

Chemical Etchant Crystals (Ferric Chloride)

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Electronics & Prototyping

Ferric chloride etchant crystals dissolve in water to make the solution that chemically removes copper from PCBs, leaving the protected traces behind. Crystal form stores safely and makes fresh etchant in the strength needed for reliably etched boards.

Key Features

- Crystal and liquid forms
- Dissolves in warm water
- Etches copper at 40-50 degrees C
- Can be reused and replenished
- Strong stain - requires careful handling

Typical Uses in the Workshop

- Etch student PCB designs
- Remove copper in rework
- Produce prototype boards in batches
- Replate and recycle etchant

Safe Operation

1. Dissolve the crystals in warm water in a tank
2. Warm, agitate and immerse the board
3. Check the etch progress every minute
4. Rinse the board in water immediately
5. Replenish or dispose of the etchant

SAFETY NOTES

- Etchant stains skin and clothing permanently - gloves and apron
- Wear goggles - splashes hurt the eyes
- Work in a ventilated area
- Dispose of spent etchant as chemical waste
- Keep crystals sealed and out of reach

Maintenance & Consumables

- Store crystals sealed dry
- Check the etch strength with scrap copper
- Clean the tank after use
- Filter and reuse where possible
- Keep a spill kit nearby

Specification & Buying Notes

Crystal ferric chloride keeps longer than liquid and is cheaper per litre. Buy with the student gloves, goggles and disposal plan. Quality etchant etches evenly and predictably.