



Mixtures & Compounds

Science – Junior Cert

Quick Notes

Mixtures & Compounds

Mixtures and Compounds

Compare a Mixture and a Compound made from the same Constituents

- Take some iron filings (14.0g) and powdered sulfur (8g)
- Note their colours (Iron grey and sulfur yellow)
- Mix fully
- Hold a magnet (wrapped in polythene) near the mixture

Result: iron filings stick to the magnet as mixture separates

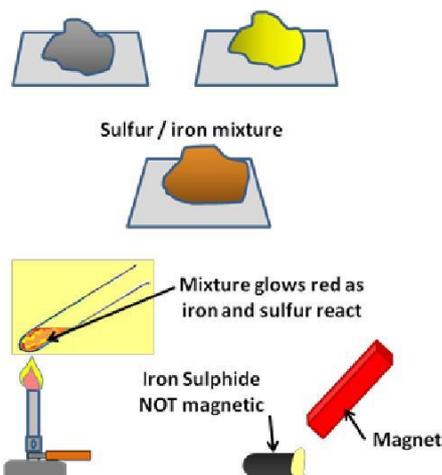
- Remix the elements and place the mixture in a test tube
- Heat strongly in a Bunsen flame
- Note what happens
- Allow to cool and test once more with a magnet

Result:

- Mixture glows as they react and iron sulphide forms
- Iron sulphide is **NOT magnetic**

Conclusion:

- The constituents of the mixture retain their original properties
- The compound formed (iron sulphide) does NOT keep the properties of the original substances



Water and Solutions

Solution: a mixture of a liquid (solvent) and a solid dissolved in it (solute) e.g. water and sugar

Water is a very good solvent

Dilute Solution: contains a small amount of solute (salt) in a lot of solvent (water)

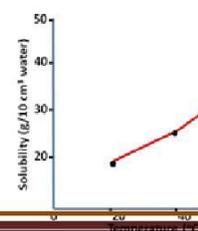
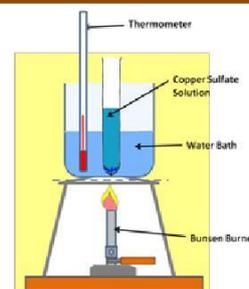
Concentrated Solution: contains a large amount of solute (salt) in a small amount of solvent (water)

Saturated Solution: contains as much solute dissolved in it as is possible at a particular temperature

The Effect of Temperature on Solubility

- Set up the apparatus as shown
- Place 10 cm³ of water in the test tube
- Place some copper sulfate (50g) on a filter paper
- Weigh it
- Heat the water bath to 20°C
- Add a small amount of copper sulfate to the test tube and stir
- Keep adding copper sulfate and stirring till no more dissolves
- Calculate the amount of copper sulfate added by the change in weight of the crystals on the filter paper
- Increase the temperature of the water bath to 40°C and repeat
- Increase the temperature of the water bath to 60°C and repeat
- Plot a graph of the amount of copper sulfate dissolved against temperature

Result: as the temperature increases the amount of copper sulfate that dissolves increases



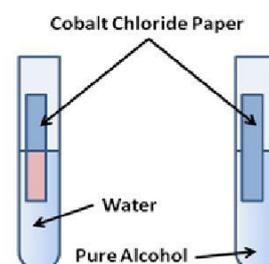
Conclusion: Solubility increases with temperature

Test for Water

- Take some **dry cobalt chloride paper (it should be blue)**
- Put a piece of cobalt chloride paper in (i) a test tube of **water** and (ii) a test tube of **pure alcohol**

Result:

- **Water turns the cobalt chloride paper blue**
 - **Alcohol has no effect on the cobalt chloride paper**
- Conclusion: Cobalt chloride paper can be used as a test for water**



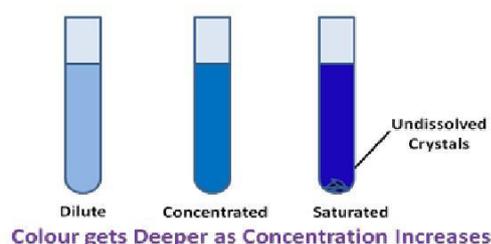
Examine the difference between a Dilute, Concentrated and Saturated Solution

- Make up three copper sulphate solutions
 - (i) **Dilute**
 - (ii) **Concentrated**
 - (iii) **Saturated**
- Compare the solutions

Result

If the solution is coloured **the colour gets deeper as the concentration increases**

Note: Copper sulfate solution is clear and blue while water is clear and colourless.



Growing Copper Sulfate Crystals

- Dissolve copper sulfate crystals in hot water until you have a **saturated solution**
- Divide the solution equally between two evaporating basins (leave any undissolved crystals in the container)
- Place one evaporating basin on the bench to **cool slowly**
- Place the other on ice to **cool it quickly**
- Compare the two sets of crystals

Result:

- the crystals formed **slowly** on the bench are **large**
- the crystals formed **quickly** on the ice are **smaller**

Conclusion: The faster crystals are formed the smaller they are



For more comprehensive Revision Notes Visit.... mocks.ie **Junior Cert Science Notes**