

Piranha Etch Use in CFN Clean Room

Piranha etch is used to remove organic residues from substrates. Acid piranha is a 3:1 mixture of concentrated sulfuric acid (H₂SO₄) with hydrogen peroxide (H₂O₂).

Precautions:

Piranha etch work is ONLY permitted at CFN between the hours of 8:30-5:00 pm, M-F.

Designate a CFN staff member who is cognizant of piranha etch hazards and procedures as a “buddy”.

Use only the fume hood that is designated for piranha etch use.

NO other activity is permitted in that hood while piranha etch is in use.

Put on the **required PPE** prior to working with piranha etch. Safety Goggles in addition to clean room garb.

Whenever handling Piranha, only use glass containers (preferably Pyrex).

Preparation & Use:

Mix the solution in the hood with the sash down between you and the solution. When preparing the piranha solution, always add the peroxide to the acid.

The H₂O₂ is added immediately before the etching process because it immediately produces an exothermic reaction with gas (pressure) release. Piranha solution is very energetic and potentially explosive. It is very likely to become hot, more than 100 degrees C. Handle with care.

If the H₂O₂ concentration is at 50% or greater, an explosion could occur.

Containers used during the experiment must be very clearly labeled and a visible warning sign must be posted at all time to indicate that the solutions contains Piranha mixture.

Substrate should be rinsed and dried before placing them in a piranha bath. Piranhas are used to remove photoresist and acetone residue, not the compounds themselves

Waste

Leave the hot piranha solution in an open container in the hood until cool.

Never store hot piranha solutions. **Piranha stored in a closed container will likely explode. .**

When there is no more gas generation, it must be wasted into a clear poly-coated waste bottle equipped with a venting cap. The waste bottle must have the special label indicating Piranha Etch/Corrosive Etchant.

Mixing hot piranha with organic compounds may cause an explosion. This includes acetone, photoresist, isopropyl alcohol, and nylon.