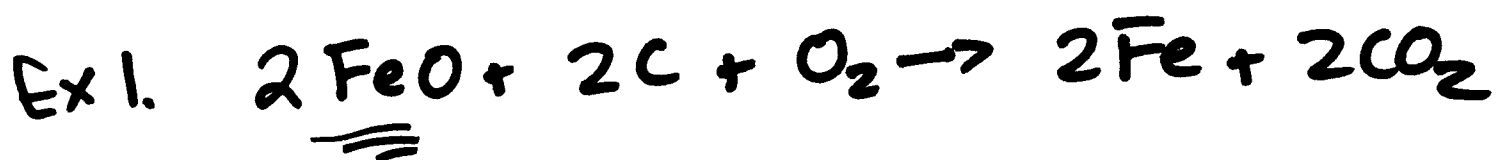


% PURITY

Feb 7/2013

Less than "expected" amount of product can result when reactants are less than 100% pure.

$$\% \text{ Purity} = \frac{\text{mass of pure reactant}}{\text{mass of impure reactant}} \times 100\%$$



If 100.0g of FeO produces 12.9g of pure Fe, what is the % purity of FeO used?

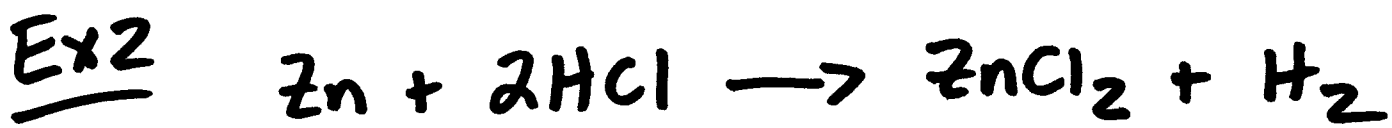
~~mass~~ Calculate the mass of pure FeO needed to make 12.9g Fe

$$\begin{aligned} \text{mass FeO} &= 12.9 \text{ g Fe} \times \frac{1 \text{ mol Fe}}{55.8 \text{ g Fe}} \times \frac{2 \text{ mol FeO}}{2 \text{ mol Fe}} \times \frac{71.8 \text{ g FeO}}{1 \text{ mol FeO}} \\ &= 16.6 \text{ g FeO} \end{aligned}$$

$$\% \text{ Purity} = \frac{\text{mass pure}}{\text{mass impure}} \times 100\%$$

$$= \frac{16.6 \text{ g FeO}}{100.0 \text{ g FeO}} \times 100\%$$

$$= \boxed{16.6\%}$$



Find the mass of 89.5% pure zinc required to produce 975ml of H_2 gas (STP).

$$\begin{aligned} \text{mass}_{\text{Zn}} &= .975\text{L H}_2 \times \frac{1\text{mol H}_2}{22.4\text{L H}_2} \times \frac{1\text{mol Zn}}{1\text{mol H}_2} \times \frac{65.4\text{g}}{1\text{mol Zn}} \\ &= 2.847\text{g Zn} . \end{aligned}$$

$$\% \text{ purity} = \frac{\text{pure}}{\text{impure}} \times 100$$

$$\text{impure} = \frac{\text{pure}}{\% \text{ purity}} \times 100$$

$$= \frac{2.847\text{g}}{.895}$$

$$= \boxed{3.18\text{g}}$$

Chemistry 11 Study Guide for Chemical Reactions Unit aka STOICHIOMETRY

Name: _____ Date: _____ Block: _____

My "Chemical Reactions Test" will take place on: _____!

Before you write your Chemical Reactions Test, be able to:

- Come up with balanced equations for the 6 types of chemical reactions**
 - classify reactions into 1 of the 6 types (synthesis, decomposition, single replacement, double replacement, neutralization, and combustion)
 - predict products for the 6 types of reactions when given the reactants, and then balance the equations
- Apply the Law of Conservation of Mass to balance chemical equations**
 - explain the *Law of Conservation of Mass*
 - balance chemical equations
 - use the abbreviations (s), (l), (g), and (aq) to represent solids, liquids, gases, and aqueous solutions, respectively
- Explain that chemical reactions are the result of old bonds breaking and new bonds forming as atoms rearrange**
 - define *reactants* and *products*
 - describe changes you might observe during the course of a chemical reaction
- Describe reactions in terms of energy changes**
 - define *endothermic* and *exothermic*
 - classify reactions as *endothermic* or *exothermic* based on observations
 - relate energy changes to bonds breaking and bonds forming
 - write thermochemical equations
- Perform stoichiometric calculations involving chemical reactions**
 - State Avogadro's hypothesis
 - Understand that the chemicals' coefficients in a balanced chemical equation represents the relative amounts of moles (or molecules) of each reactant and product in that reaction
 - Perform stoichiometric calculations involving reactions converting among any of the following units:
 - molecules
 - moles
 - grams
 - litres of gas at STP
 - molarity (concentration)
 - litres of solution
 - Identify a limiting/excess reagent
 - Calculate the amount of excess (moles/grams/litres) of the excess reagent

Calculate Percent yield

Calculate percent purity

Titrations!