Hydrofluoric acid

Process:
Highly toxic etchant for Silicon Oxide and other metal oxides.

Materials:
Hydrofluoric Acid (49%) and water for dilution, sometimes premixed.

Incompatible Materials:
Will dissolve glassware. Be cautious when mixing with acids as toxic HF outgassing will typically occur.

Hazards:
*Poor warning properties*: harmful exposure and workstation contamination are initially very difficult to detect. A concentrated HF splash the size of three hands can be fatal even when treated. HF numbs the skin, so diluted (<20%) HF burns are not always apparent until up to a day later. Burns from concentrated (49%) HF burns are typically immediately apparent. Fumes are prevalent, highly toxic and detectable (but just barely) at chronically harmful concentrations.

Exposure Actions: Do what’s below, and then notify CNM2 staff within a few hours. For advice, call CNM2 staff.

**Eyes:** Hold eyes open in running eyewash station for 15 minutes and call 911 as soon as possible.

**Skin:** Remove splashed clothing, wash for 3 minutes, apply Calcium Gluconate gel and call 911.

Personal Protective Equipment:
Goggles, face shield, heavy chemical gloves (blue disposable Nitridex or black Chemtek), and heavy chemical apron. Keep Calcium Gluconate gel handy.

Acceptable Locations For Use:
Wet process stations 3, 13, acid & base fume hood. If heated, only acid & base fume hood. Never open bottles or carry baths away from these ventilated areas because the toxic fumes must not be allowed to circulate through the cleanroom.

Additional Process Notes:
If dilution is needed measure water, add HF, then stir. Heat only after mixing is complete if greater than ambient temperature is desired.

Disposal:
If heated allow to cool, then decant or aspirate to neutralizer. Heavy metal or organic bearing solutions should instead be disposed of in spent the “Fluorides” bottle.