

GLASSWARE CLEANING PROCEDURES

Jon Sack's Acid Cleaning Protocol

Materials you'll need: Chromerge bottle, Sulfuric Acid 9lb, Millipore H₂O, 95% EtOH, Acetone.

Time you'll need: At least an hour, dry time: overnight.

Safety Equipment: Viton Gloves, Safety Goggles, Lab Coat, Respirator or Fume Hood?

The basic principle underlying the running of this laboratory is:

CLEANLINESS IS A GOOD THING!

This protocol applies to the appearance of the lab and glassware, the planning and analysis of the experiments, and the state of the solutions.

If this is your first time or you need to review, please refer to MSDS for necessary precautions / hazardous awareness when carrying out Glass Cleaning Procedure.

CLEANING SOLUTIONS.

1. Millipore H₂O: This should be used fresh from the outlet filter. if the service light is on, remain calm, it only indicates that service is due soon, however; be aware that when the red light is on, Millipore Station should not be used, and the contact should be communicated with.
2. Chromic-sulfuric acid: Mix 1 bottle of Chromerge into a 9 lb bottle of concentrated sulfuric acid (AR Grade). Mix the solution by gently shaking it. The active solution is reddish-brown in color – it should be useable for ~1 month. Remember to date the bottle. The solution turns green with time, at which time it is totally inactive. Green solution should not be regenerated by the addition of fresh Chromerge – you may, however, try to regenerate less run-down solutions by addition of a second bottle of Chromerge. Again remember to date the bottle. You should never regenerate a bottle more than once.
 - THIS SOLUTION IS VERY CORROSIVE: YOU MUST WEAR PROPER PPE: LAB COAT AND NITRILE GLOVES WHEN YOU HANDLE THIS STUFF.
 - Solutions which have been left out for a few days, or which have been used to clean especially dirty glassware should be discarded directly.

NOTE: Chromic Acid CANNOT BE DUMPED DOWN THE DRAIN, small or large volume; it must be discarded as Hazardous Waste, in the _____ .

1. Ethanol (EtOH): 95 % EtOH
2. Acetone: From Burdick and Jackson.

GENERAL GLASSWARE CLEANING

(Beakers, Erlenmeyer flasks, volumetrics, etc.) Wear a lab coat, goggles, and ____ gloves, when you work with chromic-sulfuric acid.

1. Remember to note the status light on the Millipore System. (Green, yellow, red).
2. Rinse the glassware with Millipore H₂O to get rid of the major dirt. Note, this also rids the glassware of Cl⁻, which in chromic-sulfuric acid solutions will produce a carcinogenic vapor.
3. While it is still wet, fill the glassware with chromic-sulfuric acid. The solution should be nice brownish-red. Soak for at least ½ hr.
 - If you ever see vapors rise out of the glassware after addition of the acid, pour the acid out into the sink – turn the faucet on and leave the room. The vapors may be toxic. This should be done in the hood, or isolated area where user has approved respirator, viton gloves provide excellent protection, lab coat, and goggles should all be worn.
4. Return the acid to the bottle. If the chromic-sulfuric acid is green it should be discarded.

5. Rinse the pieces 10 times with Millipore H₂O. This procedure is tedious and boring, but you will be able to set a scheme to “semi-automate” it. It is, however, soothing on the nerves, and it can be done at the end of the day, while thinking or anything else, about past and future experiments.
6. Put the glassware in the drying oven (note the location), turn it on, and leave it there overnight.
7. Cap and seal all pieces with aluminum foil – after the glass has cooled to room temperature.

CLEANING OF LARGE PIPETS (1 – 25 ml)

Wear lab coat and gloves, possibly a face mask, when working with chromic-sulfuric acid.

1. Place the pipettes in a large cylinder(Big Wash, some sort of nickname?), tips up, and fill with Millipore H₂O. Ensure that none of the pipettes have the cotton plug remaining inside.
2. Pour out the H₂O, and add chromic-sulfuric acid up to the rim (~1 cm below). Soak for one hour or more. Check that all the pipettes are filled with the acid.
3. Pour the acid back into the bottle. Allow the pipettes to drain, and pour the remaining acid into the bottle.
4. Rinse the pipettes x 6 with Millipore H₂O. Remember all the pipettes must be filled completely each time.
5. Fill the cylinder with Millipore H₂O again. Draw ~20 ml of H₂O through each pipet. (1 rinse/multiple rinses?)
6. Repeat the above procedure with 95 % EtOH and Acetone.

After the Acetone cleaning, remove the pipettes and let them drain on a clean Kimwipe for a short time. Then place them in the drawer, as soon as possible after they are reasonably dry.