

# Iodine

➤ **Chemical formula :-** $I_2$

➤ **Mol wt :** 253.8

Properties:-

➤ **Colour:-**grayish-violet or bluish-black

➤ **Nature:-**brittle plates or small crystals with a metallic luster.

➤ **Odour:-**It possesses a distinctive penetrating irritant

➤ **Taste:-**bitterly pungent taste.

➤ **Solubility:-**It is very slightly soluble in water, soluble in alcohol and dissolves freely in ether, chloroform and carbon disulphide.

It dissolves readily in sol of KI & other iodides forming compound as  $KI_3$ .

## **Chemical Properties:-**

- 1.It melts at  $140^{\circ}\text{C}$  but sublimes freely at temp below its MP.
- 2.It is volatile at R.T & its vapours attack both cork & rubber.
- 3.The imp chemical property of iodine in aqueous sol is that a mild oxidizing action mediated through the formation of hypoiodous acid.

Storage:- Should be stored in well- closed bottles fitted with glass stoppers **because  $\text{I}_2$  is volatile & its vapors attack both cork & rubber.**

Incompatibility:- with **alkalis and alkali carbonates.**

## Uses:-

- 1) Topical **anti-infective** iodine has a powerful **bactericidal** action and is used for disinfecting unbroken skin before operation.
- 2) Iodine ointments are applied as counter-irritants.
- 3) Its 2% solution in glycerol is used for application to mucous membrane
- 4) **compound iodine paint** is used as a throat paint in **pharyngitis** and **follicular tonsillitis**.
- 5) Iodine is an essential trace element in **human diet**.  
Deficiency of iodine leads to development of **goiter** and in many countries, common salt which is used for food purpose is iodized mainly with iodides.

## **Solution Of Iodine:-**

- The germicidal activity of free iodine is about six times that of hypoiodous acid.
- Preparations providing free iodine are bactericidal, fungicidal, amoebicidal and virucidal.
- Iodine is effective in very dilutions.
- Iodine Solutions and Iodine Tincture are most effective topical agents available.
- They have been used as antiseptics on the skin prior to surgery.

## Some of the well-established solutions are:

1) Aqueous Iodine Solution B.P./I.P. (1966) (Strong Iodine U.S.P.)

- It is also known as Lugol's solution.
- It does not contain any alcohol. It contains 5.0% w/v of Iodine and 10.0% w/v of Potassium Iodide.
- The relative proportion of potassium iodide to iodine is much higher than in weak solution.
- Uses: Source of Iodine.

## **2)Strong Iodine Solution I.P. (1966)**

It contains 10.0% w/v of Iodine and 6.0% w/v of Potassium Iodide in alcoholic solution, composition: Iodine 100 g, Potassium Iodide 60 g, Purified water 100 ml; Alcohol (90%) sufficient to produce 1000 ml'

Uses: Antiseptic.

### **3) Weak Iodine Solution B.P/I.P. (1966):-**

It contains

2.0% w/v of Iodine

2.5% w/v of Potassium Iodide in water.

This solution is identical in composition with Tinctura  
iodi Mitis B.P. 1914. es.

Uses: Antiseptic.

#### **4) Iodine Tincture U.S.P. :**

It contains 2.0% w/v of Iodine and 2.4% w/v of Sodium Iodide in much diluted alcoholic solution.

Note-Iodine preparations of any type are contraindicated in patients who have exhibited prior allergy or hypersensitivity to iodine.



## Properties

- Colour:- Yellowish brown
- Odour:- slight characteristic odour
- Nature:- amorphous powder
- Solubility:- It is soluble in water and in alcohol, but practically insoluble in organic solvents.
- Chemical properties :- Aqueous solution is acidic to litmus.
- The Povidone-Iodine solution is reddish Brown colour, and a pH of not more than 6.0.
- Its non-irritating effects on tissue, comparatively low oral toxicity, its water solubility and its low iodine vapour pressure making it stable to possible iodine loss makes it superior to Iodine Solutions.
- Solution in most of the applications. Solutions are nonstaining and can be washed clear from skin and clothing.

Storage :- It should be stored in air-tight containers (tightly closed containers), the materials of which<sup>61</sup> are resistant to iodine.

## Uses

- Antiseptics for surgical scrubs and pre-operative antisepsis of the skin.
- It is also used in gargles and mouthwashes for the treatment of infections in the oral cavity.
- Various preparations include an aerosol (0.5%), solutions (usually 1%), a surgical scrub (0.75%), a vaginal douche (1%) and a vaginal gel (0.1%).