

# Working with chemicals – Electrum Laboratory



## General-Chemical handling

**Avoid use contact lenses when working with chemicals!**

**It is harder to rinse after chemical splashes in eye.**

***Use protective gear!***

***Protective gear can be***

- *glasses or face covering shades protecting the eyes against splash from acids or other harmful chemicals*
- *protective gloves*
- *gasmasks*
- *etc.*

When working with wet chemicals, protective gloves and eye protection must be worn at all times. Preferably also a protective apron should be worn. As eye protection, the fully face covering screen or shield is to prefer rather than protective glasses.

## General- Personal protection

- Put chemical gloves over the cleanroom gloves before you start working with chemicals at the process benches.
- Inspect your gloves carefully. If the gloves are discolored or damaged, they should be disposed of and replaced immediately.
- Rinse the gloves carefully before placing them into the trash bins. New gloves can be found in the storage cabinet behind the Wet chemistry area.
- Put on a face protective visor and an apron.



## Acid&base- accident

- **Start washing with Diphoterine within the first minute** following the splash, beginning **with uncovered areas.**
- If no Diphoterine, wash with the emergency shower/eye shower.
- **Remove clothing and/or contact lenses.**
- Continue washing the unclothed areas as quickly as possible. Never put back on clothes stained with washing residue or chemicals.
- **Then immediately seek medical advice.**



## Hydrofluoric acid (HF)

- Pay special attention while you are working with Hydrofluoric acid (HF). This acid may cause severe burns into the bone marrow, and the symptoms may sometimes not be noticed until 24 hours after the exposure.
- Please note that HF is a component of BOE (Buffered Oxide Etch).
- Hydrofluoric acid (HF) and Potassium Hydroxide (KOH) solutions may only be used in plastic containers (PP, PE, Teflon, etc).

## Hydrofluoric acid (HF) - accident

- **Start washing with Hexafluorine within the first minute** following the splash, beginning **with uncovered areas**.
- If no Hexafluorine, wash with the emergency shower/eye shower.
- **Remove clothing and/or contact lenses.**
- Continue washing the unclothed areas as quickly as possible. Never put back on clothes stained with washing residue or chemicals.
- Any exposed skin should be covered with "HF Antidote Gel". Spread the gel and contact a physician as soon as possible. The paste is available near the process benches that contain HF.
- **Then immediately seek medical advice.**



## Chemical reactions

- Ensure that flammable chemicals (e.g. acetone or propanol) are not used near hot surfaces. Even small amounts may cause fire incidents.
- The Piranha solution (sulfuric acid and hydrogen peroxide) combines chemical corrosive properties with high temperature. The Piranha mixture must be prepared and used with caution, always using proper protective gear.
- Minimize heating of chemicals, and if necessary keep well below boiling point, e.g. max 50 C for Acetone.
- Open containers containing Ammonia ( $\text{NH}_3$ ) and Hydrochloric acid (HCl) may not be placed next to each other, as the chemical reaction between the vapors will generate solid particles in the cleanroom.



## Waste handling

- Heated chemicals must be cooled down before disposal
- There are typically two independent drainage systems:
  - The acid/base drainage is used for acids and bases. “Standard” acids and bases can be emptied in the acid drain. The waste is drained to a neutralizing tank on the floor below the cleanroom.
  - The solvent drainage is used for organic solvents. The waste is drained to a waste storage tank.
- Avoid, if possible, discharging N-methyl-2-pyrrolidon (aka NMP or Remover 1165) in the solvent drain. Collect this waste in plastic bottles and dispose of as a common waste product.
- Empty bottles shall be rinsed thoroughly and disposed of in the container for hard plastic without the cork/cap. Failure to follow this procedure can lead to damage to the waste disposal equipment and even personal injury.
- **ALL OTHER WASTE PRODUCTS SHALL BE SENT FOR DISPOSAL**



# Safety

**SOS ALARM**

**112**

**ELAB EMERGENCY/ON-CALL DUTY**  
**070-648 6032**

- Local Alarm Group
- On-Call Duty outside normal working hours
- Yellow button for help.



<p><b>RÖTT LARM</b> joddlande siren</p> <p>Total utrymning gå till samlingsplats</p>	<p><b>RED ALERT</b> oscillating siren</p> <p>Total evacuation go to meeting point</p>
<p><b>GUL-BLÅTT</b> <b>gift gas</b> <b>LARM</b></p> <p>fast tjtutande siren</p> <p>Zonvis utrymning gå till samlingsplats</p>	<p><b>YELLOW-BLUE</b> <b>toxic gas</b> <b>ALERT</b></p> <p>continuous siren</p> <p>Zone evacuation go to meeting point</p>
<p><b>GUL LARM</b> fast tjtutande siren</p> <p>Zonvis utrymning gå till samlingsplats</p>	<p><b>YELLOW</b> <b>ALERT</b></p> <p>continuous siren</p> <p>Zone evacuation go to meeting point</p>
<p><b>BLÅTT LARM</b></p> <p>Driftstörning kontakta Driftpersonal</p>	<p><b>BLUE ALERT</b></p> <p>technical fault contact service personal</p>