

# CCP MS-Series

## Copper Electrolyte Solution for VLSI and ULSI

### Benefits

- Proprietary Manufacturing with Highest Purity Chemical
- Lowest Metal Concentration
- Stringent Particle Control
- Custom Formulation Available
- OEM and Foundry Qualified

**Component concentration can be made to your specification**

### Packaging

CCP MS-series is packaged in 200 liter HDPE drums. Custom packaging is available.

### Specifications

- Copper content: Up to 76.2 g/l
- Sulfuric acid content: Up to 200 g/l
- Chloride content: Up to 120 mg/l

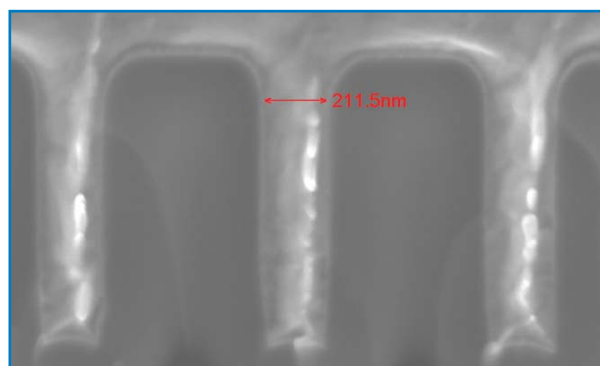
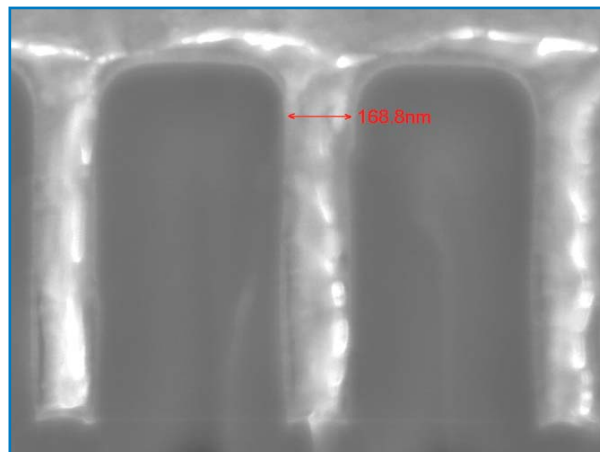
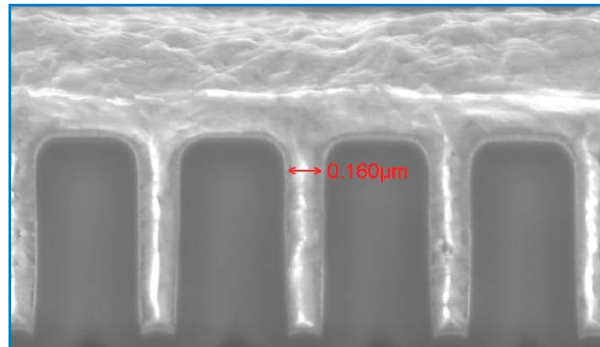
### Purity

Test	Specification
Sodium (Na):	< 1 ppm
Potassium (K):	< 1 ppm
Magnesium (Mg):	< 1 ppm
Calcium (Ca):	< 1 ppm
Iron (Fe):	< 1 ppm
Aluminum (Al):	< 100 ppb
Chromium (Cr):	< 100 ppb
Manganese (Mn):	< 100 ppb
Cobalt (Co):	< 100 ppb
Nickel (Ni):	< 100 ppb
Zinc (Zn):	< 150 ppb
Lead (Pb):	< 100 ppb
Total organic carbon (TOC):	< 20 ppb
Particle count (> 0.2µm):	< 500 ea/ml

### SQC

	Specification	Typicals (Average)	Detection Limit	Cpk VALUE
Sodium (Na)	5 ppm	0.064 ppm	25 ppb	103.160
Potassium (K)	1 ppm	0.056 ppm	25 ppb	15.241
Iron (Fe)	1 ppm	0.068 ppm	25 ppb	30.365

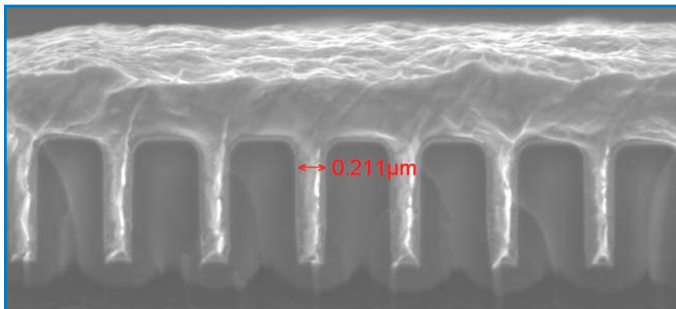
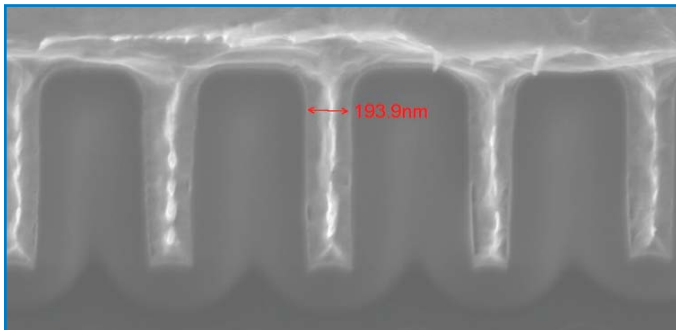
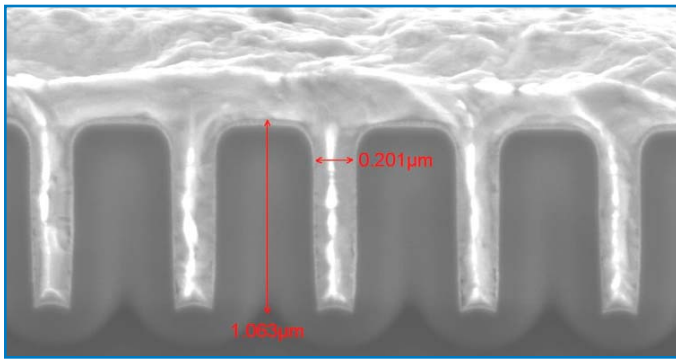
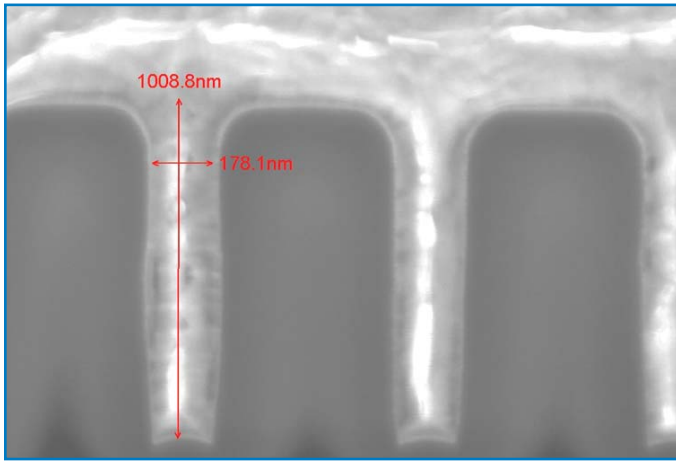
### Electroplating Results of Pattern Wafer



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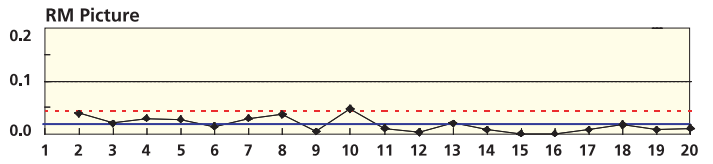
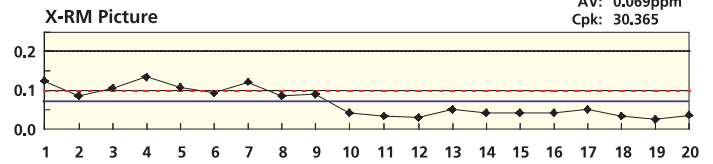
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# Electroplating Results of Pattern Wafer



## X-RM Picture of Impurity for Iron

Unit: ppm  
DL: 25ppb  
AV: 0.069ppm  
Cpk: 30.365



## COA of CCP MS-2201

Test	CCP MS-2201
Copper content	29.84 g/L
Chloride content	49.6 mg/L
Sodium (Na)	60 ppb
Magnesium (Mg)	< 25 ppb
Potassium (K)	< 25 ppb
Iron (Fe)	85 ppb
Aluminum (Al)	55 ppb
Chromium (Cr)	< 25 ppb
Manganese (Mn)	< 25 ppb
Cobalt (Co)	< 25 ppb
Nickel (Ni)	< 25 ppb
Lead (Pb)	< 25 ppb
Zinc (Zn)	70 ppb
Total metals (excluding Cu)	< 10 ppm
TOC	2.65 ppm
Particle count (> 0.2µm)	19 ea/ml

## Impurity of Copper Film – Metallic Contamination

	ERSO (88/9)	CCP Sample
Na	< 1 ppm	< 1 ppm
K	< 1 ppm	< 1 ppm
Mg	< 1 ppm	< 1 ppm
Fe	< 1 ppm	< 1 ppm
Pt	< 1 ppm	< 1 ppm
C	< 14 ppm	< 13 ppm
N	< 14 ppm	< 9 ppm
O	< 249 ppm	< 160 ppm
F	< 4 ppm	< 1 ppm
S	< 8 ppm	< 1 ppm
Cl	< 41 ppm	< 1 ppm

# Copper Electroplating Additives for VLSI and ULSI

## Benefits

- Manufacturing with Highest Purity Chemical
- Lowest Na, K and Transition Metal Level
- Excellent Gap-Filling Ability
- Excellent Leveling Ability
- Lowest Contamination

## IC-PLATE-AC™ (Accelerator)

### Typical Properties

Test	Limit
Appearance:	Clear blue solution
Accelerator content:	0.95~1.05 NU
pH:	3~4
Gravity:	1.001~1.015

### Purity

Test	Specification
Sodium (Na):	< 100 ppm
Potassium (K):	< 500 ppb
Magnesium (Mg):	< 50 ppb
Calcium (Ca):	< 150 ppb
Aluminum (Al):	< 100 ppb
Chromium (Cr):	< 50 ppb
Manganese (Mn):	< 50 ppb
Iron (Fe):	< 100 ppb
Nickel (Ni):	< 50 ppb
Zinc (Zn):	< 100 ppb
Lead (Pb):	< 50 ppb

## IC-PLATE-SU™ (Suppressor)

### Typical Properties

Test	Limit
Appearance:	Clear blue solution
Suppressor content:	0.9 ~1.10 NU

### Purity

Test	Specification
Sodium (Na):	< 10 ppm
Potassium (K):	< 500 ppb
Magnesium (Mg):	< 50 ppb
Calcium (Ca):	< 150 ppb
Aluminum (Al):	< 100 ppb
Chromium (Cr):	< 50 ppb
Manganese (Mn):	< 50 ppb
Iron (Fe):	< 100 ppb
Nickel (Ni):	< 50 ppb
Zinc (Zn):	< 100 ppb
Lead (Pb):	< 50 ppb

## IC-PLATE-LE™ (Leveler)

### Typical Properties

Test	Limit
Appearance:	Clear blue solution
Leveler content:	0.9 ~1.10 NU

### Purity

Test	Specification
Sodium (Na):	< 10 ppm
Potassium (K):	< 500 ppb
Magnesium (Mg):	< 50 ppb
Calcium (Ca):	< 150 ppb
Aluminum (Al):	< 100 ppb
Chromium (Cr):	< 50 ppb
Manganese (Mn):	< 50 ppb
Iron (Fe):	< 100 ppb
Nickel (Ni):	< 50 ppb
Zinc (Zn):	< 100 ppb
Lead (Pb):	< 50 ppb



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Specifications are subject to change. Please check [www.mathesontrigas.com](http://www.mathesontrigas.com)  
for most current information.

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