

Survey performed courtesy of **Circuit Research Corporation**, Delano, MN
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Cupric Etching Survey

<u>Equipment Manufacturer</u>	<u>Etch Chamber Length (in feet)</u>	<u>Speed 1 OZ (IPM)</u>	<u>Average Speed (per 4 ft section - 1 OZ)</u>	<u>Etch Type/Control</u>	<u>Normality</u>	<u>Nozzle Type</u>	<u>Nozzles (per 4 ft section)</u>	<u>Spray Pressures</u>	<u>Oscillation Type</u>
IPS / WTA	8	67	33.5	Sodium Chlorate Vis-U-Etch™ 5	<0.04N	Fan	81	45 Top, 40 Bottom	Manifold
Schmid	17	130	30.6	Sod Chlorate/ORP	2.0-2.2N	Fan	130	45 Top, 40 Bottom	Manifold
ACS	18	120	26.7	Sod Chlorate/ORP	1.5N	Cone	55	47 Top, 27 Bottom	Sweep
IS	6.5	43	26.5	Sodium Chlorate Vis-U-Etch™ 5	<0.04N	Fan	134	44 Top, 39 Bottom	None
Chemcut	12	74	24.7	Sodium Chlorate Vis-U-Etch™ 5	0.06N	Cone	70	36 Top, 32 Bottom	Sweep
Chemcut	20	120	24.0	Sod Chlorate/ORP	2.0N	Cone	98	32 Top, 32 Bottom	Sweep
Chemcut	8	48	24.0	Peroxide/ORP	3.05-3.45	N/A	N/A	30 Top & Bottom	Sweep
Chemcut	16	90	22.5	Sod Chlorate/ORP	1.5 N	Cone	70	35 Top, 35 Bottom	Sweep
Chemcut	16	90	22.5	Sod Chlorate/ORP	2.0N	Cone	70	40 Top, 38 Bottom	Sweep
IS	9	48	21.3	Sod Chlorate/ORP	1.4N	Cone	55	42 Top, 24 Bottom	None
Chemcut	12	63	21.0	Chlorine/ORP	1.2-1.4N	Cone	56	30 Top & Bottom	Sweep
Hollmuller	9.2	48	20.9	Sod Chlorate /ORP	1.8N	Fan	163	30 Top, 28 Bottom	Manifold
ACS	12	62	20.7	Chlorine/ORP	2.0N	Cone	55	30 Top, 60 Bottom	Sweep 40/Min
Snic	24	122	20.3	Sodium Chlorate Vis-U-Etch™ 5	0.06N	Fan/Cone	56	15-20 Top & Bottom	Top Manifold Bottom None
Chemcut 547	12	60	20.0	Chlorine/ORP	2.0-2.1N	Cone	70	35 Top, 22 Bottom	N/A
Hyoki	12	60	20.0	Peroxide/ORP	3.05-3.45	N/A	N/A	30 Top & Bottom	Rotary
Chemcut	16	72	18.0	Sod Chlorate/ ORP	2.0-2.5N	Cone	56	28-30 Top & Bottom	Sweep
Chemcut	8	31	15.5	Sod Chlorate/ORP	1.5-2.0N	Cone	56	35 Top & Bottom	Sweep

Notes: N/A - Data is "Not available"

OZ – Ounce

FT – Foot

IPM – Inches per minute