

# Base Bath

## Standard Operating Procedure

Lab: 3724 BI

Department: Materials Science and Engineering

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### Section 1: Overview

Type of SOP:  Process  Hazardous Material  Hazardous Class of Materials  Equipment

#### Synopsis:

Base bath in the Beckman lab is located by the sink at the southeast corner (nearest the door) in room 3724 BI. This SOP includes potential hazards of the base bath, proper equipment required, operation procedure and cautions for the use of the base bath. It aims to guiding the lab users to use the base bath properly so as to avoid potential hazards to user health and safety.

### Section 2: Risk Assessment Summary (Hazards and Control Measures)

#### Materials:

Material (name, CAS #, other ID)	Hazards
Potassium hydroxide (CAS #: 130-58-3)	Corrosive to skins; acute oral toxicity; serious eye damage.
Isopropanol (CAS #: 67-63-0)	Highly flammable; causes serious eye irritation; specific target organ toxicity; causes drowsiness or dizziness.

#### Relevant References for Material Hazards:

MSDS for potassium hydroxide:  
<http://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=P5958&brand=SIAL&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsial%2Fp5958%3Flang%3Den>  
MSDS for isopropanol:  
<http://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=W292907&brand=ALDRICH&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Faldrich%2Fw292907%3Flang%3Den>

#### Equipment Hazards:

N/A

Hazardous Conditions:

- Glassware with metal residues is not allowed to be cleaned using the base bath, which otherwise might cause fires.
- For the same reason, do not leave metal tongs in the base bath.
- Not wearing proper PPE may lead to health hazards including severe skin and eye damage.

Technique Hazards:

- Be careful while weighing potassium hydroxide and measuring isopropanol.
- Not wearing proper PPE or not obeying this SOP might cause potential harms to the base bath user, which includes but not limits to skin corrosion, eye damage or fires.

Personal Protective Equipment

- A lab coat, safety glasses and neoprene gloves (with latex or nitrile gloves underneath) are required for the uses of the base bath.
- Close-toed shoes and long pants are also necessary.

Engineering Controls

- Base bath is contained in buckets with lids, which are removed only when necessary.
- Base bath buckets should be put in secondary containers with appropriate gloves next to them.
- Base baths should be placed in locations where they are not trip hazards or likely to be knocked over.

**Section 3: Procedures**

Preparing the base bath

1. Dissolve ~300 g of KOH in 1 L water.
2. Keep stirring until all KOH is dissolved.
3. Slowly add the aqueous solution of KOH into 8 L of isopropanol.
4. Stir to mix the solution completely.

Pre-washing glassware

1. Scrub or rinse glassware with appropriate solvents to remove excess chemicals. The used solvent should be collected in appropriate waste containers.
2. Wipe off grease remaining on glassware.

### Using the base bath

1. Wear necessary PPE, including a lab coat, safety glasses and neoprene gloves, before using the base bath.
2. Separate all glass joints.
3. Slowly lower glassware into the base bath and ensure that the solution fills the glassware completely.
4. Leave glassware in the base bath for several hours (no more than an overnight period). Long time exposure to the base bath can etch the glassware.
5. Take out cleaned glassware and pour out excessive base bath liquid.
6. Turn on tap water and place glassware under the stream.
7. Thoroughly rinse the cleaned glassware with tap water.
8. Rinse with distilled water.
9. Place glassware on the drying rack or in a drying oven.

### **Section 4: Waste Disposal/Cleanup**

The base bath liquid should be replaced when it is not clear and the cleaning capability decreases. Carefully transfer the old base bath liquid to a plastic waste bottle using a funnel, and label it with essential information (e.g. name, date, etc.). Secondary containers are required for the storage of the base bath waste, which should be separate from other waste streams. More detailed disposal procedures can be found on the Division of Research Safety webpage.

### **Section 5: Emergency Response**

- **Skin Contact:** Rinse affected skin with large amounts of water after removing contaminated clothing.
- **Eye Contact:** Rinse the affected eye(s) thoroughly using the eye wash, and lift eyelids and roll eyeballs occasionally.
- **Inhalation:** Move into fresh air as soon as possible.
- **Ingestion:** Rinse the mouth with water.

Always seek medical help after first aid is performed in the cases above. Detailed procedures can be referred to the Division of Research Safety (DRS) webpage.

- **Spills:** Clean spills immediately. Then neutralize the spill by covering it with neutralizer (e.g. solid citric acid, tartaric acid, and sodium bisulfate, etc.), and sweep up the neutralized material with a broom. If there is a large spill of the base bath liquid, evacuate the area immediately and alert others nearby. Close the door and call 911 immediately.

### **Section 6: Additional Information**

#### Advice:

Items that are **NOT** supposed to be put into the base bath:

1. Glassware that is not pre-washed
3. Glassware contaminated by metals
2. Volumetric glassware
3. Quartz glassware
4. Rubber/plastic items

- 5. IR/UV cells
- 6. NMR tubes
- 7. Stopcock keys

Checklist:

*A checklist can be written in the SOP as a reminder for the steps needed to take in order to perform the procedure. Potential checklist items include:*

- Read (Material) Safety Data Sheets.*
- Proper fire extinguisher is nearby.*
- Another researcher is nearby and knows the hazards present.*
- All calculations are done prior to beginning the procedure.*
- The required glassware is of the proper size to accommodate all steps of the procedure.*
- Received necessary immunizations.*

References:

1. [The Division of Research Safety webpage, University of Illinois at Urbana-Champaign.](#)
2. [Standard Operating Procedures, Bartlett Group, Department of Chemistry, University of Michigan.](#)