201: Health and safety in building services engineering  
**Handout 8: Firefighting procedures**

**Learning outcome**

The learner will:

1. Understand the requirements for identifying and dealing with hazards in the work environment

**Assessment Criteria**

The learner can:

4.6 identify the correct type of fire extinguisher for a particular type of fire.

**Firefighting procedures**

Combustion is a chemical reaction in which a substance reacts violently with oxygen to produce heat and light. The three elements of fuel, oxygen and heat all need to be in place in order for combustion to occur; this is known as the fire triangle.

**Fire triangle**

|  |  |  |
| --- | --- | --- |
| **OXYGEN**: all fires need a supply of oxygen to burn.  **Smother** a fire by isolating the fire from the supply of oxygen. | Fire triangle.png | **HEAT:** a naked flame, match or spark is sufficient to start a fire, especially if in contact with something which is flammable.  **Cool** a fire by using water to lower the temperature. |
| **FUEL:** can be anything that will burn, e.g. wood, furniture, flammable liquid, gas, etc.  **Starve** a fire by removing fuel. | | |

Many materials that contain highly flammable solvents may be found in the workplace, alongside equipment which produces sparks. The combination of the two can cause a fire, unless great care is taken.

|  |  |
| --- | --- |
| **If you discover a fire:**   * raise the alarm * close doors and windows to prevent fire spreading * evacuate the area * fight the fire with an extinguisher, fire blanket, water or sand **only** if you have been trained to do so * **never** put your own safety at risk. | **Firefighting should not continue if:**   * the fire becomes too dangerous * there is a possibility that any escape route might be cut off * the fire continues to spread and becomes out of control * there are gas cylinders or other highly flammable materials in the immediate fire area that cannot be removed or protected. |

**Classification of fires**

This system classifies the different types of materials that may be used in fires.

|  |  |
| --- | --- |
| **Class A.png** | Fires involving wood, paper, textiles and other carbonaceous materials. |
| **Class B.png** | Fires involving flammable liquids, petrol and spirits. |
| **Class C.png** | Fires involving flammable gases, eg propane and butane. |
| **Class D.png** | Fires involving burning metals, eg aluminium, magnesium (where water is generally ineffective and/or dangerous). |
| **Class Elec.png** | Electrical fires are not considered to constitute a fire class of their own, as electricity is a source of ignition that will feed a fire until removed. When the electrical supply has been isolated, the fire can be treated (generally) as a ‘Class A’ for extinguishing purposes. Make sure the supply is isolated and if not, a non‑electrical conducting extinguishing agent should be used. |
| Class F.png | Fires involving cooking oil and fat, eg olive oil, maize oil, lard and butter. |

**Fire extinguishers**

* When using flammable materials, a suitable fire extinguisher must always be kept handy and ready for use.
* Make sure that the extinguisher is the right type for the fire that may occur.
* Before starting work on any job, make sure that the extinguisher’s operating instructions are fully understood.
* Fire extinguishers are colour coded for easy recognition and you should familiarise yourself with the codes and their uses.

The following chart shows which extinguisher should be used for different types of fires:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Fire Sign.png | | Class A.png | Class B.png | Class C.png | Class D.png | Class Elec.png |
| **Old colour BS5406** | **New colour BS EN3** | **Class A paper or wood, etc** | **Class B flammable liquids** | **Class C flammable gas fires** | **Class D metal fires** | **Electrical fires** |
| Water old.png | Water new.png | Tick.png | Do not use.png |  |  | Do not use.png |
| Hose Reel.png | | Tick.png | Do not use.png |  |  | Do not use.png |
| Foam old.png | Foam new.png | Note multi.png | Note specialist.png |  |  | Do not use.png |
| CO2 old.png | CO2 new.png |  | Tick secondary.png |  |  | Tick primary.png |
| Powder old.png | Powder new.png | Tick.png | Note specialist DP.png | Tick.png | Note specialist Dry powder.png | Tick.png |
| Fire blanket.png | |  | Tick primary.png | General note.png | | |
|  | | | | | | |
| F Extinguisher.png | | Class F.png | Specialist hot cooking.png | | | |