

**SENIOR SECTION**  
**DEPARTMENT OF CHEMISTRY**  
**CLASS IX**  
**LAB SHEET -IV**

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**PREPARATION OF MIXTURE & COMPOUND**

Experiment No: .....4.....

Date: .....

**Objective:** To prepare (a) mixture and (b) a compound using iron filings and sulphur powder and distinguish between these on the basis of:

(a) Appearance (homogeneity and heterogeneity); (b) Behaviour towards magnet

(c) Behaviour towards Carbon disulphide (CS<sub>2</sub>); (d) Effect of heat.

**Requirements:** China dish, test tubes, test tube holder, mortar and pestle, watch glasses, magnet, Bunsen burner, iron filings, tripod stand, wire gauze, sulphur powder, CS<sub>2</sub> etc.

**Procedure:**

1. Take 7 g of Iron filings and 4 g of sulphur powder and mix them well using mortar and pestle. Transfer half of this into watch glass no-1
2. Take half of this mixture in a china dish heat strongly on a Bunsen burner (Use tripod stand and wire gauze) till the mixture starts to show a red glow.
3. Cool the mixture, and grind into fine powder using a mortar and pestle.
4. Transfer the powder to watch glass no-2.
5. Perform the following experiments with the samples you have in both the watch glasses.

**Properties of mixture of iron & sulphur**

| EXPERIMENT                                                                   | OBSERVATION                                                                             | INFERENCE                                          |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------|
| Dip a magnet in the mixture of substances.                                   | Only iron powder/filing gets attracted by the magnet.                                   | Iron has magnetic properties but sulphur does not. |
| Observe the substances under a magnifying glass                              | Brown/black iron powder and yellow coloured sulphur powder can be easily distinguished. | Because it forms a heterogeneous mixture           |
| Try to dissolve the mixture in 2 ml of CS <sub>2</sub> taken in a test tube. | Yellow coloured sulphur dissolves. Fe does not.                                         | Sulphur is soluble in CS <sub>2</sub>              |

**Properties of compound of iron & sulphur**

| EXPERIMENT                                                                                | OBSERVATION                                                                                                                                                                  | INFERENCE                                                                                                                                                             |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A small portion of the mixture is taken on china dish and heat strongly on a Bunsen flame | A reaction takes place with the emission of an offensive smelling gas. Sulphur also catches fire. Finally the yellow colour of S disappears and a brown substance is formed. | $\text{Fe} + \text{S} \rightarrow \text{FeS}$ (Ferrous sulphide)<br>Some sulphur also gets burned results in the formation of offensive smelling SO <sub>2</sub> gas. |
| Observe the product formed after heating under a magnifying glass                         | Only a brown coloured powder is seen                                                                                                                                         | On reacting Fe and S combine to form a compound, which is homogeneous.                                                                                                |
| Dip a magnet in the product formed.                                                       | Substance does not get attracted by the magnet                                                                                                                               | FeS is diamagnetic (Does not show magnetic behaviour)                                                                                                                 |
| Take the product formed in a test tube, add CS <sub>2</sub> and shake well.               | The substance (FeS) does not dissolve in CS <sub>2</sub>                                                                                                                     | FeS is insoluble in CS <sub>2</sub>                                                                                                                                   |

Precautions:

1. Heating of the Fe & S mixture should be done with extreme care.
2. While performing the experiments, use only very little quantity of the samples.
3. Use china dish for heating the mixture.

Questions:

1. Name the compounds formed when the following chemicals react:  
a) Hydrogen and Oxygen                      b) Mg and S  
b) S and Fe                                      d) Fe and  $\text{Cl}_2$ .
2. Classify the following into homogeneous and heterogeneous mixtures.  
a) Sand and saw dust                      b) Sugar dissolved in water.  
c) Milk                                          d) Powders of Fe and S
3. Suggest suitable physical methods to separate the following mixtures:  
a. Fe and S                      Magnet  
b. NaCl and water              Evaporation/Boiling  
c. Sand and water              Filtration
4. Classify the following into compounds, elements and mixture:  
a. Air              b.  $\text{CO}_2$  gas,              c. Fe metal              d. S powder              f. Sugar solution              e. Ethane  
f. Fe + S              g. NaCl                      h.  $\text{SO}_2$  gas.              i.  $\text{H}_2\text{S}$  gas              j. Ammonia gas              k. Milk

**Multiple choice type questions**

|   |                                                                                                                                                                                                                                                                                                                                                                               |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | On heating a mixture of iron filings & sulphur ,it is observed that<br>a) Sulphur starts melting<br>b) iron filings start melting<br>c) mixture becomes red hot<br>d) mixture evaporates                                                                                                                                                                                      |
| 2 | When dilute sulphuric acid is added to a mixture of iron filings & sulphur powder ,it is observed that<br>a) A brisk reaction takes place without evolution of gas<br>b) A brisk reaction takes place with the evolution of a colourless gas<br>c) The yellow colour of sulphur disappears<br>d) Gas with the smell of rotten egg is evolved                                  |
| 3 | A small amount of iron sulphide is added to 5 cc of carbon di sulphide and the test tube is shaken vigorously, it is seen that<br>a) Grey coloured iron particles dissolve, but not sulphur<br>b) Yellow coloured sulphur particles dissolve, but not iron<br>c) Both iron & sulphur dissolve to form a clear solution<br>d) None of the particles of the compound dissolves. |
| 4 | When a mixture iron & sulphur powder is reacted in a china dish ,then after some time it glows with<br>a) Yellowish colour<br>b) Bluish colour<br>c) Greenish colour<br>d) Reddish colour                                                                                                                                                                                     |
| 5 | On heating a mixture of iron filings & sulphur powder strongly, the colour of the product becomes<br>a) Grey              b) Black              c) Brown              d) Yellow                                                                                                                                                                                               |
| 6 | To prepare iron sulphide ,by heating a mixture of iron filings & sulphur powder ,we should use<br>a) copper dish              b) china dish              c) petri dish              d) china dish                                                                                                                                                                             |
| 7 | The reaction of iron and sulphur to form iron sulphide takes place at:<br>a) at high temperature<br>b) in the presence of a catalyst<br>c) at moderate temperature<br>d) in the presence of an acid                                                                                                                                                                           |