

Laboratory/work area: **Wet laboratory**

Activity: **Semiconductor etching**



Ätzend

## Inorganic acids

Valid for **Hydrochloric acid > 25%**, sulfuric acid > 15%, **Phosphoric acid 25%**; colorless, strongly sour liquids with stinging smell; Oily consistency and odorless **Sulfuric acid**.

### Dangerous for humans and environment

**Cause heavy burns:**

**With skin contact** burned scabs are formed and frequently the burns remain skin-deep. However, concentrated sulfuric acid can penetrate deeply in the tissue.

**Inhalation** of steams can lead to strong excitations or to burns of the respiratory tracts.

**With eye contact** significant cornea damages are caused.

**When swallowing** heavy internal burns are possible, danger for a stomach break-through, mortal danger.

**Violent reaction** with hydroxide/caustic solutions (spray, heat development). When in contact with base metals high-inflammatory hydrogen develops. With addition of water into the acid violent warming up and spraying should be taken into account.

**Sulfuric acid:** Explosive reactions among other things with permanganaten, concentrated Ammonia solution, perchloric acid; hot and concentrated acids act as strongly oxidizing agents.

**Hydrochloric acid:** Chlorine development when in contact among other things with permanganaten, oxidizing agents; in damp air the acid is "smoking". Dangerous reactions with other materials, see respective safety data sheet.

**Do not pour** in the waste water. Collect as a special garbage.

### Safeguard and directives

Work under a functional hood, close the front slide-gate-valve as far as possible. Keep containers closed; Keep apart from caustic solutions and other reactive materials. Avoid the contact with materials made of base metals. For acid diluting purposes always pour slowly the acids into the water with a simultaneous water agitation, never do it vice versa. Eye emergency showers must be available in the laboratory.



Use the following protection equipment:

- **Eye protection:** Always use safety eyeglasses.
- **Hand protection:** Always use safety gloves (Ultranitril 492).
- **Skin protection:** Always wash the hands after the work and use preservative agents.





**Suitable fire extinguishing agents:** CO2, powder;

**Slops:** Put on the protection equipment; With smoking acids also use a respiratory protection; If necessary use acid-proofed footwear such as rubber boots. In case of leakages absorb the liquids with a chemical binder and dispose them in firmly lockable plastic containers as a special refuse. After that, clean the place with much water. Provide a good aeration.

**First assistant: (J. Bahr, Tel.: 6183):**



**After inhalation:** Fresh air, if possible inhale Dexamethason spray (e.g. Auxilon) (5 strokes per 10 min); If you are suspicion on pulmonary edema, call the doctor!

**After skin contact:** Immediately rinse off extensively with much water; in case of a wide contact use the emergency shower! Call the doctor and/or emergency!

**After eye contact:** Rinse immediately for a minimum period of 15 minutes under flowing water with opened eyelid and protect the intact eye. Immediately go to an ophthalmic clinic and/or emergency!

**After swallowing:** Immediately drink a large amount of water. Avoid any kind of misdeeds, otherwise a real danger for the stomach perforation can appear. Call immediately the doctor and/or emergency!

**After clothe contact:** Place immediately a moistener. With care wash the skin with much water.

**Adequate disposal**

Dispose remainders, empty bundles as special refuse (contact: Kai Rath).

**Signature of the responsible person:**

\_\_\_\_\_