

Dalton's Law of Partial Pressure

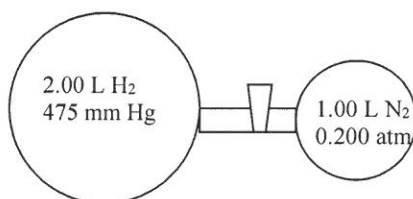
1. A 250 mL sample of oxygen is collected over water at 25° C and 760.0 torr pressure. What is the pressure of the dry gas alone? (Vapor pressure of water at 25° C = 23.8 torr)

0.97 atm

2. A 54.0 mL sample of hydrogen is collected over water at 23° C and 770.0 torr pressure. What is the volume of the dry gas at STP? (Vapor pressure of water at 23° C = 21.1 torr)

1.947 L

3. Consider the flasks diagrammed below. What are the final partial pressures of H₂ and N₂ after the stopcock between the two flasks is opened? Assume the volume between the flasks is negligible. What is the total pressure in mm Hg?



627 mm Hg

4. Deep-sea divers must use special gas mixtures in their tanks, rather than compressed air, to avoid serious problems, most notably a condition called "the bends." At depths of about 350 ft, divers are subject to a pressure of approximately 10 atm. A typical gas cylinder used for such depths contains 51.2 g of O₂ and 326.4 g of He and has a volume of 10.0 L. What is the partial pressure of each gas at 20.00°C, and what is the total pressure in the cylinder at this temperature?

P_{He} = 196.2 atm, P_{O₂} = 3.85 atm, P_{tot} = 200.1 atm