

Standard Operating Procedure

Task: Making a base bath

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Background:

- The base bath described here is a cleaning solution consisting of a hydroxide salt in a water/alcohol mixture. It is part of the cleaning routine in most laboratories.

Training Requirements:

- Lab safety training

Potential Hazards:

- caustic (base burn)
- exothermic reaction
- rapid breakthrough time for some gloves
- Isopropyl Alcohol is a class B peroxide forming material

Special PPE Requirements:

- Clean, sturdy, thick, long rubber (e.g. neoprene) gloves. Check the rubber gloves thoroughly for tears. Small tears can allow base bath to leak into the gloves and come into contact with skin. Wear a pair of nitrile gloves under the rubber gloves as well, and always thoroughly wash your hands after use.

Materials Needed:

- 5 gallon bucket with lid for base bath
- 100g potassium hydroxide (KOH)
- 4L of iso-propyl alcohol (a bulk solvent source, such as a 20L drum, is recommended)
- 500mL Erlenmeyer flask
- 100mL deionized Water
- Ice bath

Procedure for Preparing a Base Bath:

1. Add 100 mL DI water and a stirbar to a 500 mL Erlenmeyer flask.
2. Chill flask in ice bath and start stirring
3. Slowly and carefully add ~100g KOH to the flask containing the water so as to avoid splashing. **Caution:** exothermic!
4. Transfer hydroxide solution to base bath bucket, being careful not to splash while pouring.
5. Carefully add approximately 4 liters of iso-propanol to base bath
6. Put lid on.
7. Add the date that the base bath was made as well as an expiration date, set 12 months later the “born on date”. See below for disposal instructions.

Using the Base Bath:

- Confirm that the labware you are cleaning is stable to base bath. Since base bath solution will etch glass, **the following glassware should not be placed in the base bath**: volumetric glassware (e.g. graduated cylinders, volumetric flasks, etc.), NMR tubes, frits and other sintered glass (dissolve readily in base bath), and cuvettes. Ground glass joints and Kontes valves may only be soaked in base bath for short periods of time (< 12 hr), as long term soaking may compromise the seal.
- Glassware should be visibly clean before going into base bath.
- Put on your lab coat, goggles, and gloves.
- Put on clean, sturdy, cut-free thick rubber gloves (clipped under the sink).
- Carefully submerge glassware into base bath. Fully submerge items and avoid bubbles.
- While wearing your base bath gloves, rinse exposed areas with water in sink.
- Soak glassware as needed, usually 1-24 hours. Do not leave glassware unattended for more than two days.
- To remove glassware, carefully drain base bath solution from glassware while wearing appropriate PPE (see above). Retain base bath solution in original container.
- Carefully transfer glassware to the sink. Wash glassware and gloves with water. Wash glassware with deionized water and acetone before placing on drying rack.
- Put base bath away.

Disposal

- Since isopropyl alcohol is a class B peroxide forming material, base baths must be disposed of or tested for peroxides 12 months after creation.
- Base baths should be changed at least each biannual group cleanup, or if they're dirty, whichever comes first.
- Test for peroxides before disposal. If peroxides are detected, consult with EHS before proceeding.
- Dispose of in separate dedicated waste stream.

References:

- Cleaning glassware SOP