

Answer on Question #65459, Chemistry / General Chemistry

Aqueous sulfuric acid

H_2SO_4

will react with solid sodium hydroxide

NaOH

to produce aqueous sodium sulfate

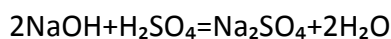
Na_2SO_4

and liquid water

H_2O

. Suppose 8.8 g of sulfuric acid is mixed with 5.40 g of sodium hydroxide. Calculate the maximum mass of water that could be produced by the chemical reaction. Be sure your answer has the correct number of significant digits.

Answer



2MolNaOH responds with 1mol H_2SO_4

$$V_{\text{NaOH}} = m/M = 5.4\text{g}/40\text{g}/\text{Mol} = 0.135\text{Mol}$$

$$V_{\text{H}_2\text{SO}_4} = m/M = 8.8\text{g}/98\text{g}/\text{Mol} = 0.0898\text{Mol}$$

NaOH a lack of

$$2\text{MolNaOH}/0.135\text{MolNaOH} = 2\text{MolH}_2\text{O}/X\text{mol H}_2\text{O}$$

$$V_{\text{H}_2\text{O}} = 0.135\text{Mol}$$

$$m(\text{H}_2\text{O}) = V * M = 0.135\text{Mol} * 18\text{g}/\text{Mol} = 2.43\text{g}$$

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