Answer on the Question #64161, Chemistry / Inorganic chemistry

calculate the concentration in mol/L, of a 20% (m/m) solution of sodium hydroxide that has a density of 1.43 g/ml

Solution:

Assume, that volume of the solution is 100 ml (V=100 ml). Mass of solution equal to:

$$m(solution) = V \cdot d = 100 \cdot 1.43 = 143\ g$$

Now we can find the mass of sodium hydroxide:

$$m(NaOH) = \frac{m(solution) \cdot 20\%}{100\%} = \frac{143 \cdot 20\%}{100\%} = 28.6\ g$$

Concentration of NaOH in solution equal to:

$$c(NaOH) = \frac{m(NaOH) \cdot 1000}{M(NaOH) \cdot V} = \frac{28.6 \cdot 1000}{40 \cdot 100} = 7.15 \frac{mol}{L}$$

Answer: concentration of sodium hydroxide equal to 7.15 mol/L.