* Fire triangle
* Adiabatic flame temperature
* Life cycle of a fire (4 stages)
* The four stages of combustion
* The chemistry of fire extinction
* Prevention of fire and flammability
* Storage guidelines
* Classes of fire
* Fire extinguisher
* Fires in buildings (flame test & temperature)
* Development of room fire
* Photos

**Fire Triangle  
Fuel + Oxygen + Heat = Fire**

**What is combustion ?**

Combustion is the act or process of burning. For combustion to occur, fuel, oxygen (air), and heat must be present together.

The combustion process is started by heating the fuel above its ignition temperature in the presence of oxygen. Under the influence of heat, the chemical bonds of the fuel are split.

**Fuel can be any combustible material in any state of matter - solid, liquid, or gas.  Most solids and liquids become a vapor or gas before they will burn.**

If complete combustion takes place, the elements carbon (C), hydrogen (H) and sulphur (S) react with the oxygen content of the air to form carbon dioxide CO2, water vapour H2O and sulphur dioxide SO2 and, to a lesser degree, sulphur trioxide SO3.

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| --- | --- | --- |
| The air we breathe is about **21% oxygen**.  Fire requires an atmosphere with at least **16% oxygen**. |  | **Heat is the energy necessary to increase the temperature of the fuel to a point where sufficient vapors are given off for ignition to occur.**  complete combustion takes place, the elements carbon (C), hydrogen (H) and sulphur (S) react with the oxygen content of the air to form [carbon dioxide](http://www.habmigern2003.info/future_trends/infrared_analyser/carbon-dioxide.htm) CO**2**, water vapour H**2**O and [sulphur dioxide](http://www.habmigern2003.info/19_flue-gas-contents.html) SO**2** and, to a lesser degree, sulphur trioxide |