VOLUME STRENGTH OF H_2O_2

The volume strength of an H_2O_2 solution is defined as the volume of oxygen (O_2) evolved at standard temperature and pressure (STP) in milliliters obtained per milliliter of the H_2O_2 solution. In simpler terms, if 1 liter of the H_2O_2 solution generates 10 liters of oxygen at STP, the volume strength of the H_2O_2 is considered to be 10 volumes.

Consider a sample of H_2O_2 labeled 'V' volume.

The decomposition reaction of H_2O_2 is represented as $2H_2O_2 \rightarrow 2H_2O + O_2$

When 68 grams of H_2O_2 produces 22400 mL of oxygen

Then V mL of oxygen is obtained by $\frac{\mathbf{68}}{\mathbf{22400}} \times$ V grams of H_2O_2.

Expressing this relationship further, if 1 mL of H_2O_2 corresponds to $\frac{\mathbf{68}}{\mathbf{22400}} \times$ V grams of H_2O_2, then for 1000 mL (1 liter) of H_2O_2, the amount becomes $\frac{\mathbf{68}}{\mathbf{22.4}} \times$ V grams per liter.

Therefore, the strength of H_2O_2 is given by $\frac{\mathbf{68}}{\mathbf{22.4}} \times$ V.

This relates to the molarity, which is $\frac{\mathbf{V}}{\mathbf{11.2}}$

and the normality, which is $\frac{\mathbf{V}}{\mathbf{5.6}}$.