

# Oxygen ratio in air

Level Elementary

## Concept

The ratio of oxygen in air is  $\frac{1}{5}$ (21%). Let's confirm it by simple experiments.

## Experiment 1

### by Iron rusting

#### Materials

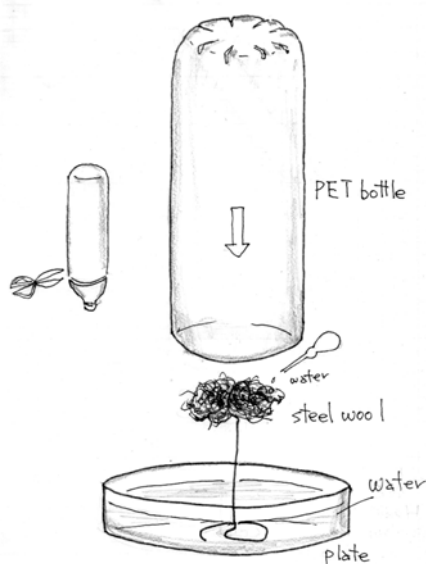
steel wool, glass vessel or PET bottle, wire, plate and water

#### Procedure

- (1) Make the wire support for the steel wool.
- (2) The steel wool is dampened by water a little.
- (3) The steel wool is put in the plate.
- (4) Water is put in the plate.
- (5) When the PET bottle is used, cut it in the form of a cylinder.
- (6) Cover the steel wool with the glass vessel or the PET bottle.
- (7) Leave it for half a day and confirm the water level and the ratio of the volume.

#### Science

The oxygen in air combines to iron and makes iron oxide. The gas oxygen is absorbed in steel wool. Water enters in the container to the same amount of oxygen.



## Experiment 2

### by Candle combustion

#### Materials

candle, glass vessel or PET bottle, match, plate, sodium hydroxide, and water

#### Procedure

- (1)The sodium hydroxide is dissolved in water and the solution of 3% is made.
- (2)The candle is fixed in the plate.
- (3)Light the candle.
- (4)Cover it with the glass vessel or the PET bottle.
- (5)Confirm the water level and the ratio of the volume.

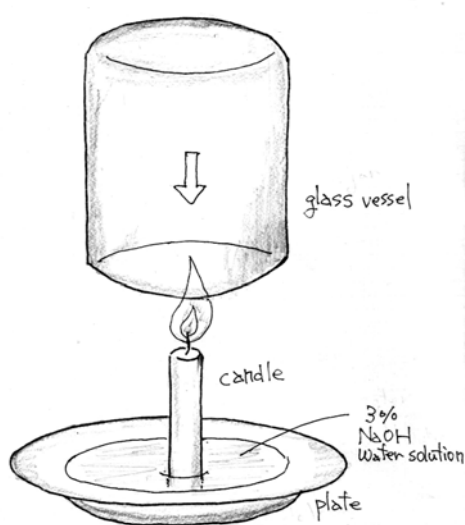
#### Science

When burning, the candle uses the oxygen in the air.

The water made by burning reduce the volume about  $1/1700$  after cooling and becoming the liquid.

As for remaining carbon dioxide, it reacts with the sodium hydroxide and the sodium carbonate is made. It is absorbed to the solution.

Therefore, water which is almost same volume of the oxygen rises in the container.



Water goes up the level  $1/5$ .