$$\underset{2.5\ g}{2\ KClO_3\ (s)} \rightarrow 2\ KCl\ (s) + \underset{x\ g}{3\ O_2\ (g)}$$

1. How many grams of O_2 is produced if 2.50 g of $KClO_3$ is completely decomposed by heating?

$$x\ g\ O_2 = 2.5\ \cancel{g\ KClO_3} \times \frac{(1\ \cancel{mol\ KClO_3})}{(122.5\ \cancel{g\ KClO_3})} \times \frac{(3\ \cancel{mol\ O_2})}{(2\ \cancel{mol\ KClO_3})} \times \frac{(32\ g\ O_2)}{(1\ \cancel{mol\ O_2})} = 0.98\ g\ O_2$$

2. How many grams of KCl is produced if 2.50 g of $KClO_3$ is decomposed?

$$\underset{2.5\ g}{2\ KClO_3\ (s)} \rightarrow \underset{x\ g}{2\ KCl\ (s)} + 3\ O_2\ (g)$$

$$x\ g\ KCl = 2.5\ \cancel{g\ KClO_3} \times \frac{(1\ \cancel{mol\ KClO_3})}{(122.5\ \cancel{g\ KClO_3})} \times \frac{(2\ mol\ KCl)}{(2\ \cancel{mol\ KClO_3})} \times \frac{(74.5\ g\ KCl)}{(1\ \cancel{mol\ KCl})} = 1.52\ g\ KCl$$

3. How many moles of $KClO_3$ is used to produce 10 moles of O_2?

$$\underset{x\ mol}{2\ KClO_3\ (s)} \rightarrow 2\ KCl\ (s) + \underset{10\ mol}{3\ O_2\ (g)}$$

$$x\ mol\ KClO_3 = 10\ \cancel{mol\ O_2} \times \frac{(2\ mol\ KClO_3)}{(3\ \cancel{mol\ O_2})} = 6.7\ mol\ KClO_3$$

4. How many moles of KCl is produced if 15 g of $KClO_3$ is used?

$$\underset{15\ g}{2\ KClO_3\ (s)} \rightarrow \underset{x\ mol}{2\ KCl\ (s)} + 3\ O_2\ (g)$$

$$x\ ml\ KCl = 15\ \cancel{g\ KClO_3} \times \frac{(1\ \cancel{mol\ KClO_3})}{(122.5\ \cancel{g\ KClO_3})} \times \frac{(2\ mol\ KCl)}{(2\ \cancel{mol\ KClO_3})} = 0.12\ mol\ KCl$$

5. How many liters of O_2 is produced if 5 moles of $KClO_3$ is used?

$$\underset{5\ mol}{2\ KClO_3\ (s)} \rightarrow 2\ KCl\ (s) + \underset{x\ L}{3\ O_2\ (g)}$$

$$x\ L\ O_2 = 5\ \cancel{mol\ KClO_3} \times \frac{(3\ \cancel{mol\ O_2})}{(122.5\ \cancel{g\ KClO_3})} \times \frac{(22.4\ L\ O_2)}{(1\ \cancel{mol\ O_2})} = 168\ L\ O_2$$

6. How many liters of O2 is produced if 10 g of KClO3 s used?

$$\underset{10\ g}{2\ KClO_3\ (s)} \rightarrow 2\ KCl\ (s) + \underset{x\ L}{3\ O_2\ (g)}$$

$$x\ L\ O_2 = 10\ \cancel{g\ KClO_3} \times \frac{(1\ \cancel{mol\ KClO_3})}{(122.5\ \cancel{g\ KClO_3})} \times \frac{(3\ \cancel{mol\ O_2})}{(2\ \cancel{mol\ KClO_3})} \times \frac{(22.4\ L\ O_2)}{(1\ \cancel{mol\ O_2})} = 2.74\ L\ O_2$$