

Acid Bath (5% v/v HCl) and Acid Washing Protocol

- Ellen Esch, May 2019, adapted from National Field Manual for the Collection of Water-Quality Data. Book 9: Handbooks for Water-Resources Investigations. Chapter A3: Cleaning of equipment for water sampling. (2004) *editor* Francesca D. Wilde.
 - Note: PPE is super important. Pants, shoes, sleeves, lab coat, face, hands, etc.
 - ABSOLUTELY NO METAL NOR RUBBER ALLOWED IN ACID BATH (so look at what you put in)
 - As a secondary precaution (PPE is the first!), make sure you know where the eyewash and safety shower are, and how to use them. The acid will sting, so you will know if you need to use them.
 - If all else fails and you get some acid on yourself (clothes or otherwise), wash well with water. You will probably get a hole in your clothes. Which is why we take all steps to make sure you don't get a hole in your eyes.
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Make acid bath:

Add 5:95 parts concentrated HCl (37%) : nanopure water. Always add acid to water.

- For 20 L acid bath, add 19 L nanopure water, 1 L concentrated HCl.
- Label acid bath with date.

Wash glassware

1. NO METAL NOR RUBBER ALLOWED IN ACID BATH. Glassware and plastic only.
2. Items must be clean before placing in acid bath, scrub if you need but do NOT use soap (often contains P)
3. Submerge items in acid bath, and make sure acid is touching all internal surfaces of glassware.
4. Let sit 2+ hours.
5. Remove items from acid bath, making sure to leave all the acid inside the bath.
6. Rinse items 3x with nanopure water.
7. Let items dry, and place back into acid washed cabinet once dry.

Changing acid bath

If acid bath is dirty, or > 3-ish months old (or 1 month with heavy use), it should be changed. To change it, you have to neutralize it first, steps as follow.

1. Make sure PPE is on for this step too.
2. Slowly add sodium bicarbonate until reaction visibly stops. You might have to stir the acid bath (again, no metal nor rubber). A 20 L acid bath will probably need around 2 kg of sodium bicarbonate.
3. Check the pH, and once it is above 6, dump it down the drain. Any sodium bicarbonate that is at the bottom of the container can be put in the trash.
4. Rinse acid bath container 3x with nanopure water before making a new acid bath.