VALENCIA COLLEGE

Experiment 4: Limiting Reactant Data Tables

Version 4

Name: _____ Date: _____

Lab Partner: _____ Section: _____

Experimental Data and Calculations

Remember to include units of measure with each entry, and to read and record each measurement to the full precision allowed by the instrument used. Make sure that your work is neat and legible so that you may communicate your results to others such as your instructor. All tables should have a title; add a title where needed.

Table 1. Molar Mass of Reactants and Solid Product

1. Molar mass of copper(II) chloride	
2. Molar mass of Al metal	
3. Molar mass of Cu metal	

Table 2. Amount of Reactants Used in Each Trial and Observations

1. Trial #		Trial 1	Trial 2
2. Molarity of copper(II) chloride solution			
3. Volume of copper(II) chloride solution			
4. Moles of copper(II) chloride			
5. Mass of Al foil			
6. Moles of Al			
7. Observations	Reactants before mixing		
	Mixture after rection		

(Note: the clear cells should contain your data; the shaded cells will contain calculated values.) *Show your work for each type of calculation for each trial on the back of this sheet.*

Name: _____

Table 3. Amount of Copper Produced in Each Trial

1. Trial #	Trial 1	Trial 2
2. Mass of empty beaker		
3. Mass of filter paper		
4. Mass of beaker + filter paper + solid product, after:		
a. First heating		
b. Second heating		
c. Third heating		
d. Final mass of beaker + filter paper + product, after heating		
5. Mass of solid copper formed in the experiment (actual yield)		

Show your work each type of calculation for each trial:

Name: _____

Table 4. _____

1. Trial #	Trial 1	Trial 2
2. Moles of the product formed from copper(II) chloride		
3. Moles of the product that formed from Al		
4. Limiting reactant in the reaction (chemical formula)		
5. Excess reactant in the reaction (chemical formula)		
6. Theoretical yield in moles		
7. Theoretical yield in grams		
8. Theoretical mass of the unreacted excess reactant		

Show your work each type of calculation for each trial:

Name: _____

Table 5. _____

1. Trial #	Trial 1	Trial 2
2. Actual yield (mass of solid copper formed in the experiment)		
3. Theoretical yield		
4. Percent yield		

Show your work each type of calculation for each trial:

Name: _____

Post-lab

Show your calculations neatly for ***each*** trial as outlined by the tables 1-5. Also, write a conclusion (see Appendix 9 How to Write a Scientific Conclusion). Include:

1. A balanced chemical equation for the reaction in this experiment. Indicate the states of the reactants and products.
2. The limiting reactant and excess reactant in each trial. Back up your decisions with observations and calculations from the experiment.
3. Comment on your percent yield. Comment on any unusual or notable results. For example, if you received greater than 100 % yield, that would be an error since matter cannot be created; give some ideas for the source of the error. Likewise, give potential reasons for a very low yield, unexpected color changes, etc.