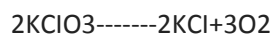


Question #62559, Chemistry / Other |

When heated KClO_3 decomposes into KCl and O_2 .



If this reaction produced 34.6 g of KCl , how much O_2 was produced in grams?

Answer:

The number of moles of KCl equals:

$$v(\text{KCl}) = m(\text{KCl}) / M_r(\text{KCl}) = 34.6 \text{ g} / 74.55 \text{ g mol}^{-1} = 0.4641 \text{ mol}$$

According to the reaction 2 moles of KClO_3 produces 2 moles of KCl and 3 moles of O_2 . Therefore,

$$v(\text{O}_2) = 3/2 v(\text{KCl}) = 1.5 \times 0.4641 \text{ mol} = 0.6962 \text{ mol}$$

Thus, the mass of O_2 is:

$$m = v(\text{O}_2) \times M_r(\text{O}_2) = 0.6962 \text{ mol} \times 32 \text{ g mol}^{-1} = 22.28 \text{ g}$$