

Problema0254: Un recipiente pechado de 5L contén 25g de O₂ e 10g de H₂, a 25°C. Calcula a presión parcial de cada gas e a presión total.

Calculamos as presións parciais e logo as sumamos para obter a presión

$$P_{O_2} \cdot V = n_{O_2} \cdot R \cdot T$$

$$P_{O_2} = \frac{n_{O_2} \cdot R \cdot T}{V} = \frac{\frac{m}{M_m} \cdot R \cdot T}{V} = \frac{\frac{25 \text{ g}}{32 \text{ g/mol}} \cdot 0,082 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \cdot 298 \text{ K}}{5 \text{ L}} = \underline{3,82 \text{ atm}}$$

$$P_{H_2} \cdot V = n_{H_2} \cdot R \cdot T$$

$$P_{H_2} = \frac{n_{H_2} \cdot R \cdot T}{V} = \frac{\frac{m}{M_m} \cdot R \cdot T}{V} = \frac{\frac{10 \text{ g}}{2 \text{ g/mol}} \cdot 0,082 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \cdot 298 \text{ K}}{5 \text{ L}} = \underline{24,44 \text{ atm}}$$

$$P_T = P_{O_2} + P_{H_2} = 3,82 \text{ atm} + 24,44 \text{ atm} = \underline{28,26 \text{ atm}}$$