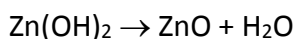
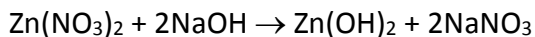


Answer on Question #76947 – Chemistry – General Chemistry

Can we change limiting reactant in chemical reaction to increase the amount of required product? Like if zinc nitrate hexahydrate (15.0 g) reacts with sodium hydroxide (16.0 g) to produce zinc oxide (which was just 4.0 g), then can we change the amount of reactants in such a way so that the amount of zinc oxide produced is more?

Solution:



$$n(\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}) = m/M = 15.0 \text{ g} / 297.0 \text{ g/mol} = 0.05 \text{ mol}$$

$$n(\text{NaOH}) = 16.0 \text{ g} / 40.0 \text{ g/mol} = 0.4 \text{ mol}$$

$$n(\text{ZnO}) = 4.0 \text{ g} / 81.0 \text{ g/mol} = 0.05 \text{ mol}$$

Zinc nitrate hexahydrate is limiting reactant

If we want more zinc oxide to be produced we must increase amount of $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$