**20.3 Carbon dioxide**

Properties:

* A colourless and odourless gas.
* Will not support combustion unless the fire is hot enough to break the double bonds carbon-oxygen bonds.
* Is denser than air.
* When cooled at atmospheric pressure, it does not form a liquid but will turn to a solid at -78oC.
* Is slightly soluble in water, 1.5 g of carbon dioxide will dissolve in 1 litre of water.
* Forms slightly acidic solutions

Test for Oxygen:

* If you blow through a straw into limewater (calcium hydroxide) a white precipitates forms. This precipitate is calcium carbonate.

CO2(g) + Ca(OH)2(aq) CaCO3(s) + H2O(l)

Uses:

* Photosynthesis
* To make carbonated drinks
* Solid carbon dioxide (dry ice) is used as a refrigerant
* Use in fire extinguishers.
* Fruits and grains are sometimes stored in an atmosphere of carbon dioxide to deter organisms that damage them.

Commercial Production:

* Carbon dioxide can be obtained as a by-product of the fermentation of sugars to alcohol.

**Laboratory Preparation of Oxygen.**

Carbon dioxide is usually prepared in the lab by the reaction of hydrochloric acid with calcium carbonate and collected over water.

Equation: