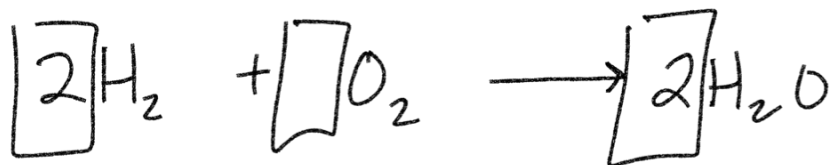


TH-6C General Chemistry Week 19 2/9



What mass ( $H_2O$ ) is produced when  $60g$  of  $H_2$  is reacted with  $250g$   $O_2$ ?

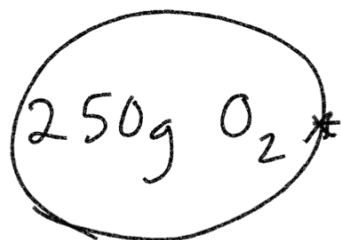
$$60g H_2 \times \frac{1 \text{ mol } H_2}{2.016g H_2} \times \frac{2 \text{ mol } H_2O}{2 \text{ mol } H_2} \times \frac{18.015g H_2O}{1 \text{ mol } H_2O} = \boxed{536g H_2O}$$

$$H_2 = 2 * 1.008 = 2.016g$$

$$H : 2 * 1.008 = 2.016$$

$$O : 1 * 15.999 = 15.999$$

$$18.015$$



limiting reagent

$$\frac{1 \text{ mol } O_2}{31.998g O_2} \times \frac{2 \text{ mol } H_2O}{1 \text{ mol } O_2} \times \frac{18.015g H_2O}{1 \text{ mol } H_2O} = \boxed{282g H_2O}$$

$O_2$  limiting reagent

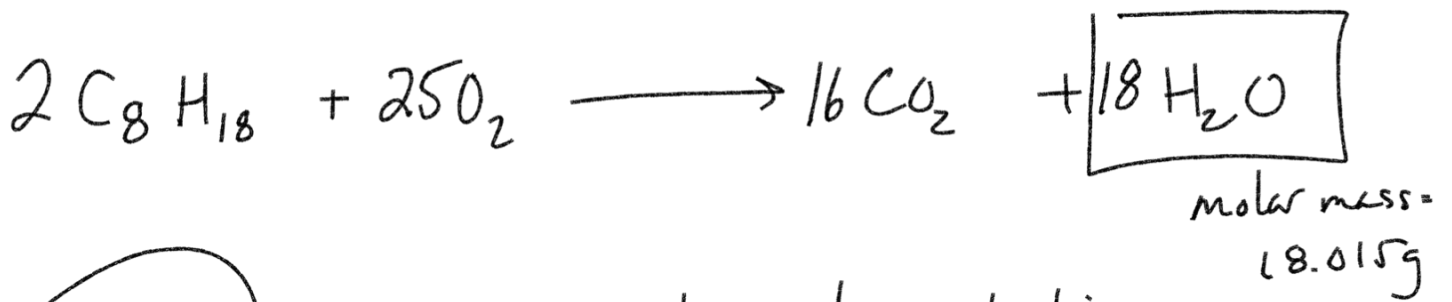
$$282g H_2O$$

$$(281.5g)$$

What is the remaining mass of the excess reagent?  $\rightarrow H_2$

$$281.5g H_2O \times \frac{1 \text{ mol } H_2O}{18.015g H_2O} \times \frac{2 \text{ mol } H_2}{2 \text{ mol } H_2} \times \frac{2.016g H_2}{1 \text{ mol } H_2} = 31.5g H_2$$

$$60 - 31.5 = \boxed{28.5g H_2 \text{ left over}}$$



Amount reactant mol      mol ratio      Amount of H<sub>2</sub>O (g)

400,860g C<sub>8</sub>H<sub>18</sub>

1,000,000g O<sub>2</sub>

$$400,860 \text{g C}_8\text{H}_{18} * \frac{1 \text{ mol C}_8\text{H}_{18}}{114.232 \text{g C}_8\text{H}_{18}} * \frac{18 \text{ mol H}_2\text{O}}{2 \text{ mol C}_8\text{H}_{18}} * \frac{18.015 \text{g}}{1 \text{ mol}}$$

$$\boxed{568,960 \text{g}}$$

C:  $8 * 12.011 = 96.088$

H:  $18 * 1.008 = 18.144 \text{g}$

114.232g

$$1,000,000 \text{g O}_2 * \frac{1 \text{ mol O}_2}{31.998 \text{g}} * \frac{18 \text{ mol H}_2\text{O}}{25 \text{ mol O}_2} * \frac{18.015 \text{g}}{1 \text{ mol}}$$

↑  
limiting

$$\boxed{405,363 \text{g}}$$

405,363