

# Organic chemistry: esterification lab flashcard



**ASSIGN  
BUSTER**

Lab Introduction Stratification is an important part of organic chemistry that has many practical applications. Stratification can be used to make polymers.

In most cases, esters are used for scents - they often smell fruity and sweet. In general, an stratification reaction results from a condensation reaction between a carboxylic acid and an alcohol. The carboxylic acid group loses an OH group, and the alcohol loses and H. For instance, the reaction between methanol acid and methanol is shown below

$\text{COHO} + \text{CHI}_3 \text{OH} \rightarrow \text{CHOC}_3 + \text{H}_2\text{O}$  Purpose The purpose of this Investigation Is to verify the smell of esters Method Place 250 ml of downsize water in a 500 ml. Heat this water until it boils.

Turn off the heat source after boiling Follow the chart below for the following steps

Ester #	Acid	Alcohol
2	Acetic Acid	Butane
3	Acetic Acid	Acetic Acid
4	Acetic Acid	Ethanol
5	Botanic acid	Butane
6	Botanic acid	Botanic acid
7	Botanic acid	Methanol
8	Botanic acid	Butane acid

Ethanol Place tens drops of the acid in your test tube. Add 10 drops of the required alcohol to the test tube.

Refer to the chart to check what combination of acids and alcohols you should use Add 2 drops of concentrated sulfuric acid (this Increases the yield) Place the test tube into the boiling water so the level of the alcohol-acid solution is below the level of the water. Allow the test tube to remain in the hot water bat for 15 minutes After 15 minutes, smell the solution and record the smell. Pour the solution down the drain and rinse the test tube with tap water to remove odor.

Repeat the above 1 OFF After this, clean up all materials and wash your hands.

Data Ester # Acid Alcohol Ester name Smell Acetic acid Butane Butyl ethanol  
Banana/pear Acetic acid Octane Octal ethanol Orange citrus Acetic acid  
Methanol Methyl ethanol Nail polish remover Acetic acid Ethanol Ethyl  
ethanol Sweet, fruity Botanic acid Butane Butyl butane Pineapple or banana  
Botanic acid Octane Octal butane Flowery, earthy Botanic acid Methanol  
Methyl photoluminescence Botanic acid Ethanol Ethyl butane Sweet, fruity  
Analysis The experiment was successful in that the smells of esters were  
obtained.

Most of the esters smelled nice or fruity, with the exception of methyl ethanol, which smelled like nail polish remover. This could be a result of errors in the experiment.

2. In order to optimize the ester yield, one could increase the concentrations of the various acids and alcohols used to generate the esters. One could also increase the concentration of sulfuric acid, although this may end up damaging the reaction. 3. One could add water to dilute the ester. The addition of water would induce the reaction to undergo hydrolysis 4.

Use distillation 5. Botanic Acid + Butane