Answer on the question #54226 – Chemistry – Physical Chemistry

Question:

The concentration of a solution of H_2O_2 is 6.8% (w/V). What is the volume concentration of the solution? Please explain.

Solution:

Mass concentration (weight per volume percentage) is frequently used in pharmacology. It is defined as:

$$(w/V\ \%\ ) = \frac{m(solute)}{V(solution)} \times 100\%.$$

The volume concentration is the ratio of the volume of the component to the volume of the solution:

$$\varphi(solute) = \frac{V(solute)}{V(solution)} \times 100\%.$$

As the relation between the mass and volume is density of the solute, then:

$$\varphi(solute) = (w/V\ \%\ )/\rho,$$

where ρ is density.

Thus, volume concentration of our solution (regarding 1.45 g/ml density of pure H_2O_2) is:

$$\varphi_i = 6.8/1.45 = 4.7\%.$$

Answer: Volume concentration of the H_2O_2 solution is 4.7%(vol.)