**Organic Analysis**

Students will always be told if a compound or mixture of compounds, to be identified is

Organic. Often the molecular formula, or the number of carbon atoms in a molecule, of a

compound will be given. Chemical tests may be followed by spectroscopic information.

**1 Appearance**

Simple organic compounds are usually colourless liquids or white solids. It is unlikely that

appearance alone will provide firm evidence for identification.

**2 Solubility**

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| **Solubility of Compound** | **Possible identity** | **pH of solution** | **Possible identity** |
| Dissolve in water  (no layers) | Alcohols, carboxylic acids, simple aldehydes | Approx. 7 | Alcohols etc. |
| Below 7 | Carboxylic acid |
| Insoluble in water  (forms layers**)** | Alkane, Alkene,  Halogenoalkane (but soluble in ethanol) | NA |  |

**3 Ignition**

|  |  |
| --- | --- |
| **Observation** | **Possible inference** |
| Burns with a very Smokey yellow flame | Alkene (unsaturated) |
| Burns with a yellow flame | Alkane |
| Burns with a clear, blue flame | Alcohol (possible carboxylic acid) |

**4 Chemical tests**

|  |  |  |
| --- | --- | --- |
| **Tests** | **Observation** | **Inference** |
| Warm with acidified potassium dichromate (VI) | Orange to green or blue | Primary or secondary alcohol, aldehyde |
| Shake with bromine water | Solution is decolourised (yellow or orange to colourless). Layers formed | Alkene |
| Shake with acidified potassium manganate | Solution is decolourised (purple to colourless) Layers formed | Alkene |
| Warm with aq sodium/potassium hydroxide, acidify with dilute nitric acid then add aq silver nitrate | Precipitate:  White  Cream  Yellow | Halogenoalkane  C-Cl  C-Br  C-I |
| Sodium or potassium carbonate or hydrogen carbonate solution | Effervescence | Carboxylic acid |
| Add a small piece of sodium | Effervescence, sodium “disappears” colourless solution formed. | Alcohol or Carboxylic acid |
| Phosphorus (V) chloride | Vigorous Effervescence steamy fumes of HCl that turn damp blue litmus paper red | OH group in alcohols or carboxylic acids. |