

## COPPER PLATING ACID TYPE

### DESCRIPTION:

Transene Copper Plating Acid Type is ideal for high-speed copper deposition including through hole plating. The bath exhibits good stability and is easily controlled. Stabilizer limit resistivity and promote a bright deposit.

### PROPERTIES:

Temperature (°F)	70-120
Current Density (A/ft <sup>2</sup> )	20-50
Anode	Copper
Anode to cathode ratio	1:1
Agitation	Mechanical
Voltage (V)	4-6
Filtration	Continuous
Tank	Glass, fiberglass, pvc, ceramic, rubber
pH	< 1
pH control	Sulfuric Acid
Deposition rate @ 20 asf	0.5 mil/hour
Copper concentration (oz/gal)	6

### APPLICATIONS:

Copper Plating Acid Type is used to plate copper of any thickness onto ferrous base metals over copper strike. Especially suited for plating through holes and over trenches where over plating is a concern. The bright deposit consists of uniformly distributed rather than columnar grains. Copper Plating Acid Type is also advantageous as a protective coating under nichrome.

## COPPER PLATING ADDITIVES

Transene Company offers three additives for copper plating:

Suppressor (inhibitor): The suppressor adsorbs onto the substrate surface. Its role is to increase polarization which inhibits overly fast deposition. Slower deposition results in smaller grain size which yields a deposit with a smoother surface. The result is a denser and more ductile deposit.

Accelerator (brightener): The accelerator promotes uniform deposition which enhances brightness and reduces the tendency to form a deposit with a cloudy or burnt appearance. The accelerator is particularly useful in an acid copper plating solutions.

Surfactant: Hydrogen gas bubbles can form during plating. If the bubbles adhere to the surface, they inhibit local deposition and result in pitting. Surfactants reduce surface tension, thereby allowing the bubbles to release from the surface of the substrate. In addition, surfactants improve the ability of the bath to penetrate high aspect ratio vias and other complex geometries, allowing for a more uniform result.

When used together, the suppressor and accelerator promote “bottom up” deposition in vias and trenches where the metal deposits fill these geometries from the bottom rather than from the surface down, yielding a more solid fill.

The recommended starting concentration for each additive is 30 grams of additive solution/L plating solution with a working range of 20-30 g/L. Additive concentrations are monitored via cyclic voltammetry or CVS (cyclic voltametric stripping).