

Limiting Reactant Practice

- $2 \text{Na(s)} + \text{Cl}_2\text{(g)} \rightarrow 2 \text{NaCl(s)}$
 - 6.0 mol of Na and 4.0 mol of Cl_2 are mixed. How many moles of NaCl in moles can be made from this mixture?
 - What is the limiting reactant?
 - What is the excess reactant?
- $\text{C}_2\text{H}_4\text{(g)} + 3 \text{O}_2\text{(g)} \rightarrow 2 \text{CO}_2\text{(g)} + 2 \text{H}_2\text{O(g)}$
 - 2.7 mol of C_2H_4 is reacted with 6.3 mol of O_2 , how many moles of water will be made?
 - What is the limiting reactant?
 - What is the excess reactant?
- $2 \text{Cu(s)} + \text{S(s)} \rightarrow \text{Cu}_2\text{S(s)}$
 - If 80.00 grams of copper is reacted with 25.00 grams of sulfur, how many grams of product can be produced?
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 - How many grams of the excess reactant are left over at the end of the reaction?

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4. $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
- How many grams of CaO can be made by heating 24.8 grams of CaCO_3 ?
 - How many liters of CO_2 gas are made at STP from decomposing 24.8 g of CaCO_3 ?
5. $3 \text{CaCO}_3 + 2 \text{FePO}_4 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + \text{Fe}_2(\text{CO}_3)_3$
- 100.00 grams of calcium carbonate and 45.00 grams of iron (III) phosphate are mixed and allowed to react. What mass of iron (III) carbonate is formed?
6. $3 \text{NH}_4\text{NO}_3 + \text{Na}_3\text{PO}_4 \rightarrow (\text{NH}_4)_3\text{PO}_4 + 3 \text{NaNO}_3$
- 30.00 grams of ammonium nitrate and 50.00 grams of sodium phosphate are mixed and allowed to react. What mass of ammonium phosphate is formed?
 - What is the limiting reactant?
 - What is the excess reactant?
 - How many grams of excess reactant remain unreacted?

Answers:

1a) 6.0 mol NaCl	1b) Na	1c) Cl_2	2a) 4.2 mol H_2O	2b) O_2	2c) C_2H_4
3a) 100.2 g Cu_2S	3b) Cu	3c) S	3d) 4.814 g S		
4a) 13.9 g CaO	4b) 5.55 L CO_2		5a) 43.52 g $\text{Fe}_2(\text{CO}_3)_3$		
6a) 18.63 g $(\text{NH}_4)_3\text{PO}_4$	6b) NH_4NO_3	6c) Na_3PO_4	6d) 29.52 g Na_3PO_4		

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