

TCR[®] Critical Process Guide

Process Step:

Second Etch (Ammoniacal)

Process Description:

Selectively etch copper using Ammoniacal Etchant for resistor length definition (remove copper to expose resistive layer).

Purpose:

The second etch defines the resistor length and selectively removes unwanted copper to expose the resistive layer. This step is critical for determining resistor value.

Critical Process Parameters:

	<i>Process Parameter</i>	<i>Recommended Process Limits</i>
1	NH ₄ Cl Conc.	~ 267 gpl (see internal process specs for your parameters)
2	PH	~ 8.25 (see internal process specs for your parameters)
3	Specific Gravity	~ 21° Baume
4	CuCl ₂ Conc.	~ 10 gpl
5	Solution Temperature	~ 130°F (see internal process specs for your parameters)
6	Conveyor Speed	Adjust so that no residual copper can be seen in resistor pattern or on exposed resistor layer. Take sample measurement (using standard methods and equipment) of resistor to assure specified dimensions are being obtained.

Trouble Shooting:

<i>Problem</i>	<i>Probable Causes</i>
Copper not completely removed	1. Conveyor Speed too fast 2. PH not within limits 3. Etch temp too low 4. Clogged nozzles in etcher
Resistor length too long (over etch) or resistor value too high	1. Etch temp too high 2. Conveyor speed too slow 3. Poor photo resist adhesion 4. PH too high
Photoresist Breakdown	1. PH too high 2. Wrong photoresist thickness / type used 3. Poor resist conformation in and around resistor pattern (see photoresist critical process guide)