Answer on Question #69071 - Chemistry – Other

Task:

The chemical formula for potassium chlorate is $KClO_3$. What is weight of the Cl (chlorine) in 13.664 grams of potassium chlorate? (Atomic weights: K, 39; Cl, 35; O, 16).

Solution:

Let's find the molar mass of potassium chlorate:

$$M(KClO_3) = Ar(K) + Ar(Cl) + 3 * Ar(O);$$

$$M(KClO_3) = 39 + 35 + 3*16 = 122 \left(\frac{g}{mol}\right)$$

Let's find the percentage of chlorine in potassium chlorate:

$$w(Cl) = \frac{Ar(Cl)}{M(KClO_3)} = \frac{35}{122} = 0.2869 \ or \ 28.69\%$$

Let's find the weight of the Cl in 13.664 grams of potassium chlorate:

$$m(Cl) = w(Cl) * m(KClO_3) = 0.2869 * 13.664 = 3.920(g).$$

Answer: 3.92 grams of the Cl in 13.664 grams of $KClO_3$.