

Practice

How many grams of potassium carbonate are needed to make 150 mL of a 5.5 M solution?

$$150 \times 5.5 \text{ M} = \frac{x}{.15 \text{ L}} \times .15$$

$$0.825 \text{ mol}$$

$$150 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} = .15 \text{ L}$$

$$0.825 \text{ mol} \times \frac{138 \text{ g}}{1 \text{ mol } \text{K}_2\text{CO}_3} = 113.8 \text{ g}$$

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Practice

What is the concentration (in M) of an aqueous solution with a volume of 650 mL that contains 300.0 grams of iron (II) chloride?

$$\frac{2.38 \text{ mols}}{0.65 \text{ L}} = 3.66 \text{ M}$$

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Percent by Mass

$$\frac{\text{mass of solute}}{\text{mass of solution} \times 100}$$

(solute + solvent)

Example:

~~In order to maintain a sodium chloride (NaCl) concentration similar to ocean water, an aquarium must contain 3.6 g NaCl per 100.0 g of water. What is the percent by mass of NaCl in the solution?~~

$$\frac{3.6 \text{ g}}{103.6 \text{ g}} \times 100 = 3.47\%$$

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Percent by Volume

$$\frac{\text{volume of solute}}{\text{volume of solution}} \times 100$$

Example:

What is the percent by volume of ethanol ($\text{C}_2\text{H}_5\text{OH}$) in a solution that contains 35 mL of ethanol dissolved in 155 mL of water?

$$\frac{35}{(155 + 35)} \times 100 = 18.4\%$$

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Practice

What is the percent by volume of isopropyl alcohol in a solution that contains 24 mL of isopropyl alcohol in 1.1 L of water?

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Practice

What is the percent by mass of NaHCO_3 in a solution containing 20.0 g of NaHCO_3 dissolved in 600.0 mL of H_2O ?

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Attachments

solutionSalt.zip

clipboard(20615).galleryitem