Preparing an Iron Coordination Complex

Name:_____ **Section:** _____

Date: _____

Purpose (goal of the experiment):

Experimental data:

Mass of $FeCl_3 \cdot 6H_2O$ used	
Mass of $CH_3CO_2Na \cdot 3H_2O$ used	
Volume of acetylacetone used	
Moles of $FeCl_3 \cdot 6H_2O$ used	
Moles of $CH_3CO_2Na \cdot 3H_2O$ used	
Moles of acetylacetone used	
Theoretical yield of $Fe(acac)_3$	
Actual yield of $Fe(acac)_3$	
Percent yield	

Show calculations:

Use the following molar masses for calculating the theoretical yield: $FeCl_3 \cdot 6H_2O$ = 270.30 g/mol, $CH_3CO_2Na \cdot 3H_2O$ = 136.08 g/mol, acetylacetone = 100.11 g/mol, $Fe(acac)_3$ = 353.18 g/mol. Density of acetylacetone is 0.976 g/mL.

Post Lab Questions

1. How would using 0.42 g $CH_3CO_2Na \cdot 3H_2O$ instead of the amount called for in the procedure change the theoretical yield of $Fe(acac)_3$? Explain (show calculations if needed).

2. When checking to see if crystallization is complete, briefly explain why it is more efficient to examine a small portion of the filtrate rather than the entire solution?

3. After the recrystallization step, you are instructed to wash the collected crystals with distilled water instead of a water-methanol mixture. Briefly explain why.

Physiologically Important Anions

Name:_____ Section: _____

Date: _____

Purpose (goal of the lab):

Table 1: Testing Known Anion Solutions

Test	Observations
HCO_3^-	
Cl^-	
I^-	
PO_4^{3-}	
SO_4^{2-}	

Table 2: Testing an Unknown Anion Solution Unknown Number: _____

Test	Observations	Conclusions
HCO_3^-		
Cl^-		
I^-		
PO_4^{3-}		
SO_4^{2-}		

Based on your observations and conclusions, write the anions present in your unknown solution:

Table 3: Testing Consumer Products

List each consumer product tested and your conclusions about anions present.

Product	Anion Tests					Anions listed on product label
	HCO_3^-	Cl^-	I^-	PO_4^{3-}	SO_4^{2-}	

Post Lab Questions

1. Were the results of your tests on the consumer products consistent with your expectations based on the label information? List any consumer product tested that gave unexpected results. Suggest a reason for any unexpected results.

2. Suppose you mistakenly used tap water instead of distilled water to dissolve your consumer product. When you do the test for chloride, you observe formation of a white precipitate after addition of silver nitrate. Can you rightly conclude that the product being tested contains chloride? Explain your reasoning.

3. List some of the main uses of sodium bicarbonate ($NaHCO_3$). Do you think that sodium carbonate (Na_2CO_3) could be used for the same purposes?