



Chemical risk assessment

KOH 25-50% w/w solution

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DETAILS OF THE WORK PROCESS

- Book the HF fumehood in CR1.
It is recommended to use a setup where you can run your process undisturbed
- Gather all necessary materials and equipment:
 - IKA hotplate with 2L beaker
 - Scale from to shelves
 - Beakers for measuring and mixing
 - KOH pellets
- Set up your equipment
 - Fill 2L beaker with water to create a hotbath and add a magnetic stirring pill.
 - Balance the scale.
- Calculate the portions of water and solid KOH pellets that you would like to mix:
 - You are aiming to make a 28% w/w solution
 - There is no shame on using an [online calculator](#) to figure out the ratio.
 - The KOH pellets come in units of xxx grams. Start by weighing an appropriate amount of KOH and set it to the side.
 - Calculate the respective amount of water and fill a beaker with it.
- Slowly add the KOH pellets to the water a few at a time while stirring gently.
- Continue stirring until the pellets dissolve completely.
- Place your solution in the hotbath.
- Place a second beaker with MQ next to it.
- Submerge the probe heater into the MQ beaker.
- Start the stirring and set the temperature.
- Once you reach the desired temperature, you can start etching your sample.
Do not leave the solution unattended.
- Rinse the samples in MQ water.
- Rinse the samples in a second MQ water.
- Dry or continue with the rest of your process.
- Let the KOH solution to cool down to room temperature.
- Transfer the KOH solution to the **X-base waste container**.
- The MQ water that was used for rinsing can be discarded in the drain.
- Ensure that all the setup that you used (scale, hotbath, beakers) is back in their original location.

CHEMICALS

KOH pellets & MQ water: KOH liquid solution of 25-50% concentration



HAZARDS FROM CHEMICALS															
KOH 25-50% w/w solution: H314: Causes severe skin burns and eye damage. H302: Harmful if swallowed. P260: Do not breathe dust/fume/gas/mist/vapours/spray. P280: Wear protective gloves/eye protection/face protection. P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P301+312: IF SWALLOWED: Call a POISON CENTRE/doctor/ if you feel unwell.															
HAZARDS FROM THE WORK PROCESS	RISK OF EXPOSURE														
Heat, chemicals, fumes	Solution can heat up (strong heat generation and can boil violently) Absorbs carbon dioxide from the air. Mixing with metals while releases hydrogen forming explosive mixtures with air (incompatible with metals) Inhalation: Irritation. May be corrosive to the mucous membranes in the upper respiratory tract														
SUBSTITUTION	No substitution available														
NECESSARY SAFETY MEASURES															
Ventilation	Entire process must take place in HF fumehood of CR1														
Chemical gloves	Protective rubber gloves Mapa AdvanTech519, necessary throughout the work process Penetration time: >480 mins  Mapa Chemical AdvanTech 519 <table><tr><th>Chemical Product</th><th>CAS #</th><th>Breakthrough time (minutes)</th><th>Permeation level</th><th>Standard</th><th>Degradation level</th><th>Rating</th></tr><tr><td>Potassium Hydroxide 50%</td><td>1310-58-3</td><td>>480</td><td>6</td><td>ASTM F739</td><td>4</td><td>++</td></tr></table>	Chemical Product	CAS #	Breakthrough time (minutes)	Permeation level	Standard	Degradation level	Rating	Potassium Hydroxide 50%	1310-58-3	>480	6	ASTM F739	4	++
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Other personal protective equipment	Regular cleanroom attire Overalls / protective clothing: Teflon apron Safety goggles: Full face shield is optional Breathing equipment (state filter): No Special footwear (state type): No Other: Teflon sleeves are optional														
Other safety precautions	Specific sources of heat in the event of risk of fire: Mixing KOH pellets														
Special emergency equipment	Special fire-fighting equipment: not relevant, non-combustible solution														
Special training:	Statutory training: KOH safety handling, provided by a designated cleanroom staff														
WHAT TO DO IN THE EVENT OF AN ACCIDENT OR SPILLAGE															
Spill: Evacuate the room. The substance decomposes on heating to hazardous products eg potassium oxides Fire & explosion: no relevant															
WASTE															
KOH solution is sorted as group X-base . MQ is disposed in the sink.															
PREGNANT AND BREASTFEEDING WOMEN	Is the work process/area safe for pregnant or breastfeeding women? Yes, regular safety applies														