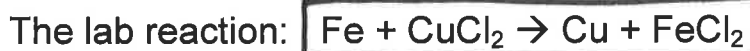


% Yield NOTES

$$\% \text{ YIELD} = \frac{\text{lab result}}{\text{theo (stoich) result}} \times 100$$



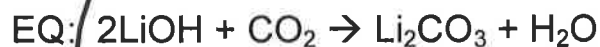
If you started with 3.00 grams of iron nails and excess CuCl_2 , find the mass of copper metal that you theoretically could produce:

$$3.00\text{g Fe} \left(\frac{1 \text{ mol Fe}}{55.85\text{g}} \right) \left(\frac{1 \text{ mol Cu}}{1 \text{ mol Fe}} \right) \left(\frac{63.55\text{g}}{1 \text{ mol Cu}} \right) = \boxed{3.41\text{g Cu}} \\ \text{theo}$$

If you only produced 3.10 grams of Cu in the lab, calculate your percent yield:

$$\% \text{ Y} = \frac{3.10\text{g}}{3.41\text{g}} \times 100 = \boxed{90.9\% \text{ Yield}}$$

Solid lithium hydroxide is used to absorb carbon dioxide released by astronauts in the space station.



1) The average human releases 849 g of CO_2 daily. How many molecules of CO_2 is this?

$$849\text{g CO}_2 \left(\frac{1 \text{ mol CO}_2}{44.01\text{g}} \right) \left(\frac{6.02 \times 10^{23} \text{ molec}}{1 \text{ mol CO}_2} \right) = 1.16 \times 10^{25} \text{ molecules CO}_2$$

2) How many grams of lithium carbonate are needed to absorb this daily CO_2 ? (start with molecules)

$$1.16 \times 10^{25} \text{ molec CO}_2 \left(\frac{1 \text{ mol CO}_2}{6.02 \times 10^{23} \text{ molec}} \right) \left(\frac{1 \text{ mol Li}_2\text{CO}_3}{1 \text{ mol CO}_2} \right) \left(\frac{73.89\text{g}}{1 \text{ mol Li}_2\text{CO}_3} \right) = 1423.8\text{g} \\ \boxed{1420\text{g Li}_2\text{CO}_3}$$

3) If you react 849 g of CO_2 and only produce 1400. g of Li_2CO_3 , what is your percent yield?

$$\% \text{ Y} = \frac{1400.\text{g (lab)}}{1420\text{g (theo)}} \times 100 = \boxed{98.6\% \text{ Yield}}$$