

## GCSE Edexcel

# Separation and purification

There are different ways to separate mixtures, for example by filtration, crystallisation, distillation or chromatography. The method chosen depends upon the type of mixture.

Part of [Chemistry \(Single Science\)](#) | [States of matter and mixtures](#)

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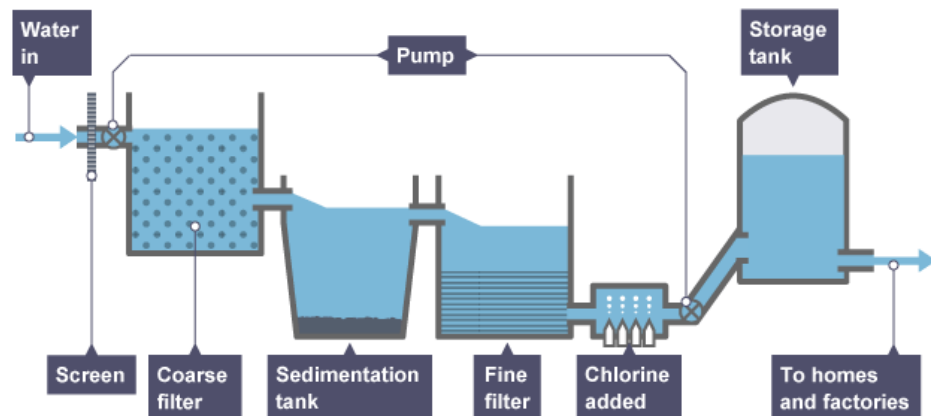
# Water for drinking

Waste water and groundwater must be treated to make them potable, or safe to drink.

## Treating fresh water

Fresh water contains objects that must be removed to make it potable. These include large objects such as branches and leaves, insoluble particles such as grit, and harmful microorganisms. Different separation methods and treatments are used to deal with them:

- large objects are removed by screening using grids
- a coarse filter bed made from clean sand and gravel removes larger insoluble grit particles
- aluminium sulfate is added to clump smaller insoluble particles together, which then settle to the bottom in a sedimentation tank
- a fine filter bed removes very small insoluble particles
- chlorine gas is added to kill harmful microorganisms



The main stages in treating fresh water to make it potable

## Treating seawater

Seawater contains too much dissolved salt to make it suitable as drinking water. However, pure water can be produced from seawater by simple distillation.

The seawater is boiled and the water vapour is led away and cooled. It condenses to form pure water, leaving the salt behind.

It is expensive to produce drinking water this way because large amounts of energy are needed to heat the seawater. However, water produced by distillation is useful in the laboratory for dissolving substances. It does not contain any dissolved ions that might interfere with a chemical analysis.

# Glossary

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