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Technical Information: Cleaning Glassware

New Glassware

Newly manufactured glassware is slightly alkaline. For chemical tests that require a high degree of precision (example: trace analysis), new glassware should be soaked for several hours in acid water (a 1% solution of hydrochloric or nitric acid) before washing.

General Cleaning Methods

Clean glassware is hydrophilic and will have a uniformly wetted surface when distilled water is used as a final rinse. Contaminants such as detergent residues or grease will cause the water to bead and the cleaning procedure should be repeated.

Wash glassware as quickly as possible after use. If cleaning is not immediately possible, place the glassware in water to soak. If the glassware is not cleaned immediately, it may become impossible to remove the residue.

A non-alkaline detergent should be used. The concentration of detergent should be between 5 and 20% depending on the residue. The water should be hot (~80°C). Do not use abrasives or steel wool in the cleaning process. They can scratch the surface of the glassware. During washing, all parts of the glassware should be thoroughly scrubbed with a brush. Brushes with plastic or wooden handles are recommended. Do not use brushes with metal handles as the metal can scratch the glassware. Scratched glassware is more prone to break during experiments.

If the glassware is clouded or contains coagulated organic material, it should be cleaned with a chromic acid cleaning solution. **CAUTION: Chromic acid solution is strongly acidic and will burn the skin. It is also a carcinogen.** Extra care must be taken to make sure the chromic acid solution is disposed of properly. Make sure the chromic acid solution is disposed of in accordance with appropriate regulations.

The glassware may be rinsed with the chromic acid solution or it may be filled and allowed to stand. The length of time the glassware is allowed to stand depends on the amount of contamination. Relatively clean glassware may require just a few minutes; if organic material is present, it may be necessary to let the glassware stand all night.

Removing Grease

Grease is best removed by boiling in a weak solution of sodium carbonate. Acetone or another fat solvent may also be used. Strong alkalis should not be used. Silicone grease can be removed by soaking in decahydronaphthalene for 2 hours. Drain and rinse with acetone; be sure to rinse off all the cleaning agents.

Rinsing & Drying

After removal of residues, glassware can be rinsed initially with deionized tap water followed by a final rinse of distilled water. Pegboard drying is not recommended since airborne contaminants in the laboratory will be deposited on the “clean” glassware. Oven drying is suggested at temperatures ranging from 100-140°C. Open-ended glassware such as beakers should be covered with foil and stored in a dust-free cabinet.