Preparation of standard solution

A solution of known molarity is called a standard solution. Its concentration is determined by a process known as standardization. If you have a primary standard (a compound which is very pure, stable, and with a high molecular weight) you can prepare a standard solution simply by dissolving a known amount of the compound in a known volume of liquid.

There are different Methodes to determind percent solution

1-Percent

One of the simplest forms of concentration is the percent. This simply means units per 100 units, or parts per 100 parts. The percent concentration can be used in three ways. It can be weight per weight, volume per volume or weight per volume basis.

a- w/w e.g. 3g/100g solution (3%).
b- w/v e.g. 3g/100ml solution (3%).
c- v/v e.g. 3ml/100ml solution (3%).

2-Parts per million

When dealing with a very small amount of a substance in solution, the concentration is often expressed in terms of parts per million. A 20 ppm concentration means 20 parts of solute dissolved for every 1,000,000 parts of solution. The unit of measurement can be weight or volume. Generally the ppm concentration is used to indicate milligrams of solute per liter of solution.

3-Molar solution

A molar solution implies concentration in terms of moles/liter. One molar (I M) solution means one mole of a substance (solute) per liter of solution. A mole means gram molecular weight or molecular weight of a substance in grams. So the molecular weight of a chemical is also its molar weight.

4-Normal solution/Normality

The other form of concentration used relatively frequently is normality, or N. Normality is expressed in terms of equivalents per liter, which means the number of equivalent weights of a solute per liter of a solution. The term normality is often used in acid-base chemistry. The equivalent weight of an acid is defined as the molecular weight divided by the number of reacting hydrogens of one molecule of acid in the reaction.

Steps for the preparation of a standard solution

1. Weigh the necessary substance (observe the indications: calcination, drying, etc.) .
   2. Put this substance in a 1 L volumetric flask.
   3. Add slowly approx. 200 mL distilled water and stir.
   4. Put the flask in a thermostat at 20 ^{0}C and maintain for 1 hour.
   5. Add distilled water up to the mark. Stir vigorously.
   6. Transfer the solution in a bottle and apply a label (date, name of the operator, name of the solution, normality).

Condtions should be fined in the standard solution

1. It must be available in a highly pure state.
2. It must be stable in air.
3. It must be easily soluble in water.
4. It should have a high molar mass.
5. In solution, when used in volumetric analysis, it must undergo complete and rapid reaction

Preparing some standared solution

. 35.9 N and 96.6%**:sulfuric acid H_2SO_4**

:hydrochloric acid **HCl**

. 12.2N and 37.2%

% acid	Acid volume (ml)	Water (ml)volume	Methods
20%	130	870	Carefully add acid to the water in volemetric flask
10%	61	939	
2N	53.5	946.5	
1N	27	973	

% acid	Acid volume (ml)	Water volume (ml)	Method
20%	510	490	Carefully add acid to the water in volemetric flask
10%	238	762	
2N	170	830	
1N	85	915	

: Sodium haydroxid NaOH

solution %	w.(g)NaOH	method
30%	386	Weight the compound and dissolve in water then dilute into 1 letter water
10%	108	
2N	80	
1N	40	