**C.3 Liquid Density**

C.3.1 Weigh an empty 100ml beaker

C.3.2 Pour 50ml of lead nitrate solution into beaker

C.3.3 Weigh the beaker with the lead nitrate solution

C.3.4 Determine the weight of the solution by subtracting the weight of empty beaker from the weight of beaker with lead nitrate solution.

C.3.5 Determine the density of lead nitrate solution

Weight of empty beaker **93.8 g**

Weight of beaker with lead nitrate **113.7 g**

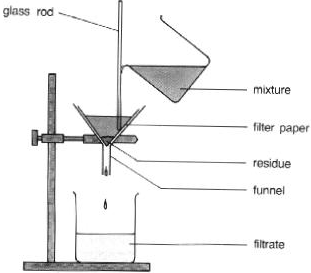
Weight of lead nitrate **19.9 g**

Volume of lead nitrate solution **5o ml**

Density of lead nitrate solution **0.998 g/ml**

**D. Separation of Precipitates**

**D.1 Filtration**

**** This is process of straining the precipitate with the use of a filter paper.

Prepare the set-up.

D.1.1 Place the iron stand on your working table.

D.1.2 Get an iron ring.

D.1.3 Clamp the iron ring to the iron stand about one foot above the top of the table.

D.1.4 Place a clay triangle.

D.1.5 Place a funnel in the clay triangle on the iron ring.

D.1.6 Place a beaker on the platform of the iron stand as a receiver.

D.1.7 The tip of the funnel must rest on the wall of the beaker. (Make necessary adjustment if it is too high).

(Source: library.thinkquest.org)

D.1.8 Prepare a filter paper.

1. Fold the filter paper equally in half
2. Fold again through the center, but half of crease must not coincide with the other half of the crease
3. Tear off the corner of the outside fold
4. Open out
5. Moisten the filter paper with water
6. Place the filter paper in the funnel.

D.1.9 Prepare a solution by adding 10g CA(OH)2 to 50 ml water.

D.1.10 Pour the mixture into the filter with the aid of a **Glass rod.**

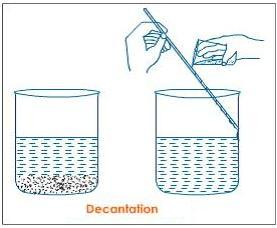
**D.2 Decantation**

This is a simpler process by allowing the mixture to stand for quite sometime to settle the precipitate. This process is good for precipitates that are quite dense. The liquid is now poured off and the precipitate will be left behind.

D.2.1 Add 20g CA(OH)2 to 100 ml water

D.2.2 Let the solution stand for several minutes

D.2.3 Decant the solution



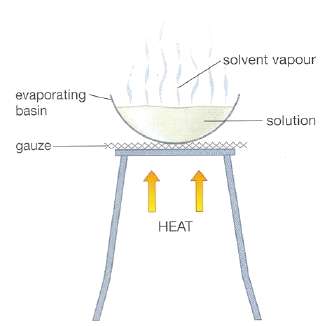
(Source: www.tutorbene.com)

**D.3 Centrifugation**

This process is used with the application of a centripetal force through the use of a centrifuge. This is commonly used in qualitative analysis.

D.3.1 Dissolve 2 g Ca (OH) 2 in 10 ml H2O

D.3.2 Transfer the mixture in a micro test tube.

 D.3.3 Put the micro test tube in a centrifuge machine.

D.3.4 Centrifuge the solution for 20 seconds.

D.3.5 Separate the mixture by decantation

**D.4 Evaporation**

D.4.1 Dissolve 0.1 g of sodium chloride to 1 ml water.

D.4.2 Transfer the solution to an evaporating dish.

D.4.3 Place the dish in a wire gauze supported by an iron ring.

D.4.4 Heat gently

D.4.5 Withdraw the heat as soon as the water is evaporated.

D.4.6 Note the residue left.

(Source: ssc.education.ed.ac.uk)

**5. Observation**

**A. Filtration**

After the experiment the residues which is color white and it is quite sticky of Ca left in the filter paper while the H2O filtrated and poured in the beaker.

**B. Decantation**

After the experiment the Ca(OH)2 left at the bottom of the beaker while the water is taken out.

**C. Centrifugation**

After the centrifugation the Ca(OH)2 left at the bottom of the test tube and solidify while the H2O

was on the top of Ca(OH)2.

**D. Evaporation**

Some water evaporated and decreased its volume while the sodium chloride left at the bottom of the evaporating dish.

**6. Conclusion**

The experiment taught us the basic use of some apparatus and what will be its result after used it in some substance. We learned that every substance must be measured, observed and be take care of it because a little mistake can be a failure of the experiment.

**7. Questions**

7.1 What is Combustion?

Combustion is defined as the burning of a fuel and oxidant to produce heat and/or work.

7.2 What are the types of combustion? Differentiate each.

**Spontaneous combustion** is a type of [combustion](http://en.wikipedia.org/wiki/Combustion) which occurs by self heating (increase in temperature due to exothermic internal reactions), followed by thermal runaway (self heating which rapidly accelerates to high temperatures) and finally, ignition.

**Internal combustion** engine is an [engine](http://en.wikipedia.org/wiki/Engine) in which the [combustion](http://en.wikipedia.org/wiki/Combustion) of a [fuel](http://en.wikipedia.org/wiki/Fuel) (normally a [fossil fuel](http://en.wikipedia.org/wiki/Fossil_fuel)) occurs with an oxidizer (usually air) in a [combustion chamber](http://en.wikipedia.org/wiki/Combustion_chamber) that is an integral part of the working fluid flow circuit.

7.3 Describe the basic methods of separating precipitates.

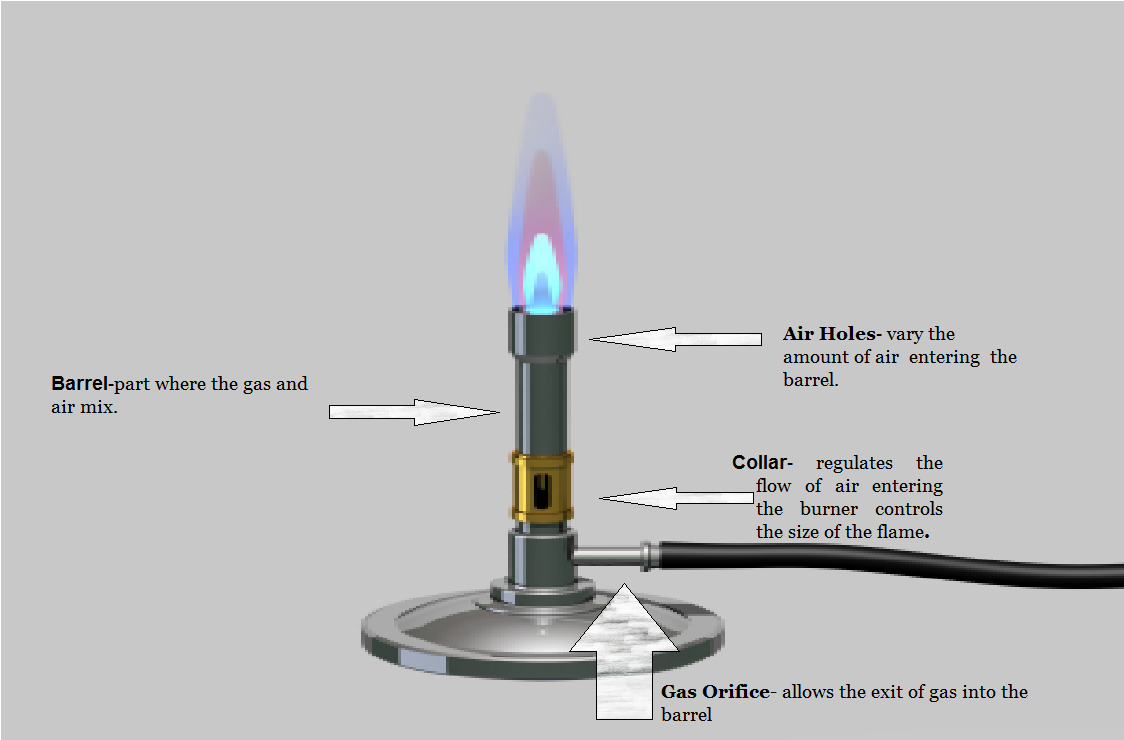
**Filtration** is a technique used to isolate solid or impurities from a solution.

**Decantation** is a very quick method used for separating a mixture of a liquid and a heavier solid.

**Centrifugation** is a process that involves the use of centrifugal force for the separation of mixtures.

**Evaporation** is a process of changing liquid to gas or vapor.

7.4 Label the parts of the Bunsen burner and give their functions.



EXPERIMENT NO.2

**PHYSICAL AND CHEMICAL CHANGE**

**1. OBJECTIVES**

* Differentiate physical from chemical change.

**2. THEORY**

Changes in matter can be classified as physical or chemical change. A change in matter is physical if there is a change in its physical appearance without altering chemical composition. A chemical change is involved if matter undergoes a change in composition.

**3. APPARATUS AND MATERIALS**

1 – Platform Balance

1 – Spatula

1 – Watch Glass

2 – Test tube with rack

1 – Bunsen burner

1 – Evaporating Dish

1 – Funnel

1 – Crucible tong

Sugar

Iodine

Mg Ribbon

**4. PROCEDURE**

**A. Using sugar**

A.1 Place 1 gram of sugar crystals in a watch glass. Observe and study its properties in terms of its state, shape, color and odor.

A.2 Take a pinch of crystals and drop it in a test tube containing enough water and shake vigorously. Observe the solubility of crystals in water.

A.3 Pour the sugar solution into an evaporating dish and evaporate it to dryness. Describe the product formed.

**B. Using Iodine**

B.1 Place a piece of iodine crystal in a test tube. Observe in terms of its state, shape, color and odor.

B.2 Heat gently the bottom of the test tube over a low flame and as the violet vapor rises, remove the heat and let it cool. Observe the substances attached to the sides of the test tube.

**C. Using Mg Ribbon**

C.1 Hold a piece of magnesium ribbon with a crucible tong and heat over the Bunsen burner. Observe what happens to the magnesium ribbon.

C.2 Place sufficient amount of water and the burnt magnesium ribbon in a test tube and shake. Observe its solubility in H2O.

C.3 Accomplish the tables below.

**SUGAR**

|  |  |  |
| --- | --- | --- |
| **Properties** | **Before Heating** | **After Heating** |
| State | Solid | Liquid |
| Shape of Crystals | Irregular shape | Irregular Shape |
| Color | Brownish | Brownish |
| Odor | Unpleasant | Sweet odor |
| Solubility in water | Some particle aren't totally dissolve | Dissolve in water |
| Type of change | Physical | Chemical |

**IODINE**

|  |  |  |
| --- | --- | --- |
| **Properties** | **Before Heating** | **After Heating** |
| State | Solid | Solid |
| Shape of Crystals | Round | Round |
| Color | Gray | Violet with green |
| Odor | Unpleasant | More unpleasant |
| Solubility in water | Some particle aren't totally dissolve | Soluble |
| Type of change | Physical | Physical |

**MAGNESIUM RIBBON**

|  |  |  |
| --- | --- | --- |
| **Properties** | **Before Heating** | **After Heating** |
| State | Solid | Solid |
| Shape of Crystals | Rectangular | Rectangular |
| Color | Violet | Violet |
| Odor | There is no odor | Unpleasant |
| Solubility in water | Unsoluble | Unsoluble |
| Type of change | Physical | Physical |

**5. CONCLUSION**

Some matter like sugar has it physical change before heating but when it was heated it became chemical. So we concluded that every matter has its own changes in before or after heating. It’s either physical or chemical. Every substance is unique, they have their own properties means by state, shape of crystals, color, odor, solubility in water and type of change.

**6. EXERCISE**

Classify the following as physical or chemical change.

1. Rusting iron chemical change
2. Molding of clay physical change
3. Melting of silver physical change
4. Digestion of food chemical change
5. Magnetization of iron physical change
6. Rotting of food chemical change
7. Souring of milk chemical change
8. Breaking of glass physical change
9. Burning of coal chemical change
10. Dissolving sugar physical change