

Gas Stoichiometry Practice

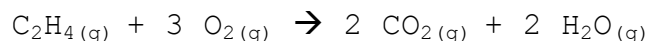
For all of these problems, assume that the reactions are being performed at a pressure of 1.0 atm and a temperature of 298 K.

1) Calcium carbonate decomposes at high temperatures to form carbon dioxide and calcium oxide:



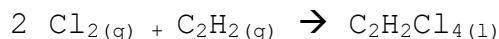
How many grams of calcium carbonate will I need to form 3.45 liters of carbon dioxide?

2) Ethylene burns in oxygen to form carbon dioxide and water vapor:



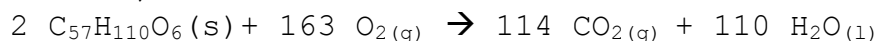
How many liters of water can be formed if 1.25 liters of ethylene are consumed in this reaction?

3) When chlorine is added to acetylene, 1,1,2,2-tetrachloroethane is formed:



How many liters of chlorine will be needed to make 75.0 grams of $\text{C}_2\text{H}_2\text{Cl}_4$?

4) Camels store the fat tristearin ($\text{C}_{57}\text{H}_{110}\text{O}_6$) in the hump. As well as being a source of energy, the fat is a source of water, because when it is used the reaction



takes place. What mass of water is available from 1.0 kg of fat?

5) The compound diborane (B_2H_6) was at one time considered for use as a rocket fuel. How many grams of liquid oxygen would a rocket have to carry to burn 10 kg of diborane completely? (The products of the combustion are B_2O_3 and H_2O .)