

GAS STOICHIOMETRY

Complete the following stoichiometric problems. Communicate your problem-solving approach, using internationally accepted symbols for elements, quantities, numbers, and units.

1. The first step in the industrial manufacture of sulfuric acid is the complete combustion of octasulfur. What mass of octasulfur is required to produce 112 L of sulfur dioxide at STP?
 2. Coal can undergo an incomplete combustion in the absence of a plentiful supply of air to produce deadly carbon monoxide gas. What volume of carbon monoxide is produced at SATP by the incomplete combustion of 150.kg of coal?
 3. The first recorded observation of hydrogen gas was made by the famous alchemist Paracelsus when he added iron to sulfuric acid. Calculate the volume of hydrogen gas at 20°C and 98 kPa produced by adding 10.g of iron to an excess of sulfuric acid.
 4. Ammonia reacts with sulfuric acid to form the important fertilizer, ammonium sulfate. What mass of ammonium sulfate can be produced from 75 kL of ammonia at 10°C and 110.kPa?
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