



What is a solution?

A solution is a mixture made by dissolving one or more substances in a liquid. In a solution, the substance that is being dissolved is the **solute** and the liquid it is being dissolved in is the **solvent**.

Solutions must be homogeneous . the solutes must dissolve and mix completely with the solvent. A mixture of sand and water is not a solution because the sand does not dissolve in the water.

Ferric chloride FeCl_3

What is Ferric chloride?

Ferric chloride is a dark colour crystal with the oxidation state of iron being +3. It is also called *Iron (III) chloride* or **Molysite**.

It is an iron coordination entity which functions as an astringent and Lewis acid. The chemical formula of Ferric Chloride is **FeCl_3** .

Molysite solution is colourless to light brown and has a faint hydrochloric acid (HCl) smell. It is corrosive to most metals and tissues. It is non-combustible and is widely used in water purification and sewage treatment.

In its **anhydrous form, it is deliquescent**. Also, partial hydrolysis takes place as it absorbs water from the air and liberates hydrogen chloride (HCl) that forms mists in moist air. It is a strong Lewis acid.

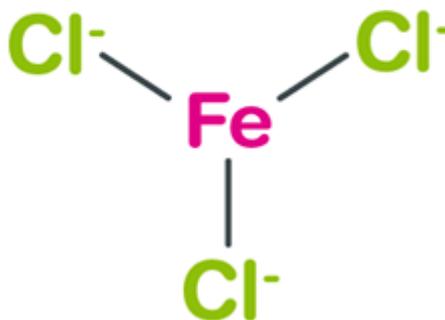


Properties of Ferric chloride – FeCl₃

Ferric Chloride	FeCl ₃
Molecular Weight of Ferric Chloride	162.204 g/mol (anhydrous)
Density of Ferric Chloride	2.90 g/cm ³ (anhydrous)
Melting Point of Ferric Chloride	307.6 °C
Boiling Point of Ferric Chloride	316 °C

Structure of Ferric chloride (FeCl₃)

FERRIC CHLORIDE STRUCTURE



Structure of Ferric Chloride

Uses of Ferric chloride (FeCl₃)

- Ferric Chloride is used in organic synthesis as a catalyst.
- It is used to treat over-cropping of animal claws especially when the over-cropping leads to bleeding.
- It is used as a drying reagent in some reactions in its anhydrous form.
- It has wide applications in energy storage systems.



Preparation of Ferric chloride

Anhydrous iron (III) chloride can be prepared by reacting metallic iron with dichloride. The chemical equation for this reaction is provided below.



Preparation of Ferric chloride Solution

1. By dissolving iron ore in HCl (hydrochloric acid)



2. By oxidizing iron (II) chloride with chlorine (Cl)



3. By oxidizing iron (II) chloride with oxygen



Ferric chloride Test

This test is conducted to determine the presence or absence of phenol in a given sample.

Step 1: Dissolve the sample in water plus ethanol.

Step 2: Add drops of a dilute solution of ferric chloride (FeCl_3).

Step 3: If the sample turns to red, green, purple, or blue colouration then it indicates the presence of phenols.

Step 4: In case the sample is insoluble in water, it can be dissolved in dichloromethane (CH_2Cl_2) with a small quantity of pyridine ($\text{C}_5\text{H}_5\text{N}$).