

Answer on Question #72030 - Chemistry - General Chemistry

Question:

suppose you have 400.0 mL of 0.25 M NaHCO₃ solution. If you dilute this to 500.0 mL with water, what is the new molarity?

Solution:

$$V (\text{NaHCO}_3) = 400 \text{ mL} = 0.4 \text{ L};$$

$$C (\text{NaHCO}_3) = 0.25 \text{ M};$$

$$n (\text{NaHCO}_3) = C (\text{NaHCO}_3) * V (\text{NaHCO}_3) = 0.25 * 0.4 = 0.1 \text{ mol};$$

$$C' (\text{NaHCO}_3) = n (\text{NaHCO}_3) / V' (\text{NaHCO}_3) = 0.1 / (0.4 + 0.5) = 0.1 / 0.9 = 0.11 \text{ M}.$$

Answer: 0.11 M.