

What is the molarity of 25 g of NaNO₃ is dissolved in 400 ml of solution?

Solution:

First we need to find the moles in 25g of NaNO₃.

To find moles we use the overall mass (Mr) and we get it from the periodic table.

$Mr(\text{Na N O}_3) = 23 + 14 + 16 \times 3 = 85 \text{ g}$ so we know that 85 g are in one mole of NaNO₃.

To get the moles we convert $\frac{25\text{g} \times 1\text{mole}}{85\text{g}} = 0,29\text{mole}$

Now we convert ml into L. $\frac{400\text{ml} \times 1\text{L}}{1000\text{ml}} = 0,4\text{L}$

Molarity = Moles of solute / Liters of solution. $C_M = \frac{v}{V}$

$$C_M = \frac{0,29\text{mol}}{0,4\text{L}} = 0,73 \text{ mol/L}$$

Note: mole / Liter (mol/L) is the unit for molarity (C_M).

Answer:

0,73 mol/L