**Student worksheet**

**Practical 3: The reactions of carboxylic acids**

**Questions:**

1. Draw a diagram showing the intermolecular forces that exist between ethanoic acid in water.
2. Write a balanced chemical equation showing how ethanoic acid behaves as an acid.
3. Write a balanced chemical equation for the reaction between ethanoic acid and magnesium.
4. Write a balanced chemical equation for the reaction between ethanoic acid and sodium hydroxide.
5. Write a balanced chemical equation for the reaction between ethanoic acid and sodium carbonate.

**Analysis of results**

1. Describe the solubility and pH of ethanoic acid
2. What gas do you think is given off when ethanoic acid reacts with magnesium?
3. Can ethanoic acid be neutralised by sodium hydroxide?
4. What gas do you think is given off when ethanoic acid reacts with sodium carbonate?

**Procedure**

**1)  Solubility and pH**

1. Add 1cm3 of pure ethanoic acid (called glacial) to a test tube (CARE very corrosive).
2. Add water dropwise with a pipette, do the liquids mix?
3. Spot out some of the mixture on to full range indicator paper.
4. See how well other carboxylic acids mix with water
5. Record all observations.

**2)  As an acid**

**a)  With magnesium**

1. Add 10cm3 of Conc ethanoic acid to a test tube.
2. Add about a 3cm strip of magnesium ribbon and place a boiling tube, place an upturned test tube over the top.
3. After a 10 mins, test the gas with a lit splint.
4. Record all observations.

**b)  With sodium hydroxide**

1. Add 5cm3 of 0.1M ethanoic acid to a test tube and add full range indicator.
2. Add half a pipette of sodium hydroxide to the test tube and note the colour of the full range indicator.
3. Repeat step (2) several times
4. Record all observations

**c)  With sodium carbonate**

1. Add 5cm3 of 1.0M sodium carbonate solution to a test tube.
2. Add Conc ethanoic acid half a pipette at a time to the solution.
3. Record all observations.

**Equipment/materials**

* Pipettes
* Glass rods
* Glacial ethanoic acid (and others except butanoic)
* 0.1M Ethanoic acid
* Full range indicator
* Full range indicator paper
* 0.1M sodium hydroxide
* Magnesium ribbon
* 1.0M Sodium carbonate solution

**Safety**

* Wear a lab coat and tie long hair back.
* Wear safety goggles.
* Wear chemical-resistant gloves when handling glacial ethanoic acid

 

Corrosive Oxidising



Harmful

**Objective**

* Identify the properties and reactions of carboxylic acids

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