



HAEMATINICS

Haematinics are the agents required in the formation of blood and used in the treatment of various types of anaemia's. These agents increase the haemoglobin content of blood through erythropoiesis or through an increase in haemoglobin content of erythrocytes. It generally contains the iron/ ferrous containing compounds. Haematinic agents are also known as antianemics.

Anemia is a general term for a condition in which circulating red blood cells are deficient in number, or deficient in total haemoglobin content, per unit of blood volume.

FERROUS SULPHATE

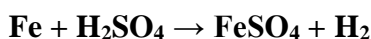
Molecular Formula: FeSO₄.7H₂O

Molecular Weight: 278.0 g/mol

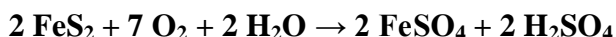
Synonymn: Green vitriol, Iron vitriol

Preparation:

1. Iron reacts with sulphuric acid to produce ferrous sulphate.



2. Ferrous sulfate is also prepared commercially by oxidation of pyrite



Physical Properties:

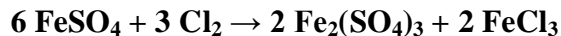
- It occurs as bluish green crystals or a light green crystalline powder.
- It occurs as crystal as well as dry form.
- It is odorless and has astringent and metallic taste.
- It is freely soluble in water.
- It is insoluble in alcohol.
- It efflorescent in air.
- On exposure to moist air the crystals rapidly oxidize and become brown.

Chemical properties:

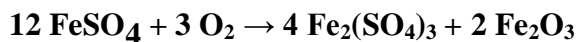
1. On heating, ferrous sulfate it loses its water of crystallization. When further heated, the anhydrous material releases sulfur dioxide and white fumes of sulfur trioxide, leaving a reddish-brown ferric oxide at about 680⁰C.



2. Ferrous sulfate is a reducing agent. For example, it reduces chlorine to chloride.



3. Upon exposure to air, it oxidizes to form a corrosive brown-yellow coating of basic ferric sulfate.



Assay

Principle

This is assayed by oxidation reduction titration.



Procedure

Weigh accurately about 0.5 gm of ferrous sulphate dissolved in a mixture of 25 ml of dilute sulphuric acid and 25 ml of water and titrate with 0.02 M potassium permanganate. End point is the appearance of permanent pale pink colour.

Uses:

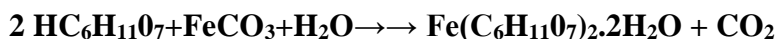
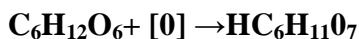
- Ferrous sulfate is a haematinic agents, it is used to treat and prevent iron deficiency anaemia.
- Ferrous sulfate was used in the manufacture of inks, most notably iron gall ink.
- Woodworkers use ferrous sulfate solutions to color maple wood a silvery hue.
- In horticulture it is used for treating iron chlorosis.
- It is used in gold refining.
- Green vitriol is also a useful reagent in the identification of mushrooms.

FERROUS GLUCONATE

Molecular Formula: $\text{C}_{12}\text{H}_{22}\text{FeO}_{14} \cdot 2 \text{H}_2\text{O}$

Preparation:

The gluconate solution is first produced by the fermentative oxidation of glucose. The solution of gluconic acid is then treated with carbonate to form soluble ferrous gluconate.



Physical Properties:



- It occurs as yellowish-grey or pale greenish yellow fine powder or granules.
- It has a slight odour like that of burnt sugar.
- It is fairly soluble in cold water and more soluble in warm water.
- It is practically insoluble in alcohol, but soluble in glycerin.
- It is unstable at pH 7.
- It is affected by light & air & the ferrous iron slowly oxidized to ferric on exposure to air.

Uses

- Ferrous gluconate is used as a haematinic agent.
- It is useful in the prevention and treatment of iron deficiency anemia.
- Ferrous gluconate is effectively used in the treatment of hypochromic anemia.