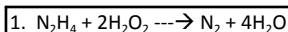


Liming Reactant

- Liming Reactant – the reactant that limits the amounts of other reactants that can combine
 - > Determines how much product can be formed
- Excess reactant – the reactant that is not used completely in a reacon

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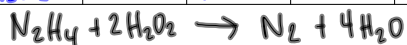
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If 0.750 mol of N_2H_4 is mixed with 0.500 mol of H_2O_2

- What is the liming reactant?
- How many moles of H_2O are formed?
- What is the excess reactant and how much is in excess?

Reactant	Have	Need	Enough?	LR or ER
N_2H_4	0.750 mol	0.25 mol	Yes	ER
H_2O_2	0.500 mol	1.5 mol	No	LR



a) H_2O_2 is LR

b) G: 0.500 mol H_2O_2 $0.500 \text{ mol } \text{H}_2\text{O}_2 \times \frac{4 \text{ mol } \text{H}_2\text{O}}{2 \text{ mol } \text{H}_2\text{O}_2}$
 U: ? mol H_2O

c) N_2H_4 $0.750 \text{ mol} - 0.25 \text{ mol} = 0.50 \text{ mol}$ = 1.0 mol H_2O

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2. If 20.5 g of chlorine is reacted with 20. g of sodium

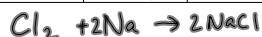
a. What is the limiting reactant?

b. How many grams of product are formed?

c. What is the excess reactant and how much is in excess?



Reactant	Have	Need	Enough?	LR or ER
Cl_2	20.5 g	30.8 g	No	LR
Na	20.0 g	13.3 g	Yes	ER



$$20.5 \text{ g Cl}_2 \times \frac{1 \text{ mol Cl}_2}{70.90 \text{ g Cl}_2} \times \frac{2 \text{ mol Na}}{1 \text{ mol Cl}_2} \times \frac{22.99 \text{ g Na}}{1 \text{ mol Na}} = 13.3 \text{ g Na}$$

$$20.0 \text{ g Na} \times \frac{1 \text{ mol Na}}{22.99 \text{ g Na}} \times \frac{1 \text{ mol Cl}_2}{2 \text{ mol Na}} \times \frac{70.90 \text{ g Cl}_2}{1 \text{ mol Cl}_2} = 30.8 \text{ g Cl}_2$$

a) Cl_2 is L.R.

b) G: 20.5 g Cl_2

U: ? g NaCl

$$20.5 \text{ g Cl}_2 \times \frac{1 \text{ mol Cl}_2}{70.90 \text{ g Cl}_2} \times \frac{2 \text{ mol NaCl}}{1 \text{ mol Cl}_2} \times \frac{58.44 \text{ g NaCl}}{1 \text{ mol NaCl}} = 33.8 \text{ g NaCl}$$

c) Na is ER $20.0 \text{ g} - 13.3 \text{ g} = 6.7 \text{ g}$

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