for putting out Class B and E fires. It is important to note that when used, the extinguisher's hose reaches very low temperatures and may cause freeze burns if held from the hose or horn. To avoid this, make sure your Carbon Dioxide extinguishers include a **frost-free horn**.

WET CHEMICAL → Wet Chemical Fire Extinguishers are special extinguishers developed primarily for use against fires in a cooking environment (Class F). This extinguisher contains a solution of potassium which spreads in a form of mist on the fire. This mist will first cool down the fire and then, upon contact with the oils and fats, the solution will react and create a soap-like coating thus isolating the surface from oxygen. These extinguishers are usually preferred over Water, Dry Dust and Foam Extinguishers since the potassium solution is spread as a mist (low pressure) and thus doesn't spread the oils and fats to other areas.

* Always check your fire extinguishers' labelling before placing them in the respective concern areas.

FAQ

Q: Do fire extinguishers need maintenance?

A: Yes. Fire extinguishers must be inspected and undergo maintenance regularly.

Q: How often do I need to send an extinguisher for maintenance?

A: On a yearly basis, but all extinguishers should have labelling showing you the month and the year of the previous maintenance procedure, as well as, when the next one is due. Always check on the labeling for this information. You should also send your extinguishers for maintenance if you ascertain any damage on the extinguisher's container or hose.

Q: Can fire extinguishers explode?

A: It is very rare for an extinguisher to explode as they are not as affected directly by heat or extreme cold. The biggest explosion risk factor would be dropping them, causing damage to the shell, container, or pressure relief valves, but even then, fire extinguishers have proven to be durable and still functional. If you drop or knock-off an extinguisher always inspect it afterwards. Make sure to check the pressure gauge as well in case pressure inside the shell has built up.

Q: What is the powder of the Dry Powder Extinguishers made of?

A: The dry powder may contain Ammonium Phosphate, Potassium or Sodium Bicarbonate, Graphite or Monnex depending on the type of Dry Powder Extinguisher. The propellant agent is Nitrogen.

Q: Is Dry Powder toxic/hazardous?

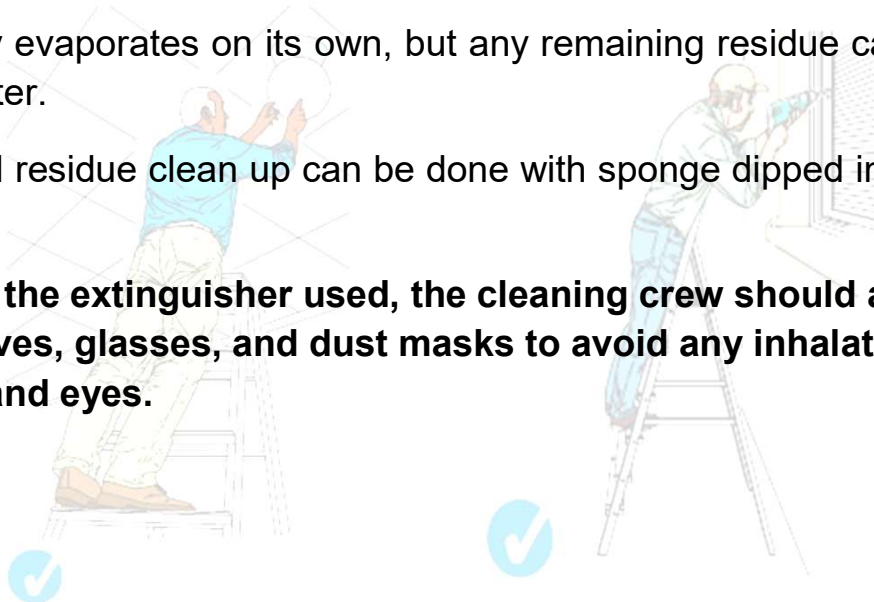
A: Dry Powder is generally considered non-toxic, but as is the case with any kind of chemical, inhaling or contact with the eyes and skin should be avoided as much as possible. It is best to clean up dry powder after use since in combination with moisture it may develop into an acidic solution which can damage the electrical equipment and the building's fabric. During cleaning always use the proper PPE.

Q: How do I clean up fire extinguisher residue?








A: Depends on the which extinguisher you used :

- The residue from extinguishers using dry powder has a sand-like texture and as discussed can become acidic with moisture, so it is best if you clean up using a vacuum, broom, or a rag.
- If the extinguisher you used contained sodium bicarbonate or potassium bicarbonate you may also scrub any leftover stains using a damp rag with water.
- To treat monoammonium phosphate based dry chemical, mix a solution using hot water and baking soda. Let the solution settle for about five minutes then rinse the area using warm water. and vinegar solution.
- Foam usually evaporates on its own, but any remaining residue can be cleaned up using clean water.
- Wet chemical residue clean up can be done with sponge dipped in hot water mixed with soap

Regardless of the extinguisher used, the cleaning crew should always wear protective gloves, glasses, and dust masks to avoid any inhalation or contact with the skin and eyes.



Types of extinguishers we use against which Class of fire.

							
	Source	Common Combustibles	Flammable Liquids	Flammable Gases	Combustible Metals	Electrical Equipment	Cooking
	Examples of Materials	Solids (wood, paper, clothing)	Gasoline, LNG, Solvents	Propane, Methane, Hydrogen	Magnesium, Lithium, Potassium, Sodium	PC, Printer, Electrical Panels or Generators	Cooking Oils & Fats
Types of Fire Extinguishers	WATER	✓	✗	✗	✗	✗	✗
	FOAM	✓	✓	✗	✗	✗	✓
	DRY POWDER	✓	✓	✓	✗	✓	✗
	M28 & L2 DRY POWDER	✗	✗	✗	✓	✗	✗
	CARBON DIOXIDE	✗	✓	✗	✗	✓	✗
	WET CHEMICAL	✓	✗	✗	✗	✗	✓