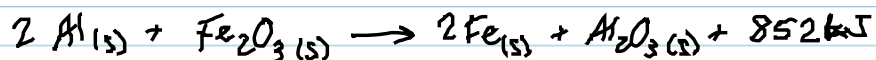


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10.0g Al, 35.0g Fe_2O_3 reacted; the actual yield was 14.2g Fe.

Calculate a) the % yield b) how much heat was released

$$10 \text{ g Al} \times \frac{1 \text{ mol}}{26.98 \text{ g}} \times \frac{2 \text{ mol Fe}}{2 \text{ mol Al}} = 0.371 \text{ mol Fe}$$

$$35.0 \text{ g Fe}_2\text{O}_3 \times \frac{1 \text{ mol}}{159.70 \text{ g}} \times \frac{2 \text{ mol Fe}}{1 \text{ mol Fe}_2\text{O}_3} = 0.438 \text{ mol Fe}$$

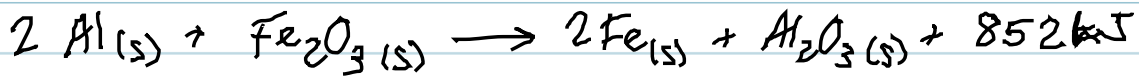
$$0.371 \text{ mol Fe} \times \frac{55.85 \text{ g}}{1 \text{ mol}} = 20.7 \text{ g Fe} \quad \text{Theoretical yield}$$

$$\% \text{ yield} = \frac{14.2 \text{ g}}{20.7 \text{ g}} \times 100\% = 92.8\%$$

$$14.2 \text{ g Fe} \times \frac{1 \text{ mol Fe}}{55.85 \text{ g}} \times \frac{-852 \text{ kJ}}{2 \text{ mol}} = -146 \text{ kJ}$$

11.07.2012 1:15p

11/7/12, 5:58 AM, 21m 38s



10.0g Al, 35.0g Fe₂O₃ reacted; the actual yield was 19.2g Fe.

Calculate a) the % yield b) how much heat was released

$$10 \text{ g Al} \times \frac{1 \text{ mol}}{26.98 \text{ g}} \times \frac{2 \text{ mol Fe}}{2 \text{ mol Al}} = 0.371 \text{ mol Fe}$$

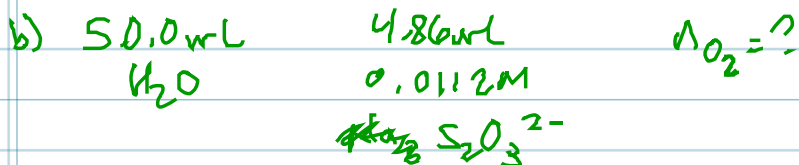
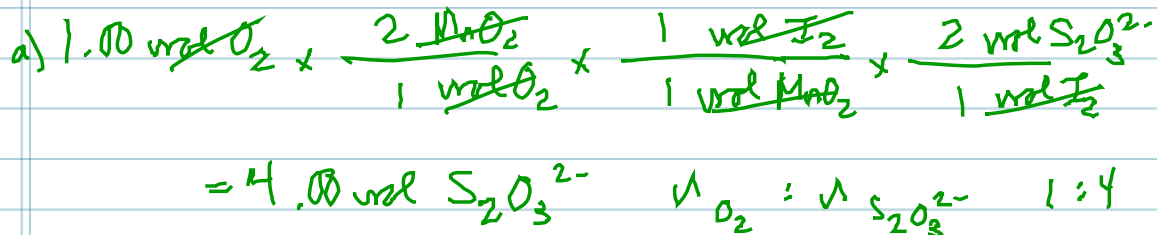
$$35.0 \text{ g Fe}_2\text{O}_3 \times \frac{1 \text{ mol}}{159.70 \text{ g}} \times \frac{2 \text{ mol Fe}}{1 \text{ mol Fe}_2\text{O}_3} = 0.438 \text{ mol Fe}$$

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1993B



$$\text{mol} = M \times L = (0.0112 \text{ M})(0.00486 \text{ L}) = 5.44 \times 10^{-5} \text{ moles } S_2O_3^{2-}$$

$$5.44 \times 10^{-5} \text{ mol } S_2O_3^{2-} \times \frac{1 \text{ mol } O_2}{4 \text{ mol } S_2O_3^{2-}} = 1.36 \times 10^{-5} \text{ mol } O_2$$

$$M_{O_2} = \frac{1.36 \times 10^{-5} \text{ mol}}{0.0500 \text{ L}} = 2.72 \times 10^{-4} \text{ M } O_2$$

↓ to make 1.00 L

$$V = \frac{nRT}{P} = \frac{(2.72 \times 10^{-4} \text{ mol})(0.082 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}})(298 \text{ K})}{1 \text{ atm}}$$

2.72 × 10⁻⁴ moles O₂

$$V = 6.65 \times 10^{-3} \text{ L} \rightarrow 6.65 \text{ mL}$$

of dry O₂ gas