

CHEM 251

Instructions for acid-washing glassware

For the analysis of substances present at very low concentrations, all laboratory ware must be very clean. The kind of cleaning one does depends on the nature of the analytical problem. In this course, we are normally most concerned with contamination by inorganic ions such as $\text{PO}_4^{3-}(\text{aq})$ and $\text{Ba}^{2+}(\text{aq})$. Acid washing is a good way to remove such ions. We present below a simple method for acid washing glassware that meets the needs of this course.

- Wash with detergent and rinse with tap water
- Rinse with a volume V mL of 8 M HNO_3 ; transfer waste to beaker
- Rinse twice with a volume of V mL of de-ionized water; transfer waste to beaker
- Rinse with a volume V mL of 1 M HCl ; transfer waste to beaker.
- Rinse with five 3-mL portions of de-ionized water; transfer waste to beaker

The volume V used will depend on the size of the container. We try to minimize the volumes of acid used both because 8M HNO_3 is fairly expensive and because we want to minimize the amount of waste generated. In general the volume V at each step should be to 5-10% of the volume of the object washed. Thus, to wash a 100 mL beaker, $V = 5 - 10$ mL.

DO NOT USE THE AUTOMATIC PIPETS TO MEASURE OUT THE VOLUMES OF ACID NEEDED FOR WASHING.

Repeated exposure to strong acids will damage the automatic pipets.
USE A GRADUATED CYLINDER.

When you have finished, be sure to dispose properly of the acid waste.

Finally, be sure to keep track of which acids in the laboratory are meant for washing and which acids are meant for other purposes. By choosing the wrong acid for the purpose at hand, you can spoil your results. When in doubt, ask your instructor.