Combustion is the process of burning a substance. There are two types of combustion: **complete combustion** and **incomplete combustion**.

Complete combustion means that there is enough oxygen present for all of the **reactants** (the substances that need to react) to react *fully*. Complete combustion produces carbon dioxide and water. When burning *hydrocarbons* (compounds containing only hydrogen and carbon), the hydrogen oxidises (receives oxygen atoms) to form water, or H_2O, and the carbon oxidises to form carbon dioxide. In general, the complete combustion of a hydrocarbon is as follows:

COMPLETE COMBUSTION:

hydrocarbon (e.g. methane)	*+*	*oxygen*	⟶	*carbon dioxide*	*+*	*water*
CH_4	+	$2O_2$	⟶	CO_2	+	$2H_2O$

Incomplete combustion means that there is NOT enough oxygen present for all of the reactants to react fully. Incomplete combustion still produces water as before, but it produces carbon *monoxide,* rather than carbon dioxide. Incomplete combustion can also produce carbon by itself, which is released as soot. This is why test-tubes are not heated using a yellow flame; the yellow flame is combusting incompletely, and therefore it forms soot on the base of the test-tube.

INCOMPLETE COMBUSTION

hydrocarbon (e.g. methane)	*+*	*oxygen*	⟶	*carbon monoxide*	*+*	*water*
CH_4	+	$1.5O_2$	⟶	CO	+	$2H_2O$

Carbon dioxide is also formed as a product of respiration and as a product of the reaction between an acid and a carbonate.