Name _____ Date _____ Period _____

ZornScience
zornscience.org

Limiting & Excess Reactants

Chemistry

Convert each reactant to moles, find the product each one could make, and the smaller amount is limiting. Compare moles, never grams. % yield = actual ÷ theoretical × 100%.

1. $2Al + 3Cl_2 \rightarrow 2AlCl_3$. A reaction starts with 1.50 mol Al and 1.80 mol Cl_2. Which reactant is limiting? How many moles of $AlCl_3$ form?

2. $4Fe + 3O_2 \rightarrow 2Fe_2O_3$. 20.0 g of Fe reacts with 10.0 g of O_2. Which reactant is limiting? What mass of Fe_2O_3 forms?

3. In problem 2, which reactant is in excess, and what mass of it is left over?

CC BY-NC-SA 4.0 | zornscience.org

4. In problem 2, a student collects 25.3 g of Fe_2O_3. What is the percent yield?

5. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$. 8.00 g of CH_4 burns in 16.0 g of O_2. Which reactant is limiting? What mass of CO_2 forms?

6. $2H_2 + O_2 \rightarrow 2H_2O$. A student mixes 5.0 g of H_2 with 30.0 g of O_2 and says H_2 is limiting because it has less mass. Is the student right? Show why.

CC BY-NC-SA 4.0 | zornscience.org