

## Esterification investigation Design Practical

### Introduction:

Esterification is a chemical reaction in which two reactants (usually an alcohol and an acid) combine to generate an ester as the reaction product. Equilibrium occurs when both reactants and products are present in concentrations that have no further tendency to change with time, resulting in no apparent change in the system's properties. This state occurs when the reaction proceeds at the same rate as the reverse reaction which results in the system reaching equilibrium.  $\text{RCOOR'}$  is the general structure of an ester. The ester will be created in this lab by combining a carboxylic acid with an alcohol, resulting in the ester and  $\text{H}_2\text{O}$ . An acid catalyst is required for this reaction.

### Hypothesis:

The alcohol is going to be the limiting reactant while the acid is going to be the excess reactant. This implies that the ester would not pass the limiting reactant.

### Safety Measures:

Different safety techniques were considered during the practical to guarantee the safety of fellow classmates.

- Lab coats must be worn at all time
- Safety glasses were worn at all time especially when dealing with any acid or bases to minimize risk.
- Special care was taken when transporting and handling sulfuric acid due to the corrosiveness to the eyes and skin.
- Due to acids and alcohols being flammable, they were not directly heated with a burner but instead a heating mantle.

### Apparatus:

Conical flask

Conical flask - 250ml/500ml

Conical flask - 100ml

Beaker

Reflux apparatus - 3-neck round bottom flask, condenser, thermometer

- 100ml/250ml/500ml
- 100ml/250ml/500ml

# Esterification Practical Investigation

**Clifford Lane**



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