



TCR[®] Critical Process Guide

Process Step:

First Etch (Cupric Chloride)

Process Description:

Etch away unwanted copper and resistor material using Cupric Chloride Etchant.

Purpose:

The first etch defines the resistor width and removes unwanted resistor material and copper. This step is critical for determining resistor value and for removing the unwanted resistor material and copper from between circuits (if Cupric Chloride etchant is not available see the First Etch Alternative process guide).

Critical Process Parameters:

	<i>Process Parameter</i>	<i>Recommended Process Limits</i>
1	CuCl ₂ Conc.	~ 200 gpl (see company process specs to insure this is within acceptable limits)
2	HCl Concentration	Must be higher than 60 gpl - (see company process specs to insure this is within set limits)
3	Solution Temperature	~ 120°F (see internal process specs to insure this is within set limits)
4	Conveyor Speed	No visible residual resistor material or copper should be seen. Take sample measurement (using standard methods and equipment) of resistor width to assure specified width is being obtained (Circuit and resistor widths should fall within set range, see internal process specs for tolerances)

Trouble Shooting:

<i>Problem</i>	<i>Probable Causes</i>
Resistor layer not removed	1. Conveyor Speed too fast 2. HCl concentration too low
Traces too narrow (over etch)	1. Etch temp too high 2. Conveyor speed too slow 3. Poor photo resist adhesion
Incomplete etching (copper and resistor layer)	1. HCl concentration too low 2. Conveyor speed too fast 3. Etch temp. too low
Too much undercut (sideways etch)	1. HCL concentration too high