

Answer on question #79880, Chemistry-general chemistry

Question:

What volume of concentrated (8 M) phosphoric acid is needed to prepare 2.5 m³ of 2.4 M H₃PO₄?

$$C_1(\text{H}_3\text{PO}_4) = 8 \text{ mol/l}$$

$$C_2(\text{H}_3\text{PO}_4) = 2.4 \text{ mol/l}$$

$$V_2(\text{H}_3\text{PO}_4) = 2.5 \text{ m}^3 = 2500 \text{ l}$$

$$V_1(\text{H}_3\text{PO}_4) = ?$$

Solution:

$$n_1(\text{H}_3\text{PO}_4) = C_1 \times V_1$$

$$n_2 = C_2 \times V_2$$

$$n_1 = n_2 \quad C_1 \times V_1 = C_2 \times V_2$$

$$V_1 = (C_2 \times V_2) / C_1 = 2.4 \times 2500 / 8 = 750 \text{ l}$$

Answer: need 750 l H₃PO₄

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