

TENDER HEART HIGH SCHOOL, SEELB, CHD

CLASS - X

SUBJECT - CHEMISTRY

CHAPTER - 10

TEACHER - ANAMIKA

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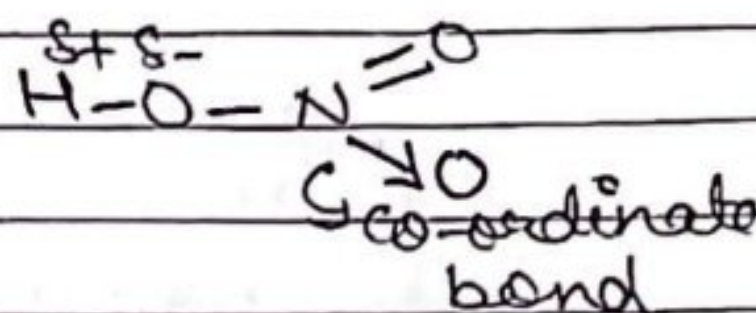
(Study of Compounds. c. Nitric Acid)

Introduction

Molecular formula of nitric acid = HNO_3

Relative molecular mass = 63

Structure of

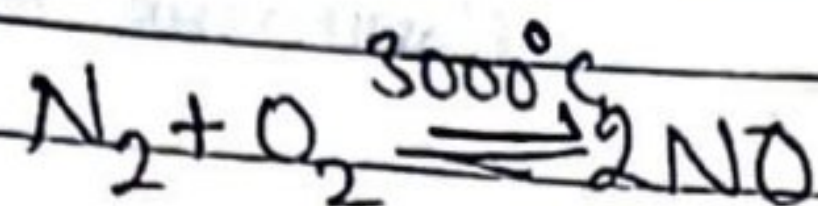


Nitric acid as combined or free state

- 1) In free state it is present in rain water and occurs in traces after lightening.
- 2) In combined state it is present as a metallic nitrate such as Chile saltpetre (NaNO_3), nitre (KNO_3) or calcium nitrate [$\text{Ca}(\text{NO}_3)_2$]

Formation of nitric acid in atmosphere

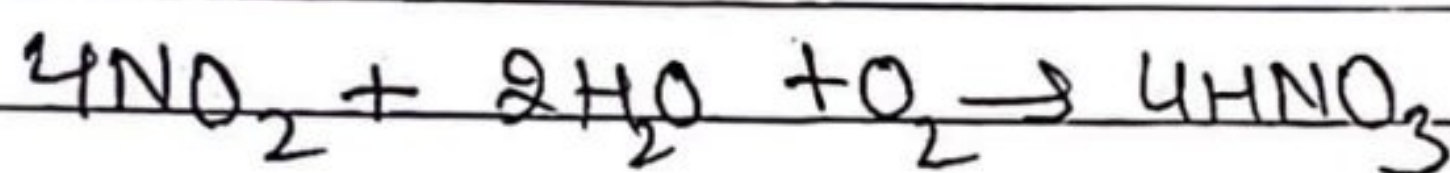
1. During lightening the gases such as nitrogen & oxygen present in the atmosphere react with each other to form unstable nitric oxide.



- 2) Nitric oxide further oxidised in the presence of oxygen to give nitrogen dioxide.



- 3) The nitrogen dioxide react with moisture and oxygen present in the atmosphere to give nitric acid which is washed down by the rain and combines with the salt present on the surface of the earth.



=> Laboratory Preparation of nitric acid

Reactants: $\text{KNO}_3 / \text{NaNO}_3$ & conc H_2SO_4

Temp: $180^\circ\text{C} - 200^\circ\text{C}$

Procedure:

1. Take a mixture of $\text{NaNO}_3 / \text{KNO}_3$ or conc H_2SO_4 in equal weight in glass retort.
2. Heat it gently at $180^\circ\text{C} - 200^\circ\text{C}$ it will

produce a brown fumes of nitrogen dioxide with the nitric acid (vapour)

3. These vapours then condenses by chilling it with the running cold tap water in another container ✓

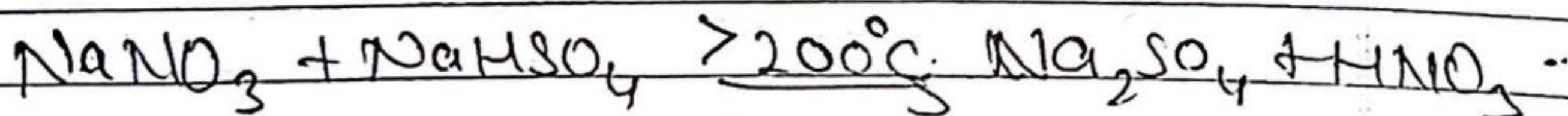
4. It will then convert vapours of HNO_3 into yellow colour liquid HNO_3 acid.

Collection:

The vapours of nitric acid are condensed to light yellow liquid by chilling the receiver with running cold water.

Precaution:

- 1) All glass apparatus is used because nitric acid vapours attack rubber & cork.
- 2) Conc HCl is not used in place of conc. H_2SO_4 because HCl is volatile & hence nitric acid vapours will carry HCl vapours.
- 3) The temp of the reaction should not exceed 200°C because sodium sulphate formed at higher temp forms a hard crust which sticks to the walls of the retort & difficult to remove.



END