Answer on Question #62560 - Chemistry – Other

Task:

When heated, KClO3 decomposes into KCl and O_2:
$2KClO_3 \rightarrow 2KCl+3O_2$.
If this reaction produced 34.6 of KCl, how much O_2 was produced in grams?

Solution:

$$n(KCl)=\frac{m(KCl)}{M(KCl)}=\frac{34.6g}{74.5\,g/mol}=0.4644\,mol;$$

$$2KClO_3 \rightarrow 2KCl+3O_2$$

$$\frac{n(KCl)}{2}=\frac{n(O_2)}{3};$$

$$n(O_2)=\frac{n(KCl)\times 3}{2}=\frac{0.4644\,mol\times 3}{2}=0.6966\,mol\,O_2;$$

$$m(O_2)=n(O_2)\times M(O_2)=0.6966\times 32=22.29g\approx 22.3g.$$

$$m(O_2)\approx 22.3g$$

Answer: $m(O_2)\approx 22.3g$