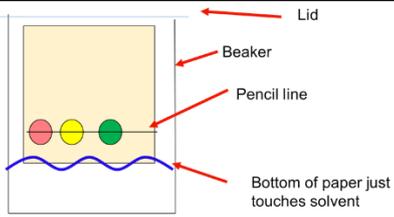


AQA Trilogy-Chemistry key terms - Chemical Analysis

Pure substances and Formulations	
<p>In chemistry, a pure substance is a single element or compound, not mixed with any other substance.</p> <p>In everyday language, a pure substance can mean a substance that has had nothing added to it, so it is unadulterated and in its natural state, eg pure milk.</p>	<p>Mixtures are substances containing two or more elements that are NOT chemically bonded.</p>
<p>Pure substances melt and boil at specific temperatures.</p> <p>Impurities in mixtures mean that they do not melt and boil at these specific temperatures.</p>	<p>A formulation is a mixture that has been designed as a useful product.</p> <p>Many products are complex mixtures in which each chemical has a particular purpose.</p>
<p>Formulations are made by mixing the components in carefully measured quantities to ensure that the product has the required properties.</p>	<p>Formulations include fuels, cleaning agents, paints, medicines, alloys, fertilisers and foods.</p>
<u>Chromatography</u>	
<p>Chromatography can be used to separate mixtures and can give information to help identify substances.</p>	<p>Artificial food colours and other additives can be detected and identified by paper <u>chromatography</u>.</p>
<p>Chromatography involves a stationary phase and a mobile phase.</p>	<p>The ratio of the distance moved by a compound (centre of spot from origin) to the distance moved by the solvent can be expressed as its R_f value:</p> $R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$
<p>Chromatography works because different compounds have different R_f values in different solvents.</p>	<p>The compounds in a mixture may separate into different spots depending on the solvent but a pure compound will produce a single spot in all solvents</p>
 <p>The diagram shows a beaker with a lid. A piece of paper is placed inside, held in place by a pencil line. The bottom of the paper is just above a solvent level. Three colored spots (red, yellow, green) are visible on the paper.</p>	
<u>Testing for gases</u>	
<p>The test for hydrogen uses a burning splint held at the open end of a test tube of the gas. Hydrogen burns rapidly with a pop sound.</p>	<p>The test for oxygen uses a glowing splint inserted into a test tube of the gas. The splint relights in oxygen.</p>
<p>The test for carbon dioxide uses an aqueous solution of calcium hydroxide (lime water). When carbon dioxide is shaken with or bubbled through limewater the limewater turns milky (cloudy).</p>	<p>The test for chlorine uses litmus paper. When damp litmus paper is put into chlorine gas the litmus paper is bleached and turns white.</p>