

Name: _____

Blk: _____ Date: _____

Chemistry 11
STOICHIOMETRY
OF EXCESS + LIMITING REACTANTS

Until now all of the stoich problems we have completed assumed that all of the reactants are used up in the reaction. HOWEVER, sometimes chemical reactions are carried out so as to:

1. _____

2. _____

IMPORTANT TERMINOLOGY:

Excess Reactant: _____

Limiting Reactant: _____

Example 1. If for the synthesis reaction between hydrogen gas and oxygen gas, 20.0 g of H_2 (g) reacts with 100.0 g of O_2 (g), which reactant is in excess and by how much?

Step 1. Write out the balanced equation:

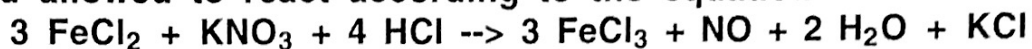
Step 2. Use both masses to solve for the mass of the **same** product

Step 3. The substance that produces the least amount of product is the **LIMITING REACTANT**

Step 4. To determine the amount of **EXCESS REACTANT** use the mass of the limiting reactant to solve for the actual mass of excess used:

Step 5. Subtract the above value from the amount of excess you have.

Example 2. If 56.8 grams of FeCl_2 , 14.0 g of KNO_3 and 40.0 g of HCl are mixed and allowed to react according to the equation:



Which reactants are in excess and by how much?

Step 1. Write out the balanced equation:

Step 2. Use all masses to solve for the mass of the **same** product

Step 3. The substance that produces the least amount of product is the **LIMITING REACTANT**

Step 4. To determine the amount of **EXCESS REACTANTS** use the mass of the limiting reactant to solve for the actual mass of the excess used:

Step 5. Subtract the above values from the amount of excesses that you have.

Ex: 26 - 32 pgs 133 - 134