

## EMETICS

An emetic is a drug which induces vomiting. Emetics act either directly by stimulation of the chemoreceptor trigger zone, located in the area of postrema of medulla oblongata; or by reflux action of irritant on gastrointestinal tract.

Examples: Inorganic compounds such as copper sulphate, sodium chloride, Zinc sulphate and sodium potassium tartrate show emetic effect. The clinical value of emetics, these days, has been lessened by the stomach tube- a safer and more effective tool for emptying the stomach.

Emetics are contraindicated in debilitated patients and in poisoning caused by corrosive or petroleum products.

### COPPER SULPHATE

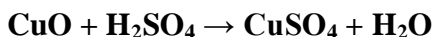
*Molecular Formula:*  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

*Molecular Weight:* 249.7 g/mol

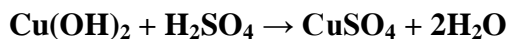
*Synonymn:* Cupric sulphate

*Preparation:*

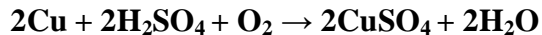
- It is obtained by treating cupric oxide with sulphuric acid.



- It is prepared by treating cupric hydroxide with sulphuric acid.



- It is also obtained by treating granulated copper in the presence of air with sulphuric acid. The solution is filtered and evaporated to crystallisation when crystals of copper sulphate separate out.



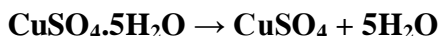
*Physical properties:*

- It is a blue colour powder in pentahydrate form and white powder in anhydrous form.
- It is very hygroscopic.
- It is freely soluble in water.
- It is slightly soluble in methanol.
- It is practically insoluble in alcohol.
- The salt has been stable to heat up to 60°C.

*Chemical properties:*

1. Copper sulphate pentahydrate can be converted into anhydrous copper sulphate when heated strongly. The blue colour of copper sulphate is due to water of hydration. When heated, it loses

two water molecules at ~63°C followed by two more at ~109°C and the final water molecule at ~200°C and turns to white coloured anhydrous copper sulphate.



The above process can be reversed, when water is added to white coloured anhydrous copper sulphate, its colour changes to blue, indicating that the blue coloured copper sulphate pentahydrate is regenerated. So, it is a reversible chemical change.

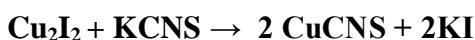
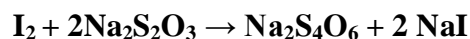
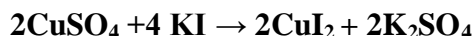
2. On heating at ~650°C, the anhydrous copper sulphate decomposes to form copper oxide (CuO) and sulphur trioxide and the reaction become irreversible.



*Assay*

*Principle*

This is assayed by iodometric oxidation reduction reaction. This reaction is based on the instability of cupric iodide formed in the reaction of copper sulphate with potassium iodide which decomposes to give cuprous iodide with the liberation of free iodine.



*Procedure*

Accurately weighed copper sulphate is dissolved in water. To this add excess of potassium iodide. The liberation of iodine is titrated with sodium thiosulphate solution using starch as an indicator. The titration is continued until the blue colour persists. 2 gm of potassium thiocyanate is then added and titrated until the blue colour disappears.

*Uses:*

- It is used as an emetic.
- It is used as chemical antidote in phosphorous poisoning.
- It is used as fungicide.
- It is an ingredient of Benedict's and Fehling's solution.

## **Sodium potassium tartarate**

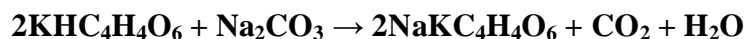
*Molecular formula:* **NaKC<sub>4</sub>H<sub>4</sub>O<sub>6</sub>·4H<sub>2</sub>O**

*Molecular Weight:* 283.23 g/mol

*Synonymn:* Rochelle salt

*Preparation:*

Potassium bitartrate (cream of tartar) reacts with sodium carbonate to produce sodium potassium tartrate (Rochelle salt).



*Physical Properties:*

- It is a white colourless crystalline powder.
- It is odourless.
- It is freely soluble in water and insoluble in alcohol.
- It is saline in taste.

*Uses*

- It is used as an emetic.
- It is having mild laxative action.
- It is used as a diuretic.
- It is used to break the emulsions.
- It is also used to paper of cigarettes.
- It is used in the silvering of mirrors.
- It is one of the ingredients in Fehling's solution and Biuret reagent.