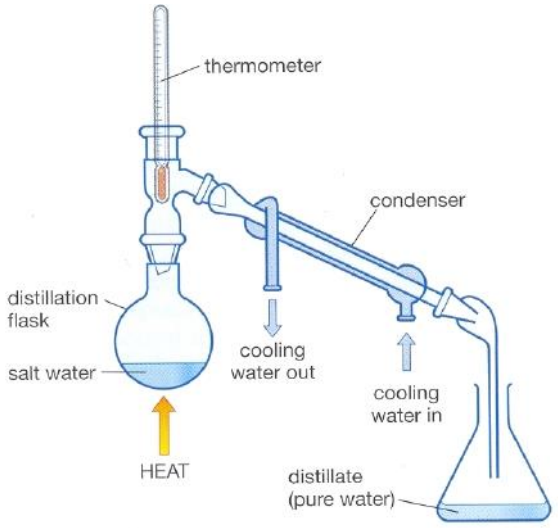
Science Year 7 Knowledge Organiser: C2 Separation Techniques

Overview of topic: **This unit explores mixtures and the way in which mixtures can be separated. You will carry out the following techniques: Filtration, crystallisation, distillation and chromatography.**

Key content/ ideas/ concepts

Distillation:

The solution is heated and the solvent boils and begins to evaporate.
When the vapour travels towards a cold tube and cannot escape.
When it reaches the cold tube it condenses (turns back into a liquid).
The pure liquid (solvent) is collected at the last stage

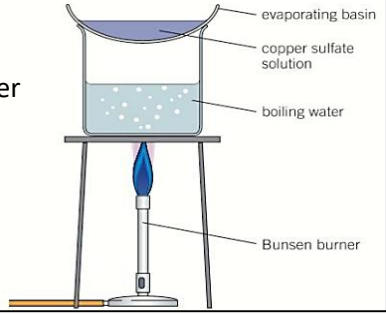


Evaporation:

Heat the solution using a Bunsen burner

The liquid (solvent) will evaporate

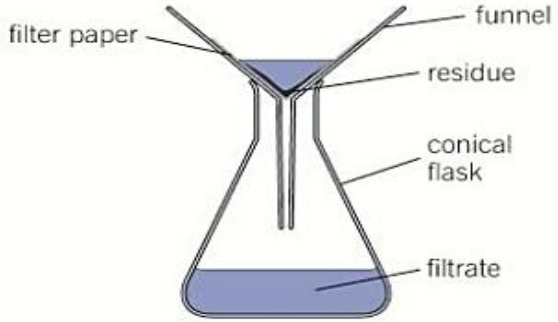
Leaving behind the solid solute



Filtration:

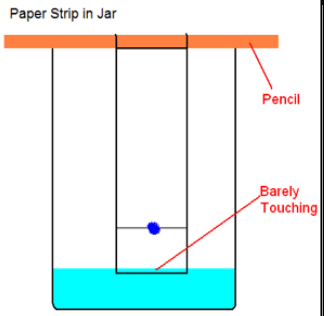
Pour the mixture into the filter.

Insoluble material will stay in the filter paper (residue) as it is too large to pass through the filter holes.
Soluble materials will pass through the small holes of the filt



Chromatography:

Draw a pencil line 2cm from the bottom of the paper.
Put one dot of each pen along th line.
Put 1cm of water into a beaker a put the filter paper in the beaker the pencil line is above the wate
Take the filter paper out when the water gets near to the top and leave it to dry,



Keywords/ Glossary

Pure -A material that is composed of only one type of particle.
Impure - A material that is composed of more than one type of particle.
Evaporation - A change of state involving a liquid changing to a gas
Distillation - A process for separating the parts of a liquid solution. The solvent is heated and the gas is collected and cooled.
Filtration - The act of pouring a mixture through a mesh, in attempts to separate the components of the mixture.
Mixture - A material made up of at least two different pure substances.
Chromatography = A technique used to separate mixtures of coloured compounds.
Solute - a substance that dissolves in a solvent
Solvent- a liquid which is able to dissolve a solute
Solution- a mixture of solute dissolved in a solvent
Soluble- The ability to dissolve in a solvent
Insoluble-A solid which is not able to dissolve in a solvent

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Wider reading: https://gizmodo.com/how-to-find-and-purify-drinking-water-in-the-wildernes-1580821351
https://www.bbc.com/bitesize/guides/zgvc4wx/revision/1

KNOW IT	GRASP IT	THINK IT
1. Identify the definition of pure.	1. Describe how a filter works.	1. Compare the similarities and differences of evaporation and distillation
2. Identify the definition of impure	2. Describe the difference between filtrate and residue after filtration.	2. Explain why cold water is used inside the condensing tube
3. Identify the definition of distillation.	3. Describe the method for crystallisation.	3. Write a method for separating a mixture of two liquids with different boiling points
4. Identify the definition of chromatography.	4. Describe the role of the condensing tube.	4. Write a method for separating salt from water.
5. Identify the definition of evaporation.	5. Describe what is meant by the stationary phase during chromatography	5. Write a method for separating the water from salt water.
6. Identify the definition of filtration.	6. Describe how solubility affects the distance that the mixture travels up the stationary phase.	6. Write a method for separating the different colour in an ink.
7. Identify the definition of crystallisation.	7. Describe the difference between a mixture and a compound	7. Write a method for the separation of Sand and water.
8. Identify the definition of soluble.	8. Explain why a pencil line is used during chromatography.	8. What is the equation for working out the Rf value of a mixture?
9. Identify the definition of a solvent.	9.Explain why filtration cannot be used to separate salt from salt water	9. What is Rf value a measurement of?
10. Identify the solvent and the solute in a glass of salt water.	10. Describe which methods you would use and why, to separate a mixture of salt sand and water.	10. Research another form of chromatography and explain when it is used.
Total score	Total score	Total score