

% Concentration

1. V/V

Uses volumes (must be same units)

i. Vinegar

ii. Rubbing alcohol

5% v/v acetic acid means 5 mL in 100 mL

$$v/v = \frac{V_{\text{solute}}}{V_{\text{solution}}} \times 100$$

A solution of rubbing alcohol contains 140 mL pure propanol in 200 mL of solution. What is the concentration in v/v of propanol in the rubbing alcohol?

$$v/v = \frac{V_{\text{solute}}}{V_{\text{solution}}} \times 100 = \frac{140\text{mL}}{200\text{mL}} \times 100 = 0.7 \times 100 = 70\%$$

2. W/V

Mass (weight) of solute in a Volume of solution

$$w/v = \frac{W_{\text{solute}}}{V_{\text{solution}}} \times 100$$

An IV solution is made by mixing 2.8 g of salt into water to make 250 mL of solution. What is the w/v% of salt in the IV solution?

$$w/v = \frac{W_{\text{solute}}}{V_{\text{solution}}} \times 100 = \frac{2.8\text{g}}{250\text{mL}} \times 100 = 1.12\%$$