

Name _____

Section _____

Alcohols and Phenols

Experiment #3

Pre-Lab Exercise

1. Draw structures of one primary alcohol, one secondary alcohol and one tertiary alcohol and give the correct name for each structure you have drawn.
2. Explain why many alcohols are soluble in water. What part of an alcohol will limit its solubility in water? What part of an alcohol may make it soluble in water.
3. Describe the difference between alcohols and phenols.

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Data & Report Sheet

Unknown Number _____

Important: Be sure to enter your unknown number. You will not receive credit for lab if you have the same unknown number as another person in this lab section.

Table 1. Solubility Test

Solubility in water

#1	1-butanol	
#2	2-butanol	
#3	t-butyl alcohol (2-methyl-2-propanol)	
#4	glycerol	
#5	unknown # _____	

QUESTIONS

1. Would you predict that methanol, ethanol and propanol are soluble in water? Explain your answer.

Table 2. Chemical Tests of Alcohols

Record your observations, noting any precipitate, cloudiness or color change.

Lucas Reagent

Bordwell-Wellman Reagent

#1	n-butyl alcohol		
#2	2-butanol		
#3	t-butyl alcohol		
#4	unknown		

2. Show the chemical reactions for the Lucas test and the Bordwell-Wellman test with each of the three butyl alcohols (1-butanol, 2-butanol and 2-methyl-2-propanol) that react with each of these reagents. You do not need to show cases where there is no reaction.
3. What is the color of the ferric chloride solution before adding it to phenol?
4. What is the color of the solution after the reaction between phenol and ferric chloride takes place?
5. From the results with ferric chloride, would you classify your unknown as a phenol?
6. What is your unknown number and what class of alcohol is your unknown (primary, secondary, tertiary, or phenol):