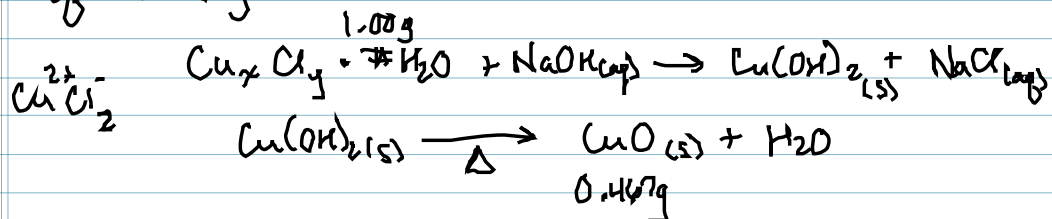


HYDRATES $MX \cdot nH_2O$ $CuSO_4 \cdot 5H_2O$ anhydrous \rightarrow "no water"

1.00g of a copper chloride hydrate $Cu_xCl_y \cdot nH_2O$ reacts with excess NaOH (aq) forming $Cu(OH)_2$ (s). When the $Cu(OH)_2$ is heated it decomposes in CuO (s).

0.467g of CuO is formed. Write out the balanced equations and determine the formula of the hydrate

 CuO $M_m = 79.55 \text{ g/mol}$

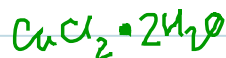
$$\%Cu = \frac{63.55g}{79.55g} = 0.7989$$

$$0.467g \times 0.7989 = 0.373g \text{ Cu} \times \frac{1 \text{ mol}}{63.55g} = 0.00587 \text{ mol Cu}$$

$$0.0117 \text{ mol Cl} \times \frac{35.45g}{1 \text{ mol}} = 0.416g \text{ Cl}$$

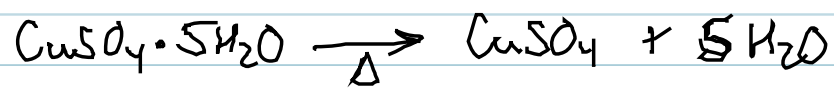
$\begin{array}{r} 1.00 \text{ g} \\ - 0.373 \text{ g Cu} \\ - 0.416 \text{ g Cl} \\ \hline 0.211 \text{ g H}_2\text{O} \end{array}$	$\begin{array}{r} Cu \text{ } 0.00587 \rightarrow 1 \\ Cl \text{ } 0.0117 \rightarrow 2 \\ H_2O \text{ } 0.0117 \rightarrow 2 \end{array}$
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$$0.211 \text{ g H}_2\text{O} \times \frac{1 \text{ mol}}{18.02g} = 0.0117 \text{ mol H}_2\text{O}$$

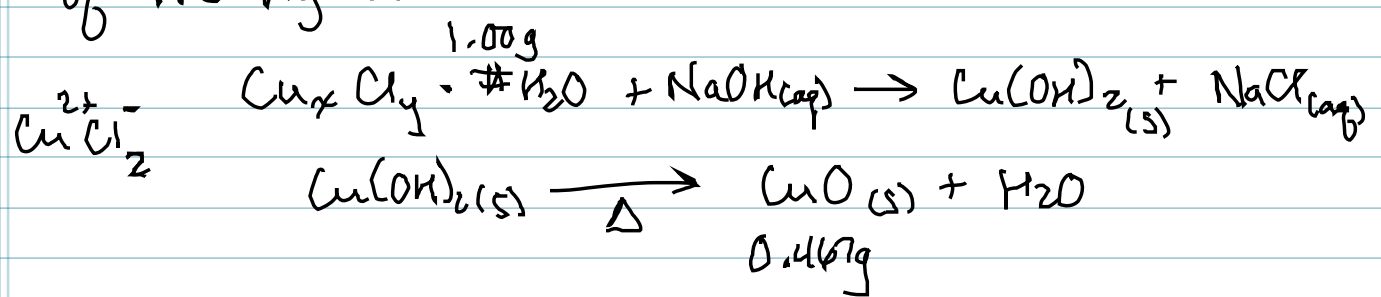


HYDRATES $MX \cdot \# H_2O$

$CuSO_4 \cdot 5H_2O$ anhydrous \rightarrow "no water"



1.00g of a copper chloride hydrate $Cu_x Cl_y \cdot \# H_2O$ reacts with excess NaOH (aq) forming $Cu(OH)_2 (s)$. When the $Cu(OH)_2$ is heated it decomposes in $CuO (s)$. 0.467g of CuO is formed. Write out the balanced equations and determine the formula of the hydrate



CuO $M_m = 79.55 \text{ g/mol}$ $\% Cu = \frac{63.55}{79.55} = 0.7989$

$0.467 \text{ g} \times 0.7989 = 0.373 \text{ g Cu}$ $\times \frac{1 \text{ mol}}{63.55 \text{ g}} = \frac{0.00587 \text{ mol Cu}}{\times 2}$

$0.0117 \text{ mol Cl} \times \frac{35.45 \text{ g}}{1 \text{ mol}} = 0.416 \text{ g Cl}$

<p>1.00 g - 0.373 g Cu - 0.416 g Cl <hr style="width: 100%;"/>0.211 g H_2O</p>	<p>$Cu : 0.00587 \rightarrow 1$ $Cl : 0.0117 \rightarrow 2$ $H_2O : 0.0117 \rightarrow 2$</p>
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$0.211 \text{ g } H_2O \times \frac{1 \text{ mol}}{18.02 \text{ g}} = 0.0117 \text{ mol } H_2O$

