Answer on the question #62595, Chemistry / General Chemistry

Question:

A solution of sodium hydroxide contains 10.0 g of sodium hydroxide dissolved in 1dmcube of solution. Express the concentration of the soltion in gdmcube and moldmcube.

Solution:

The concentration of the solution in g/dm^3:

$$\frac{m}{V} = \frac{10\ (g)}{1\ (dm^3)} = 10\ g/dm^3$$

To find the concentration of the solution in mol/dm^3, we should divide the number of the moles by the volume of solution. The number of the moles n is easily deducable from mass ($m = \ 10(g)$) and molar mass ($M = 39.997\ (g/mol)$) of sodium hydroxide:

$$\frac{n}{V} = \frac{m}{MV} = \frac{10(g)}{39.997\ (g/mol) \cdot 1\ (dm^3)} = 0.25\ mol/dm^3$$

Answer: $10\ g/dm^3$, $0.25\ mol/dm^3$.