

Water

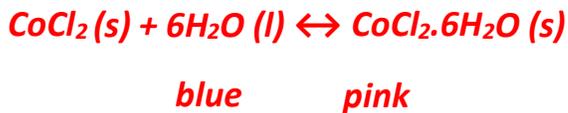
Purification of water:

- Water is filtered through a bed of sand to remove large **insoluble particles**. **Micro organisms** are not filtered out because they are so **small**.
- The filtered water has **chlorine gas bubbled** through to kill any **micro organisms**.

Tests for water:

Blue cobalt(II) chloride paper turns from blue to pink if +Ve(chemical)

anhydrous cobalt(II) chloride + water \leftrightarrow hydrated cobalt(II) chloride



White anhydrous copper(II) sulfate powder turns blue if +Ve(chemical)

anhydrous copper(II) sulfate + water \leftrightarrow hydrated copper(II) sulfate



Melting and boiling point test

If pure, the melting point of the solid water is fixed at 0°C and the boiling point of water is fixed at 100°C

Uses of water in industry

- **Production of drinks (as a solvent)**
- **Cooling parts of the reactor in power stations**

Uses of water in home

- **Washing , cooking**

Uses of water in agriculture:

- **as a drink for animals and watering crops**

Distilled water which is used in Laboratory consists of water molecules only therefore we will be able to get accurate results.

Water from natural sources may contain a variety of different substances, including:

- **Dissolved oxygen**
 - **Metal compounds**
 - **Plastics**
 - **Sewage**
 - **Harmful microbes**
 - **Nitrates from fertilisers**
 - **Phosphates from fertilisers and detergents**
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- Aluminium sulfate and Iron chloride are added as a coagulant so that fine particles clump together and can be removed easily.
 - *Mud, sand and other particles will fall to the bottom of the tank **due to gravity and form a layer of sediment**, in a process called **sedimentation***
 - ***Filtration** is the process used to remove **smaller particles by passing the water through layers of sand and filters that trap solid particles***
 - *Water can also be passed through **carbon** (in the form of charcoal) to **remove tastes and odours***
 - *Bacteria and other microorganisms are too small to be trapped by the filters so **chlorination** is used*
 - *This involves the careful addition of **chlorine** to the water supply which **kills bacteria** and other unwanted microorganisms*
 - ***Cholera and typhoid** are examples of bacterial diseases which can arise from the consumption of **untreated water***