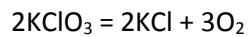


Answer on Question: 60024

Process reaction:



The ideal gas law:

$$pV = nRT$$

where  $p$  is the absolute pressure (SI unit pascals),  $V$  is the volume of gas (SI unit cubic metres),  $n$  is the amount of gas (SI unit moles),  $T$  is the temperature (SI unit kelvins)

Task data (to SI units)

$$V = 680 \text{ ml} = 0.68 \text{ l} = 0.00068 \text{ m}^3$$

$$T = 128\text{C} = 401\text{K}$$

$$P = 742 \text{ torr} = 98925.2 \text{ Pa}$$

$$R = 8.314 \text{ J K}^{-1}\text{mol}^{-1} \text{ (ideal gas constant)}$$

$$n = PV/RT$$

$$n = 0.0201 \text{ mol}$$

$$n\text{KClO}_3 : n(\text{O}_2) = 2:3$$

$$m(\text{KClO}_3) = M(\text{KClO}_3) \times n(\text{KClO}_3) = M(\text{KClO}_3) \times \frac{2}{3} n(\text{O}_2)$$

$$M(\text{KClO}_3) = 122.55 \text{ g/mol}$$

$$m(\text{KClO}_3) = 2.46 \text{ g}$$