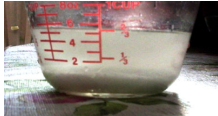


Revision for
Topic 7H
"Solutions"
Exploring
Science 7
Pages 90-
101

Saturated Solutions

- There is a Limit to How Much Soluble Solid Can Dissolve in a Given Amount of Solvent
- For Example The Maximum Number of Spoons of Sugar Which Will Dissolve in a Cup of Tea
- Has Undissolved Solute Left
- Typically Amount Which Can Dissolve Increases with Temperature

Solubility
the volume of water that 100 g of solvent will dissolve in.



Mixtures

- Two or More Different Things Jumbled Together Which Can Be Separated
 - Solute
 - The SOLID Which Dissolves to Form a Solution
 - E.g. Sugar
 - Solvent
 - The LIQUID which Dissolved the Solid
 - Water is NOT the only Solvent
 - Example : Nail Varnish does NOT dissolve in Water When you Wash Your Hands but DOES Dissolve in Nail Varnish Remover
 - Solution
 - Formed When a Solute is Dissolved by a Solvent
 - When a Solute Dissolves in a Solvent
 - Some Things do Not Dissolve in Water, But there maybe Other good Good Solvents
 - Dissolving
 - A mixture of fine Insoluble particles in a Liquid (e.g. Flour and Water)
 - Will separate out if left to stand
- Suspensions
 - A Special Type of Suspension Where the Particles do not Separate
 - Milk, Blancmange & Butter are examples
- Insoluble
 - Colloids

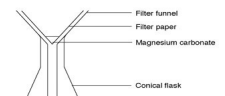
Effect of Temperature on Solubility

- Generally as Temperature Increases Solutes Dissolve Faster

Conservation of Mass

Mass of Solution = Mass of Solute + Mass of Solvent
10g of Sugar + 100g of Water = 110g of Sugar Solution

Separating

- Sieving
 - Used to Separate Different Size Solids (e.g. peas and sand)
- Filtering
 - Small Holes in Filter Paper Let Liquids Through but NOT the Solids
 - Separates INSOLUBLE Solids from a liquid
 - Examples : Sand from Water, Tea leaves from Tea
- Evaporation
 - Separates DISSOLVED SOLUBLE Solids from Solutions
 - Brine is a Name for Common Table Salt Solution or Sea Water
 - Pure Table Salt can be Made from Rock Salt by Crushing, Dissolving, Filtering & Evaporating
- Distillation
 - Use an Evaporating Basin on a Tripod
 - Separates Solvent From a Solution
 - For example Pure Clean Water from Inky Water
 - Two Liquids with Different Boiling Points
 - Used to Make Spirits such as Whisky or Brandy
 - Can separate Crude Oil into Useful Products Such as Petrol

As Rain Water Flows Through Rocks Small Amount of Minerals & Salts Will Dissolve in the Rain Water

Tap Water & Mineral Water Can Contain Dissolved Solids

Plu Water is Water with Nothing Dissolved in It

Can Be Separated by Evaporation

The Same Chemicals Move to the SAME point on a Chromatogram

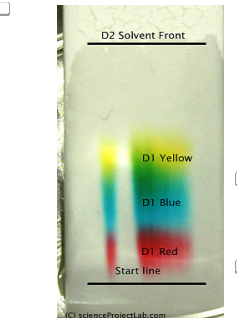
Examples : DNA finger printing, Drug tests & Identifying Coloured Dyes

Used to Separate Dissolved Solids by Speed of absorption (Often Coloured Chemicals)

Only Works if the Chemicals to Separate Dissolve in the Liquid Used

Carbonated Natural Mineral Water

Typical analysis	mg per litre
Calcium	25.6
Magnesium	6.4
Potassium	-1.0
Sodium	6.4
Bicarbonate	98.3
Sulphate	10.1
Nitrate	-2.5
Fluoride	-0.1
Chloride	6.8
Silicate	7.6
Dry residue at 180 °C	109.1
pH	4.6



Chromatography

Used to Separate Dissolved Solids by Speed of absorption (Often Coloured Chemicals)

Only Works if the Chemicals to Separate Dissolve in the Liquid Used

Distillation

Evaporation of the Solvent Followed by Condensation

I KNOW how to Label a Condenser & Know What all the Parts are for

Use an Evaporating Basin on a Tripod

Separates Solvent From a Solution

For example Pure Clean Water from Inky Water

Two Liquids with Different Boiling Points

Used to Make Spirits such as Whisky or Brandy

Can separate Crude Oil into Useful Products Such as Petrol

