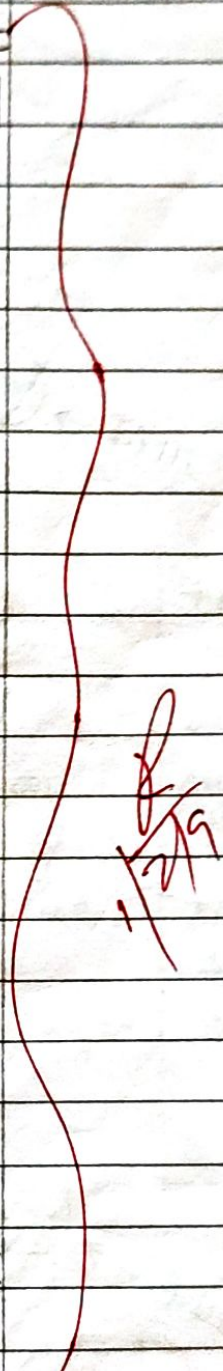
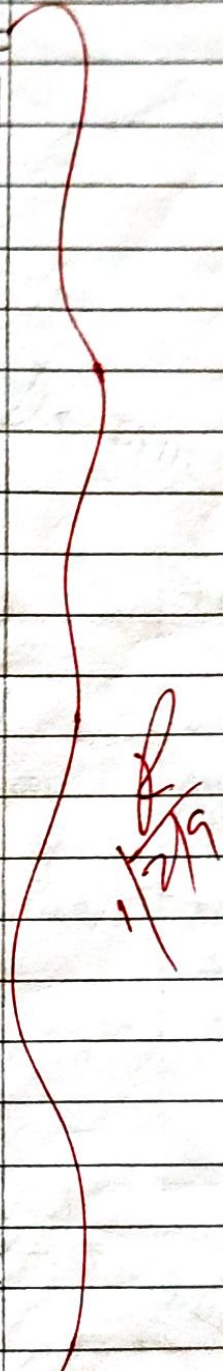


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2.	2.	DRY TEST TUBE HEATING OF ZINC NITRATE [$\text{Zn}(\text{NO}_3)_2$]		30.04.18
3.	3.	DRY TEST TUBE HEATING OF IODINE [I_2]		30.04.18
4.	4.	DRY TEST TUBE HEATING OF COPPER CARBONATE [CuCO_3]		30.04.18
5.	5.	DRY TEST TUBE HEATING OF AMMONIUM CHLORIDE [NH_4Cl]		30.04.18
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SERIAL No.	EXPT No.	EXPERIMENT NAME	TEACHER'S SIGNATURE	DATE
7.	7.	DRY TEST TUBE HEATING OF COPPER NITRATE $[Cu(NO_3)_2]$		30.04.18
8.	8.	DRY TEST TUBE HEATING OF LEAD NITRATE $[Pb(NO_3)_2]$		30.04.18
9.	9.	DRY TEST TUBE HEATING OF AMMONIUM DICHROMATE $[(NH_4)_2Cr_2O_7]$		30.04.18
10.	10.	DRY TEST TUBE HEATING OF WASHING SODA $[Na_2CO_3 \cdot 10H_2O]$		30.04.18
11.	11.	APPLICATION OF FLAME TEST		07.05.18
12.	12.	ACTION OF DILUTE SULPHURIC ACID ON A SUBSTANCE		07.05.18
13.	13.	ACTION OF DILUTE SULPHURIC ACID ON A SUBSTANCE.		07.05.18
14.	14.	ACTION OF DILUTE SULPHURIC ACID ON A SUBSTANCE.		07.05.18

SERIAL NO. EXPERIMENT NO. DATE

TEACHER'S SIGNATURE

COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

HEAT

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

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DRY TEST TUBE HEATING OF COPPER SULPHATE

HEAT

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE

DRY TEST TUBE HEATING OF COPPER SULPHATE [BLUE VITRIOL]

($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$)

Sample supplied is blue crystalline hydrated salt.

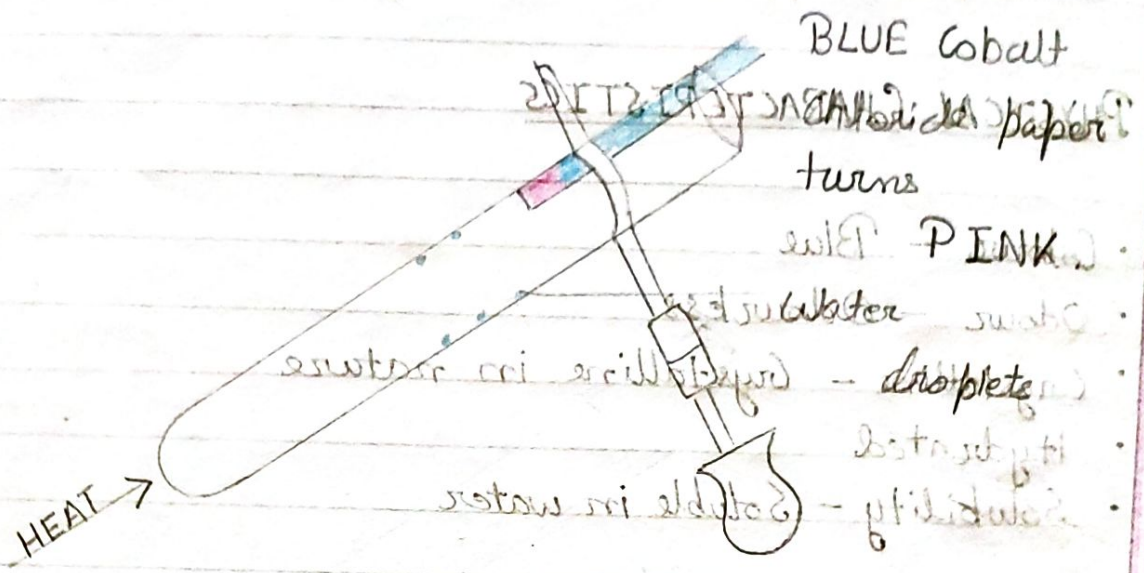
PHYSICAL CHARACTERISTICS

- Colour - Blue
- Odour - Odourless
- Crystalline - Crystalline in nature.
- Hydrated
- Solubility - Soluble in water

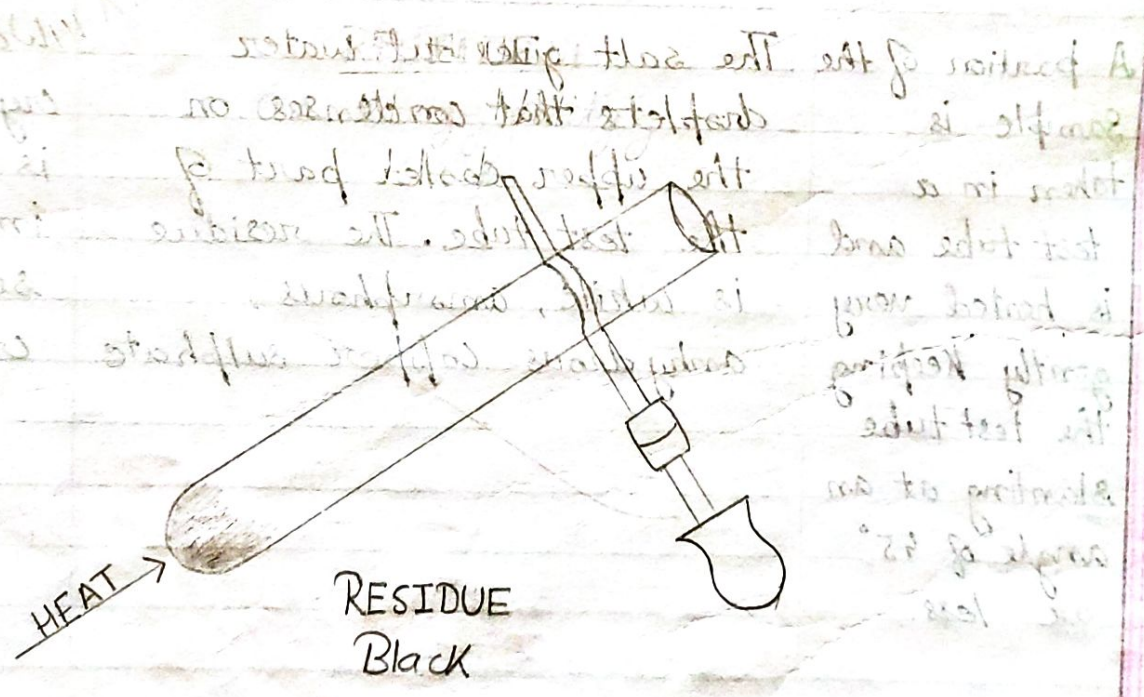
<u>EXPERIMENT</u>	<u>OBSERVATION</u>	<u>INFERENCE</u>
1. A portion of the sample is taken in a test tube and is heated very gently keeping the test tube slanting at an angle of 45° or less.	The salt gives out water droplets that condenses on the upper cooler part of the test tube. The residue is white, amorphous, anhydrous copper sulphate.	Water of crystallisation is present in copper sulphate crystals.

DRY TEST TUBE HEATING OF COPPER SULPHATE / BLUE VITRIOL (W204. 21120)

the substance is blue crystalline hydrated salt



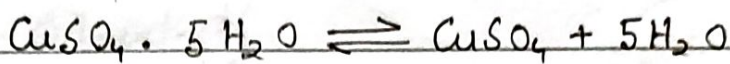
EXPERIMENT OBSERVATION INFERENCE



Blue copper chloride paper is touched with the liquid that accumulated on the upper cooler part of test tube

Cobalt chloride paper changes from blue to pink.

Water of crystallization confirmed.



blue	white
crystalline	amorphous
hydrated	anhydrous

After cooling the test tube one or two drops of water is added to the white residue.

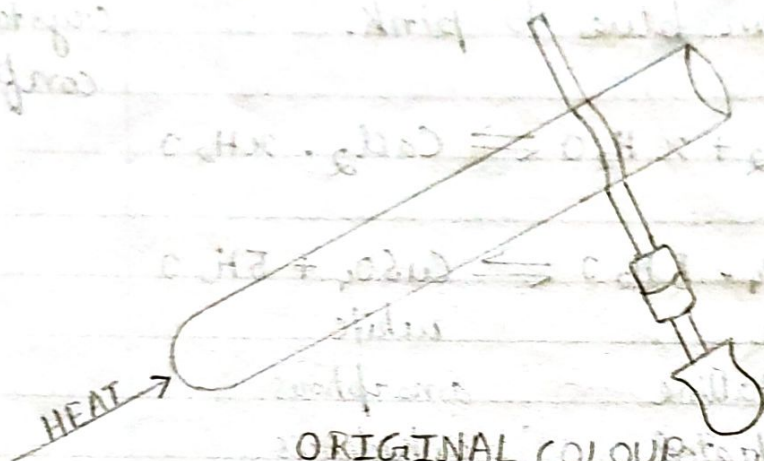


white	blue
amorphous	crystalline
anhydrous	hydrated

The residue changes to blue colour again.

Amorphous copper sulphate takes up water of crystallisation.

ZINC NITRATE



ORIGINAL COLOUR
WHITE



RESIDUE
YELLOW WHEN HOT AND
WHITE WHEN COLD

DRY TEST TUBE HEATING OF ZINC NITRATE

$Zn(NO_3)_2$

The salt supplied is a white crystalline compound.

PHYSICAL CHARACTERISTICS

- Colour - White
- Crystalline
- Odour - Odourless
- Solubility - Soluble in water

<u>EXPERIMENT</u>	<u>OBSERVATION</u>	<u>INFERENCE</u>
1. A small portion of the salt is taken in a test tube and is first heated gently and then strongly	Evolution of brown gas (NO_2) along with oxygen and a residue of zinc oxide is left which is yellow when hot and white when cold. $2Zn(NO_3)_2 \xrightarrow{\Delta} 2ZnO + 4NO_2 + O_2$ yellow when hot and white when cold	May be zinc nitrate

DRY TEST TUBE HEATING OF ZINC NITRATE

Zn(NO₃)₂

PHYSICAL CHARACTERISTICS

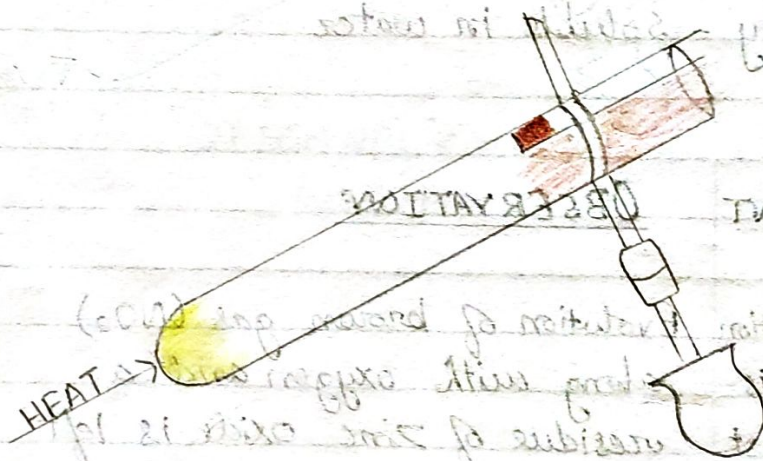
- Colour - White
- Crystalline
- Soluble - Soluble

soluble in water

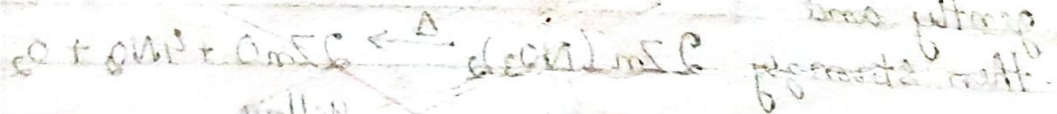
Potassium iodide paper turns BROWN.

EXPERIMENT OBSERVATION

INTERFERENCE



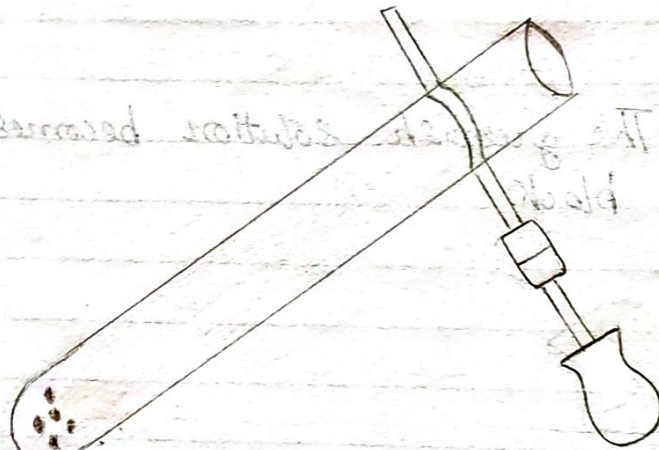
A small portion of white solid was heated in a test tube. The solid turned yellow and then brown. The residue of zinc oxide is left. The gas evolved is nitrogen dioxide which is yellow when hot and white when cold.



HEAT - white solid turns yellow then brown

- | | | |
|--|--------------------------------------|---|
| 2. A glowing splinter (glowing matchstick) is introduced | The glowing splinter glows brightly. | Presence of oxygen |
| 3. The reddish brown gas is passed through freshly prepared acidified ferrous sulphate solution. | The greenish solution becomes black. | Presence of nitrogen dioxide gas (NO_2).
Hence, the original salt was zinc nitrate $[\text{Zn}(\text{NO}_3)_2]$ |

IODINE



Grey crystals
of iodine.

DRY TEST TUBE HEATING OF IODINE [I₂]

The substance supplied is few green crystals of iodine.

PHYSICAL CHARACTERISTICS

- Colour - Grey
- Crystalline
- Odour - Characteristic odour
- Solubility - Insoluble in water but soluble in potassium iodine solution (KI).

<u>EXPERIMENT</u>	<u>OBSERVATION</u>	<u>INFERENCE</u>
1. A portion of the supplied (one or two crystals) is taken in a test tube and heated first gently and then strongly	Violet vapours are seen to evolve. A part of the vapour condenses on the upper cooler part of the test tube and part of the violet vapour escapes from the test tube $\begin{array}{ccc} \text{I}_2 & \rightleftharpoons & 2\text{I} \\ \text{(s)} & & \text{(v)} \\ \text{solid} & & \text{vapour} \\ \text{iodine} & & \text{iodine} \end{array}$ No residue is left in the test tube.	Presence of iodine that sublimes is confirmed

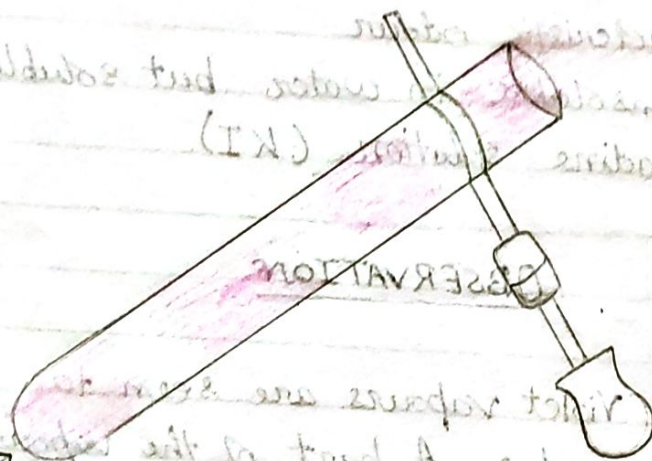
Dry Test Heating Of Iodine [1]

PHYSICAL CHARACTERISTICS

- Colour - grey
- Crystal form
- Solubility - Insoluble in water but soluble in potassium iodide (KI)

INTERFERENCE

EXPERIMENT

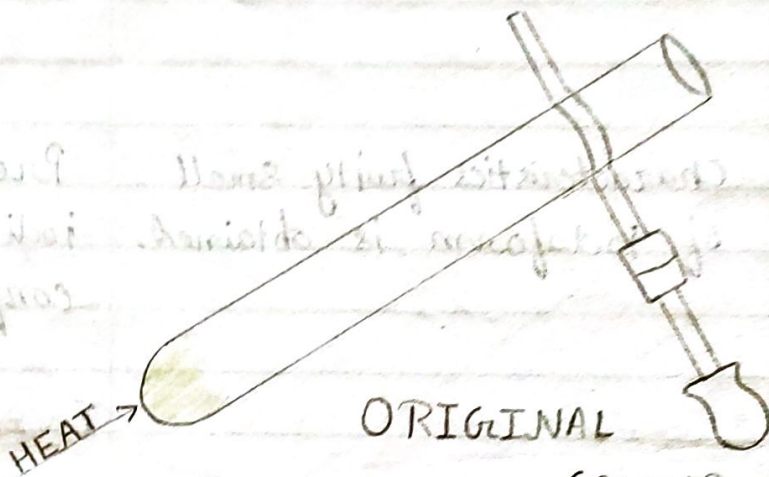


ON HEATING

Iodine sublimes to form violet vapours. A part of the vapour is taken in a test tube and the rest escapes from the test tube. The residue is left in the test tube.

- | | | | |
|----|--|---|-------------------------------|
| 2. | Silver nitrate paper is introduced into the test tube. | The violet fumes turns silver nitrate paper yellow. | Presence of iodine confirmed. |
| 3. | Ethyl alcohol is added to the above test tube after cooling and gently heated in a water bath for five to six minutes. | Characteristics fruity smell of iodoform is obtained. | Presence of iodine confirmed |

COPPER CARBONATE



ORIGINAL

COLOUR -

LIGHT GREEN.

PHYSICAL CHARACTERISTICS

- Colour - Blue
- Amorphous
- Odour - Odourless
- Solubility - Soluble in water

Pg No. 07

Dry Test Tube Heating of Copper Carbonate

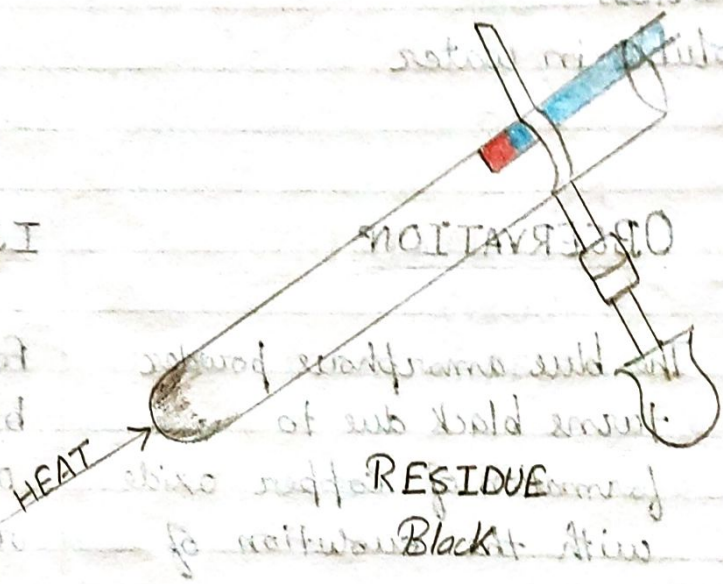
PHYSICAL CHARACTERISTICS

- Colour - Blue
- MOIST. BLUE LITHUM
- Turns white in water
- PAINTED RED

INFERENCE

Formation of black copper oxide as residue.

OBSERVATION

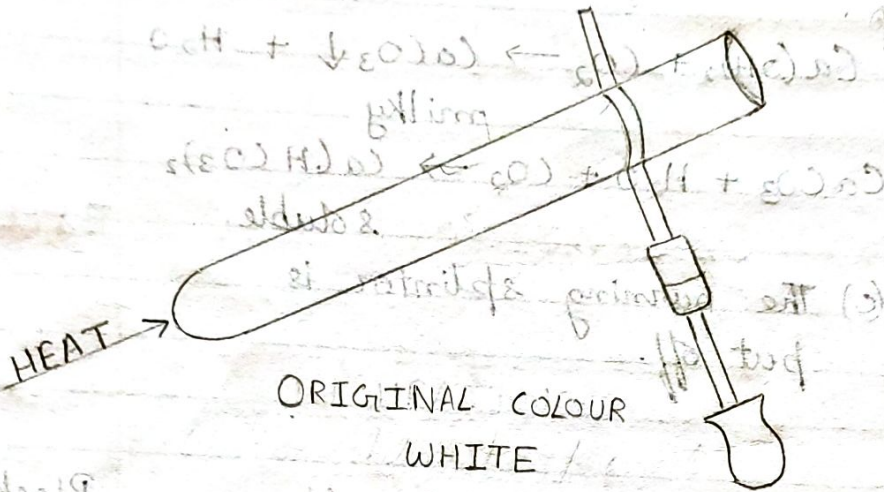


EXPERIMENT

A portion of the sample is taken in a test tube and heated strongly.

2. The gas is passed through lime water and the burning splinter is introduced.	(a) Lime water turns milky due to formation of calcium carbonate. (b) The milkiness disappears on passing excess of the gas. $\text{Ca(OH)}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 \downarrow + \text{H}_2\text{O}$ milky $\text{CaCO}_3 + \text{H}_2\text{O} + \text{CO}_2 \rightarrow \text{Ca(HCO}_3)_2$ soluble. (c) The burning splinter is put off.	The gas evolved is carbon-dioxide confirmed.
3. Dilute sulphuric acid is added to the black residue and boiled gently.	A blue solution of copper sulphate is formed. $\text{CuO} + \text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{H}_2\text{O}$ black due to Cu^{+2} ion.	Black copper oxide as residue is confirmed. Hence, the original salt is copper carbonate confirmed.

AMMONIUM CHLORIDE



Black copper
 oxide as
 residue is
 confirmed.
 Hence, the
 original salt
 is copper
 carbonate
 confirmed.

A blue solution of copper
 sulphate is formed.



black
 due to
 Cu²⁺
 ion

the black
 residue
 and
 boiled
 gently

DRY TEST TUBE HEATING OF AMMONIUM CHLORIDE

NH_4Cl

Sample supplied is a white crystalline solid salt

PHYSICAL CHARACTERISTICS

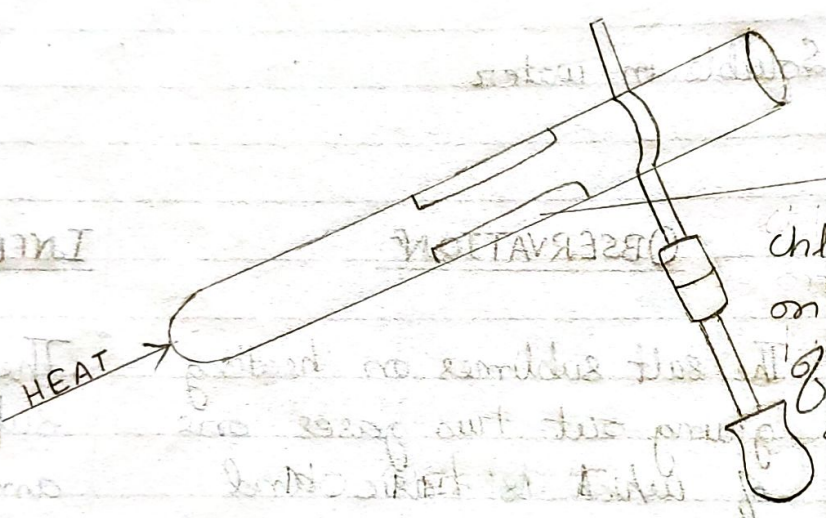
- Colour - White
- Odour - Odourless
- Crystalline
- Solubility - Soluble in water

<u>EXPERIMENT</u>	<u>OBSERVATION</u>	<u>INFERENCE</u>
1. A portion of the sample was taken in a test tube and heated first gently and then strongly.	The salt sublimes on heating giving out two gases one of which is basic and other acidic which on reaching the cooler parts of the test tube condenses on the sides of the test tube. No residue is left behind in the test tube.	The sample supplied is ammonium chloride confirmed.
	$\text{NH}_4\text{Cl} \xrightleftharpoons[\text{cooling}]{\text{heating}} \text{NH}_3 + \text{HCl}$	

DRY TEST TUBE HEATING OF AMMONIUM CHLORIDE

PHYSICAL CHARACTERISTICS

- Color - white
- Odor - odorless
- Solubility - soluble in water

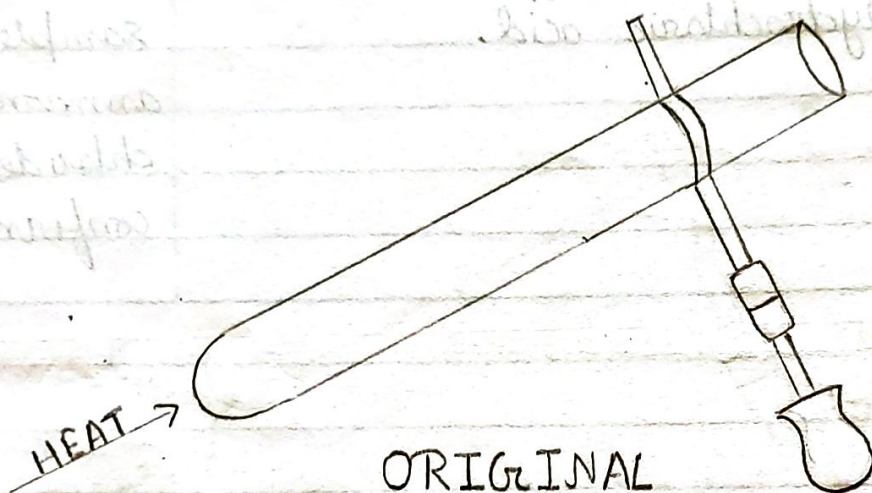


Ammonium chloride sublimes on the cooler parts of the test as dense white fumes.



2	A small part of the sample is heated with sodium hydroxide.	Evolution of a pungent gas which turns Nessler's reagent brown white fumes with a rod dipped in hydrochloric acid.	The gas evolved is ammonia and the sample is ammonium chloride confirmed.
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ZINC CARBONATE



DRY TEST TUBE HEATING OF ZINC CARBONATE

ZnCO_3

The sample supplied is white zinc carbonate.

PHYSICAL CHARACTERISTICS

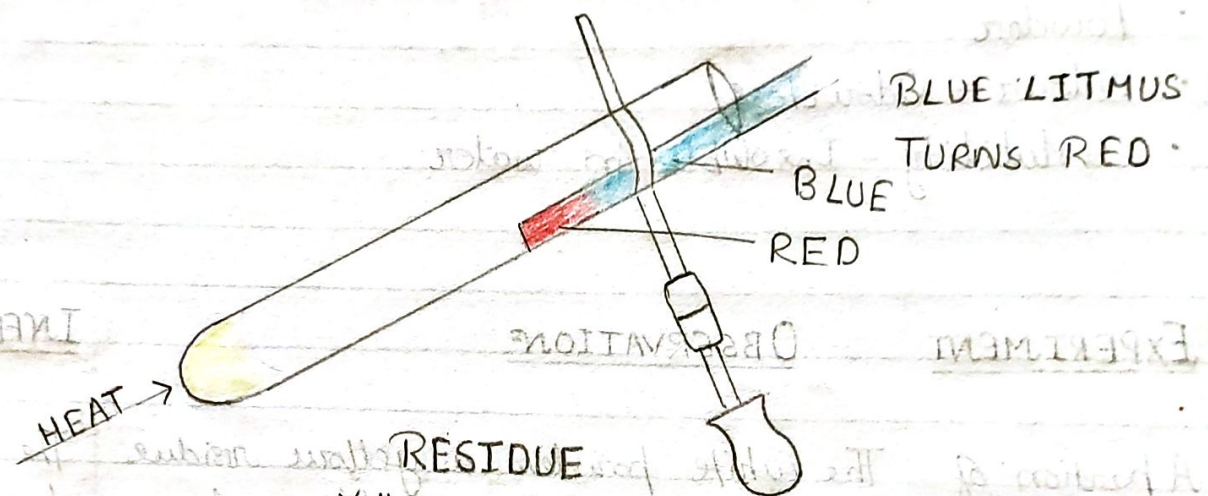
- Colour - White
- Powder
- Odour - Odourless
- Solubility - Insoluble in water

<u>EXPERIMENT</u>	<u>OBSERVATIONS</u>	<u>INFERENCE</u>
A portion of the sample is taken in a test tube and heated first gently and then strongly.	The white powder a yellow residue which is yellow when hot and white when cold with the evolution of colourless, odourless gas. $\text{ZnCO}_3 \longrightarrow \text{ZnO} + \text{CO}_2$ (Yellow when hot and white when cold)	The residue formed is zinc oxide.

Dry Test for Heating of Zinc Carbonate

PHYSICAL CHARACTERISTICS

Color - white
 Luster - metallic



EXPERIMENT

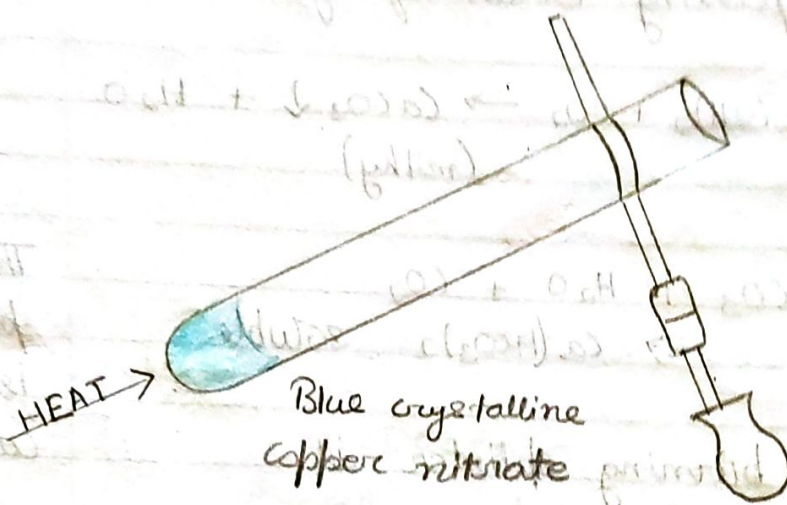
OBSERVATION

INFERENCE

RESIDUE
 Yellow when hot
 and white when cold

The gas is passed through limewater and a burning splinter is introduced.	Lime water turns milky due to the formation of CaCO_3 . The milkiness disappears on passing excess of gas $\text{Ca(OH)}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 \downarrow + \text{H}_2\text{O}$ (milky)	The gas evolved is CO_2 confirmed
	$\text{CaCO}_3 + \text{H}_2\text{O} + \text{CO}_2 \rightarrow \text{Ca(HCO}_3)_2 \text{ soluble}$	The white powder is ZnCO_3 confirmed
EXPERIMENT	A burning splinter is put off.	

COPPER NITRATE



DRY TEST TUBE HEATING OF COPPER NITRATE $\text{Cu}(\text{NO}_3)_2$

The sample is blue crystalline salt of copper nitrate.

PHYSICAL CHARACTERISTICS

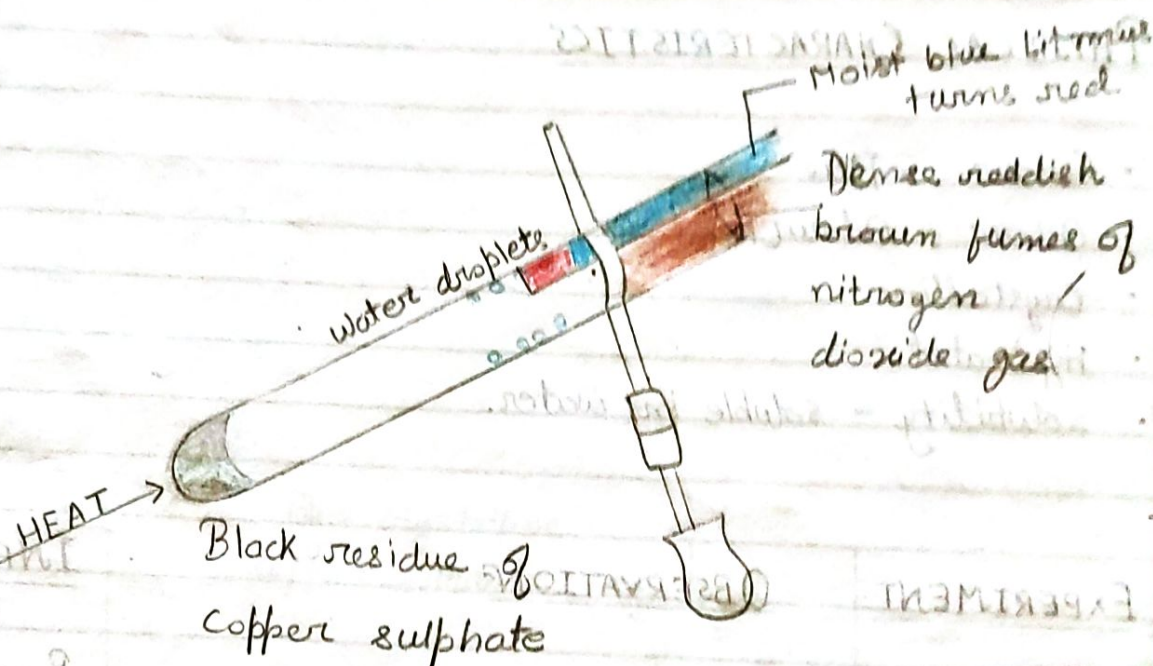
- Colour - Blue
- Odour - Odourless
- Crystalline
- Hydrated
- Solubility - soluble in water.

<u>EXPERIMENT</u>	<u>OBSERVATION</u>	<u>INFERENCE</u>
A portion of the sample is taken in a test tube and is heated first gently and then strongly	The salt gives out water droplets that condenses on the cooler parts of the test tube. The salt forms a residue on heating with the evolution of a brown gas. A colourless gas is evolved which relights a glowing splinter. $2\text{Cu}(\text{NO}_3)_2 \rightarrow 2\text{CuO} + 4\text{NO}_2 + \text{O}_2$	Presence of O_2

DRY TEST TUBE HEATING OF COPPER NITRATE

(Cu(NO₃)₂)

The sample is blue crystalline crystals of copper nitrate.



The brown gas is passed through freshly prepared acidified FeSO_4 solution.	The green solution turns black.	Presence of NO_2 confirmed
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Dilute H_2SO_4 is added to the black residue and boiled gently	A blue solution of CuSO_4 is formed $\text{CuO} + \text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{H}_2\text{O}$	Salt is $\text{Cu}(\text{NO}_3)_2$ confirmed
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