

Preparing Chemical Solutions

I. Before solution preparation.

- A. Determine volume of solution needed.
- B. Calculate the weight or volume of chemical(s) that will be added.
- C. Determine storage container, mixing container, volumetric devices and balance that will be needed.
- D. Determine equipment and supplies needed i.e. hotplate stirrer, fume hood, parafilm, stoppers, funnels, label tape, marking pen etc.
- E. Safety considerations – is this solution hazardous? Does it produce fumes or other hazards? Determine if gloves, goggles apron and fume hood are needed. Check with lab tech if you are unsure.
- F. Label containers
 1. Temporary containers e.g. beakers, erlenmeyer flasks, and volumetric flasks can be labeled with chemical abbreviations e.g. 1 M NaCl
 2. Storage containers must be labeled with the following information
 - a. Name of analysis, e.g. acid-base titration
 - b. Full list of chemicals (spelled-out) present including solvent e.g. 1M sodium chloride, 1% potassium chloride in the water. Chemical formulas are optional, e.g. 1M NaCl
 - c. NFP safety ratings for health, flammability, reactivity e.g. health:1 (slight), flammability:2 (moderate), reactivity:0 (none). This information can be found in the MSDS binders.
 - d. Preparation date , e.g.12/09/09
 - e. Initials of preparer , e.g., DJB

Sample storage container label

Acid-base titration
1M NaCl
1 M sodium chloride
in water
Health:1slight, flammability:0 none, Reactivity:0 none
12/9/09 DJB

II. Preparing solutions -directions for preparing solutions will vary depending on the solution. The simplest directions are as follows:

- A. Weigh or measure out chemicals needed.
- B. Add chemicals to temporary mixing container.
- C. Add solvent using one of the following methods*
 1. graduated cylinder
 2. Pipette
 3. volumetric flask- fill to mark on flask
- D. Mix until chemicals are dissolved with one of the following methods
 1. Magnetic stirrer and stir bar.
 2. Stirring rod
 3. Inversion--Cover flask with parafilm or stopper and invert several times.
- E. Pour prepared solution into labeled storage container.

III. After solution preparation

- A. Rinse all temporary containers into hazardous waste containers if needed.
- B. Rinse containers at least twice with de-ionized water and place on drying rack.

*Note: If you are making analytical standards then you must use pipettes, volumetric flasks and balances for all measurements. Graduated cylinders, beakers and erlenmeyer flasks do not have the needed accuracy for analytical standard preparation.

File name: Preparing Chemical solutions
Edited: 7-5-13