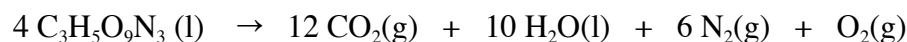
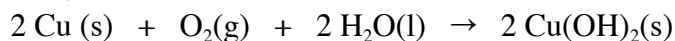


Chemistry 105
Reaction Stoichiometry II - Moles and Mass

- 1) How many moles of nitrogen gas could be formed from 4.80 moles of nitroglycerin ($C_3H_5O_9N_3$) decomposing by the following reaction?



THE NEXT TWO QUESTIONS REFER TO THE FOLLOWING CHEMICAL EQUATION:



Cu (63.54 g/mol)

(Cu(OH)₂ 97.56 g/mol)

- 2) How many kilograms of Cu(OH)₂ could be produced from 13.0 kilograms of Cu?
- 3) If 64.0 grams of Cu, 64.0 grams of O₂ and 64.0 grams of water are allowed to react, which reactant would be the limiting reactant?
- 4) What is the theoretical yield (in grams) of hexaloxane ($M_w = 666$ g/mol) from 10.0 grams of aminoxane ($M_w = 266$ g/mol) by the following equation?
- $$6 \text{ aminoxane} \rightarrow \text{hexaloxane} + 5 H_2O$$
- 5) If 6.66 grams of hexaloxane are actually obtained from the reaction above, what is the percentage yield based on the theoretical yield you calculated?
- 6) Combustion analysis was performed on the compound dioxane. Combustion of the sample formed 0.0106 moles of CO₂ and 0.0106 moles of H₂O. From the sample mass, it was found to also contain 0.0848 grams of O. What is the empirical formula of dioxane?
- 7) Combustion analysis was performed on the compound acetic anhydride. Combustion of the sample formed 0.0020 moles of CO₂ and 0.0015 moles of H₂O. From the sample mass, it was found to also contain 0.0015 moles of O. What is the empirical formula of acetic anhydride?