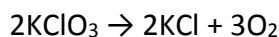


## Answer on Question #40476 - Chemistry – Other

### Question

Small quantities of oxygen can be prepared in the laboratory by heating potassium chlorate,  $\text{KClO}_3(\text{s})$ . The equation for the reaction is



Calculate how many grams of  $\text{O}_2(\text{g})$  can be produced from heating 95.9 grams of  $\text{KClO}_3(\text{s})$ .

### Answer:

Molar mass of  $\text{KClO}_3$  equals:

$$M(\text{KClO}_3) = M(\text{K}) + M(\text{Cl}) + 3M(\text{O}) = 39.1 + 35.5 + 3 \cdot 16.0 = 122.6 \frac{\text{g}}{\text{mole}}$$

Mass of 2 moles of potassium chlorate equals:

$$2 \cdot 122.6 = 245.2 \text{ g}$$

Molar mass of  $\text{O}_2$  equals:

$$M(\text{O}_2) = 2M(\text{O}) = 2 \cdot 16.0 = 32.0 \frac{\text{g}}{\text{mole}}$$

Mass of 3 moles of  $\text{O}_2$  equals:

$$3 \cdot 32.0 = 96 \text{ g}$$

Then we make a proportion:

245.2 g of  $\text{KClO}_3$  produce 96.0 g of  $\text{O}_2$

95.9 g of  $\text{KClO}_3$  – x g of  $\text{O}_2$

$$x = \frac{95.9 \cdot 96.0}{245.2} = 37.5 \text{ g}$$

**Answer:**  $m(\text{O}_2) = 37.5 \text{ g}$ .