

Answer on Question #81816 – Chemistry – Other

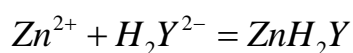
Task:

The Zn in 0.7556-g sample of foot powder was titrated with 21.27 mL of 0.01645 M EDTA. Calculate the percentage of Zn in this sample.

Solution:

Reagents for EDTA titrations: EDTA, H_4Y and $Na_2H_2Y \cdot 2H_2O$.

Complexes of EDTA and metal ions (1:1).



$$n(Zn^{2+}) = n(H_2Y^{2-});$$

$$C = \frac{n}{V}; \Rightarrow n = C * V$$

$$V(H_2Y^{2-}) = 21.27 \text{ mL} = 0.02127 \text{ L};$$

$$n = \frac{m}{M}; \quad M(Zn) = 65.38 \text{ g/mol};$$

$$\frac{m(Zn)}{M(Zn)} = C(H_2Y^{2-}) * V(H_2Y^{2-});$$

$$\frac{m(Zn)}{65.38 \text{ g/mol}} = 0.01645 \text{ M} * 0.02127 \text{ L};$$

$$m(Zn) = 65.38 \text{ g/mol} * 0.01645 \text{ M} * 0.02127 \text{ L} = 0.022876 \text{ g}$$

$$w(Zn) = \frac{m(Zn)}{m(\text{sample})} * 100\% = \frac{0.022876 \text{ g}}{0.7556 \text{ g}} * 100\% = 3.0275\%$$

$$w(Zn) = 3.0275\%$$

Answer: 3.0275% of Zn.