

Mass-Mass Stoichiometry

200.1 g of NH_4NO_3 decomposes according to the equation given below, calculate the grams of H_2O formed.

$$\text{NH}_4\text{NO}_3 \rightarrow \text{N}_2\text{O} + 2 \text{H}_2\text{O}$$

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Mass	200.1g			
			?g	
Mass	? mol			?mol

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Step 1

$$200.1 \text{ g NH}_4\text{NO}_3 \times \frac{1 \text{ mol NH}_4\text{NO}_3}{80.043 \text{ g NH}_4\text{NO}_3} = 2.500 \text{ mol NH}_4\text{NO}_3$$

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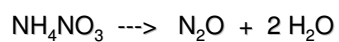
Step 2

$$2.500 \text{ mol NH}_4\text{NO}_3 \times \frac{2 \text{ mol H}_2\text{O}}{1 \text{ mol NH}_4\text{NO}_3} = 5.000 \text{ mol H}_2\text{O}$$

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Mass 200.1g 90.08g

Mass 2.500 mol 5.000 mol

Step 3 Molar mass H_2O

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Step 1

Step 2

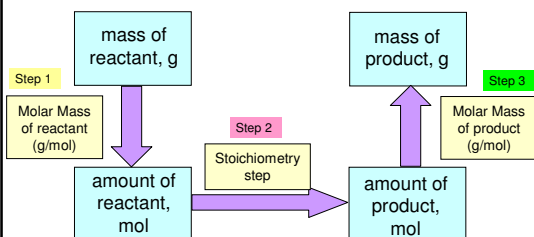
Step 3

$$200.1 \text{ g NH}_4\text{NO}_3 \times \frac{1 \text{ mol NH}_4\text{NO}_3}{80.043 \text{ g NH}_4\text{NO}_3} \times \frac{2 \text{ mol H}_2\text{O}}{1 \text{ mol NH}_4\text{NO}_3} \times \frac{18.015 \text{ g H}_2\text{O}}{1 \text{ mol H}_2\text{O}} =$$

90.08 g H_2O

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Mass-Mass Stoichiometry



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