



Safety Gram

Spring
2019

Cleaning Laboratory Glassware

Cleaning the glassware in your lab isn't as simple as "washing the dishes." Below are a few techniques to help you not ruin your chemical solution or laboratory equipment.

It's generally easier to clean glassware if you do it right away. When detergent is used, it's usually one designed for lab glassware, such as Liquinox or Alconox (available in Chem Stores). These detergents are preferable to any dishwashing detergent you might use on dishes at home.

Most of the time, detergent and tap water are neither required or desirable. You can rinse your glassware with the proper solvent, then finish up with a couple of rinses with deionized water.

How to Wash out Common Lab Chemicals

- Water Soluble Solutions (e.g., sodium chloride or sucrose solutions) Rinse 3-4 times with deionized water then put the glassware away.
- Water Insoluble Solutions (e.g., solutions in hexane or chloroform) Rinse 2-3 times with ethanol or acetone, rinse 3-4 times with deionized water, then put the glassware away. In some situations, other solvents need to be used for the initial rinse.
- Strong Acids (e.g., concentrated HCl or H₂SO₄) Under the fume hood, carefully rinse the glassware with copious volumes of tap water. Rinse 3-4 times with deionized water, then put the glassware away.
- Strong Bases (e.g., 6M NaOH or concentrated NH₄OH) Under the fume hood, carefully rinse the glassware with copious volumes of tap water. Rinse 3-4 times with deionized water, then put the glassware away.
- Weak Acids (e.g., acetic acid solutions or dilutions of strong acids such as 0.1M or 1M HCl or H₂SO₄) Rinse 3-4 times with deionized water before putting the glassware away.

- Weak Bases (e.g., 0.1M and 1M NaOH and NH_4OH) Rinse thoroughly with tap water to remove the base, then rinse 3-4 times with deionized water before putting the glassware away.

Washing Special Glassware

- **Glassware Used for Organic Chemistry**

Rinse the glassware with the appropriate solvent. Use deionized water for water-soluble contents. Use ethanol for ethanol-soluble contents, followed by rinses in deionized water. Rinse with other solvents as needed, followed by ethanol and finally deionized water. If the glassware requires scrubbing, scrub with a brush using hot soapy water, rinse thoroughly with tap water, followed by rinses with deionized water.

- **Burets**

Wash with hot soapy water, rinse thoroughly with tap water, then rinse 3-4 times with deionized water. Be sure the final rinses sheet off of the glass. Burets need to be thoroughly clean to be used for quantitative lab work.

- **Pipets and Volumetric Flasks**

In some cases, you may need to soak the glassware overnight in soapy water. Clean pipets and volumetric flasks using warm soapy water. The glassware may require scrubbing with a brush. Rinse with tap water followed by 3-4 rinses with deionized water.



To Dry or Not to Dry

- **Not Drying**

It is inadvisable to dry glassware with a paper towel or forced air since this can introduce fibers or impurities that can contaminate the solution. Normally you can allow glassware to air dry on the shelf. Otherwise, if you are adding water to the glassware, it is fine to leave it wet (unless it will affect the concentration of the final solution). If the solvent will be ether, you can rinse the glassware with ethanol or acetone to remove the water, then rinse with the final solution to remove the alcohol or acetone.

- **Rinsing with Reagent**

If water will affect the concentration of the final solution, triple rinse the glassware with the solution.

- **Drying Glassware**

If glassware is to be used immediately after washing and must be dry, rinse it 2-3 times with acetone. This will remove any water and will evaporate quickly. While it's not a great idea to blow air into glassware to dry it, sometimes you can apply a vacuum to evaporate the solvent.

