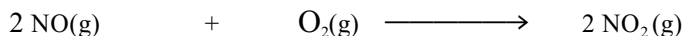


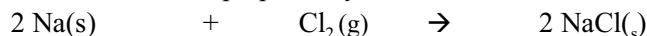
Limiting Reagent Problems

1. Nitric oxide reacts (NO), reacts instantly with oxygen gas to form nitrogen dioxide (NO₂), a dark-brown gas:



In an experiment 0.88 mole of NO is mixed with 0.53 mole of O₂. Calculate which of the two reactants is the limiting reagent. Calculate also the number of moles of NO₂ produced.

2. Sodium chloride can be prepared by the reaction of sodium metal with chlorine gas...



6.7 mol of Na are reacted with 3.2 mol of Cl₂(g). What is the limiting reagent? How many moles of NaCl are produced? How much of the excess reagent remains unreacted?

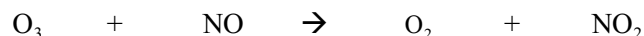
3. Ethene, C₂H₄, under goes combustion...



If 2.7 mol of C₂H₄ react with 6.3 mol of O₂, identify the limiting reagent. Calculate the moles of water produced. Calculate the moles of excess reagent remaining.

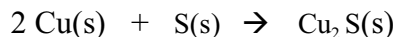
4. The depletion of ozone, O₃, in the stratosphere has been a matter of great concern among scientists in recent years. It is believed that ozone can react with nitric oxide, NO, that is discharged from jet planes.

The reaction is...



If 7.40 g of O₃ reacts with 0.67 g of NO, how many grams of NO₂ will be produced? Which compound is the limiting reagent? Calculate the number of moles of the excess reagent remaining at the end of the reaction.

5. Consider the reaction...



What is the maximum number of grams of Cu₂S (s) that can be formed when 80.0 g of Cu react with 25.0 g of S?

6. Hydrogen gas can be produced in the laboratory by the reaction of magnesium metal with hydrochloric acid...

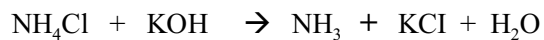


How many grams of hydrogen can be produced when 4.00 g of HCl (aq) are added to 3.00 g of magnesium, Mg.

7. How many grams of CO₂ (g) can be produced from the reaction of 100.0 g of CaCO₃(s) with 100.0 g of H₂SO₄(aq) according to...



8. How much ammonia is evolved when 34.0 g of ammonium chloride is added to 37.0 g of potassium hydroxide?



9. Consider the reaction...



If 0.86 mole of MnO_2 and 48.2 g of HCl react, which reagent will be used up first? How many grams of Cl_2 will be produced?

10. 50.0 g of $\text{O}_2(\text{g})$ are available for the combustion of 25.0 g of carbon. Is this an adequate amount? If so, by how much is the oxygen in excess? If not, by how much is the carbon in excess?

