

P C B T O T A L S O L U T I O N C O M P A N Y O R C H E M



ORChem

GLOBAL NATURE HUMAN FUTURE

CHEMICALS' NAME OF EACH PROCESS

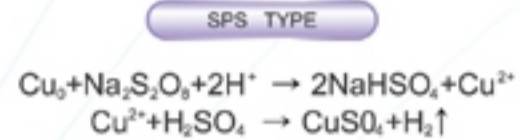
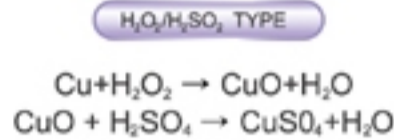
PROCESS FLOW



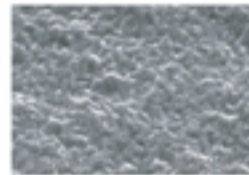
SOFT ETCHING

SECTION	ORC-124 Series (SPS Type)	ORC-125 Series (PMPS Type)	ORC-130 (H2O2 / H2SO4 additive)	ORC-130MX (One component)
FEATURE & BENEFITS	<ul style="list-style-type: none"> Oxide removal from surface Removal of pollutants High bonding from excellent surface roughness 	<ul style="list-style-type: none"> The excellent inhibition function of H₂O₂ decomposition The uniform Etching rate 	<ul style="list-style-type: none"> Anchoring Effect Easy control of etching speed 	<ul style="list-style-type: none"> Applicable to city water Easier control
RECOMMENDED PROCESS	<ul style="list-style-type: none"> Pre-Treatment of Inner / Outer Layer D/F Pre-Treatment of Solder Mask (PSR) Pre-Treatment of Copper plating (Vertical & Horizontal Type) Pre-Treatment of ENIG 	<ul style="list-style-type: none"> Pre-Treatment of Inner / Outer Layer D/F Pre-Treatment of Solder Mask (PSR) Pre-Treatment of OSP 		

Reaction Mechanism

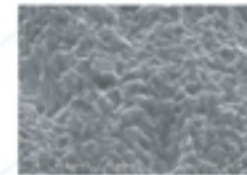


Reliability & Comparison Date



H₂O₂/H₂SO₄ TYPE

- SEM x 3000 - Tilt : 45°
- Etching Rate : 1.00um

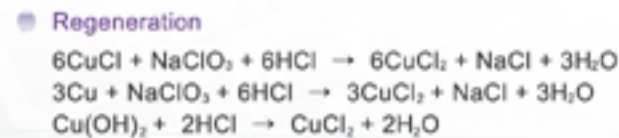
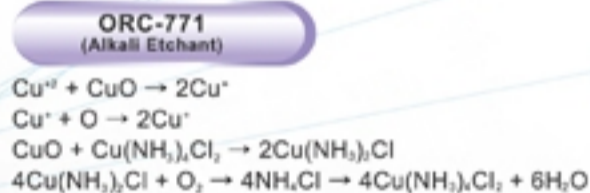


SPS TYPE

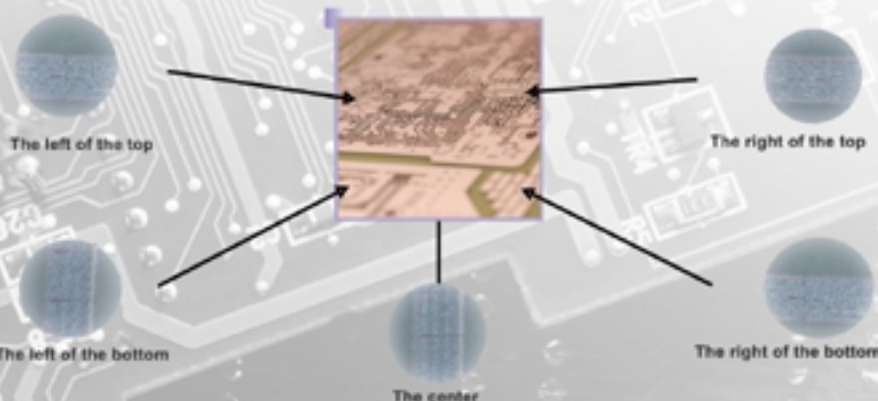
MACRO ETCHANT

SECTION	ORC-771 (Alkali Etchant)	ORC-760 (Acid Etchant)
	Pattern process	Panel Process
FEATURE & BENEFITS	<ul style="list-style-type: none"> Etching Speed is fast and constant. Less undercut with banking agent contained.. Constant and less variation oh pH. As a buffer solution, less sludge is generated and safe. Very low rate of discolor of Sn/Pb (Solder). 	<ul style="list-style-type: none"> Not attack dry film. Maintenance the steady solution after leaving alone for long term. Non-toxic when in contact with skin. Better Etch Factor and the possibility of working the fine pattern etching. Lowest cost etchant per quantity of copper removed.

Reaction Mechanism



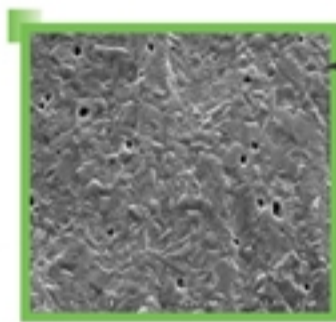
Etching Shape & Etch factor



BROWN OXIDE

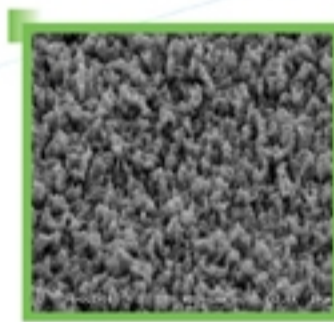
- Excellent thermal resistance on Halogen free & High Tg resin system
- Works equally well in vertical and horizontal systems
- Lower overall process costs
- Superior adhesion (Bonding strength)
- No Oxide to dissolve
- Superior surface topography

ORC-200 Series Innerlayer Adhesion Promotion

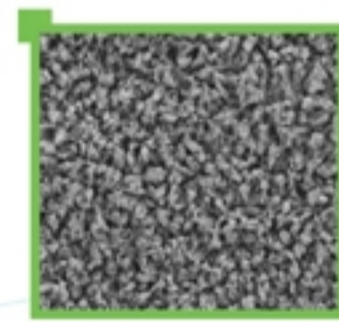


SEM Photo Image Before Oxide Treatments

Copper Surface



SEM Photo Image after Black Oxide Treatments (SEM X3000 - Tilt45°)

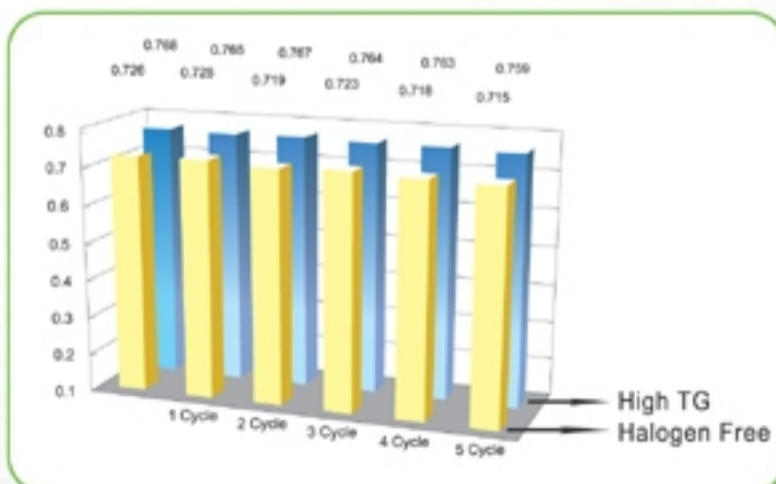


SEM Photo Image after Brown Oxide Treatments (SEM X3000)

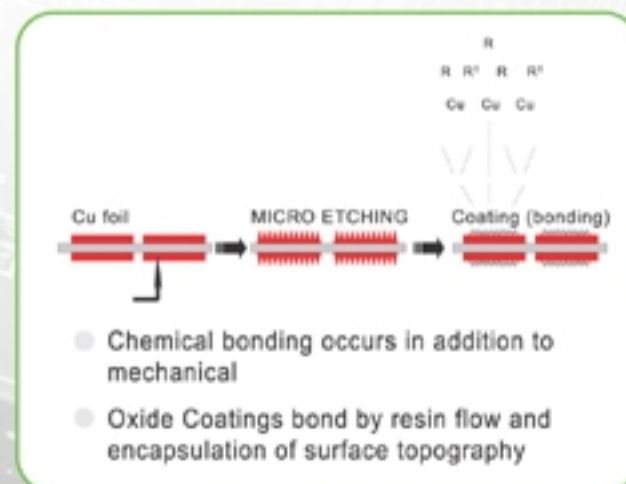
Process Flow



Engineered For Halogen Free & High Tg Resin System (Thermal Shock Test)



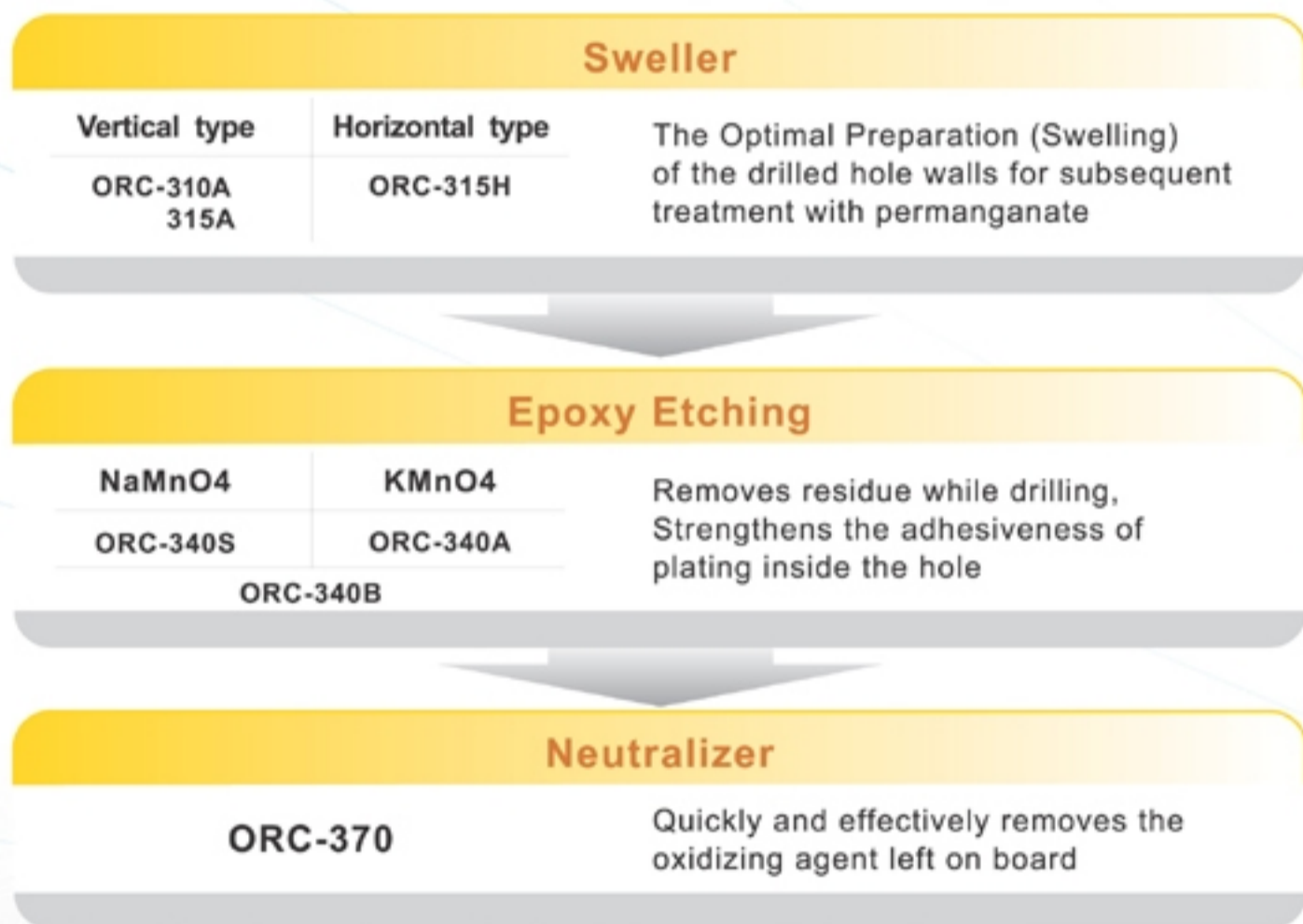
Bonding Mechanism



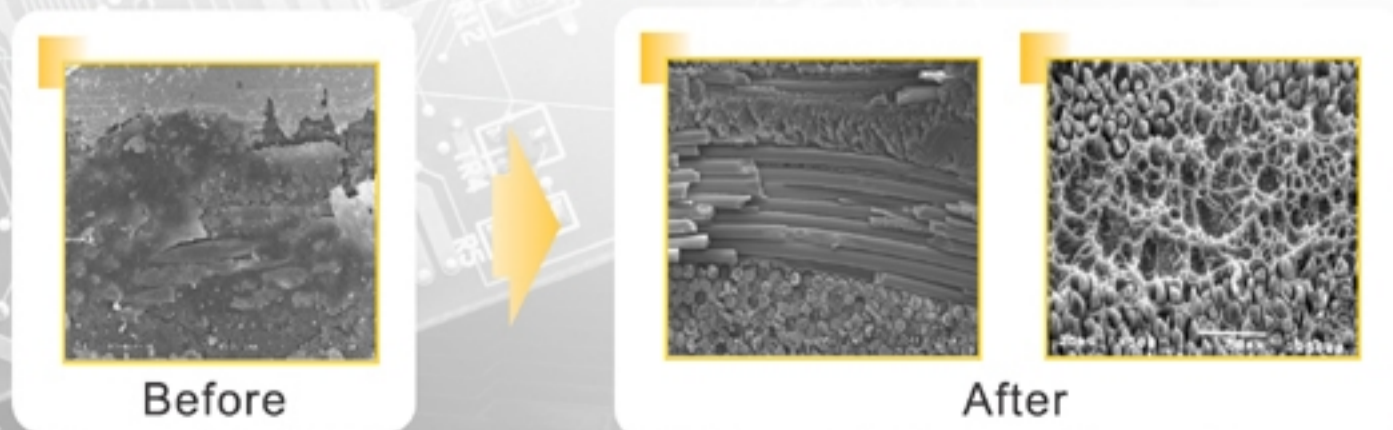
DESMEAR

- Works equally well in vertical and horizontal systems.
- Permanganate processes are capable of desmearing a wide variety of high performance resin systems including difunctional, multifunctional, BT, PPE and PPO type resins.
- Maximum microtopography on the hole wall for adhesion

Process Flow



Optimal Hole Condition



- Low internal stress
- Suited for small diameter vias and high aspect ratio.
- Superior hole wall adhesion
- Blister/Pullaway prevention
- Excellent coverage deposited copper
- Ideal for conformal mask and PCB designs with bare resin areas
- Unsurpassed interconnect reliability thermal shock testing.

Process Flow

C. & Conditioner

Cleans the copper surface.
Provides proper electric Charges on the hole wall.

Soft-Etching

Microrches and forms roughness on the copper surface.

Pre-Dip

Make the optimum condition for adsorption of catalyst.

Catalyst

It is adsorbed by static electrical attraction on conditioning agent.

Accelerator

The promotion of plating process using Pd-catalyst.

Electroless Copper Plating

Assures uniform, high adhesive and fine grain E/L plating layer on the hole wall

COLLOID TYPE

ION TYPE

ORC-410, 410P, 410RF

ORC-120, 120NA, 124 Series

ORC-430S

ORC-435

ORC-440

ORC-445

ORC-450

ORC-455

ORC-460, 461, 465 Series

ELECTROLYTIC PLATING

ORC-810, 813 (Acid Copper Plating Additive)

- High Throwing Power
- Ductile and Fine Grained Deposits
- Excellent Thermal Shock Resistance
- Superior Leveling Deposit

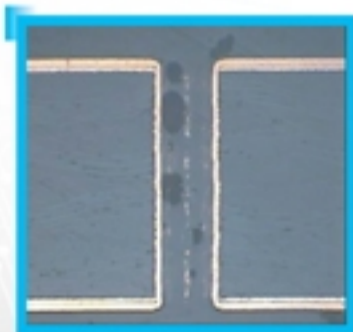
ORC-830 (Solder Plating Additive)

- Stable and characteristics of the deposits. (appearance, throwing power and covering power etc.)
- Dusts of finger-print are difficult to remain on surface.
- Solder ability is good and corrosion resistance is high.
- The range of cathode current density where we can get the good deposits is very wide.
- There is no foaming problem in this solution, so environmental pollution by foaming doesn't occur.

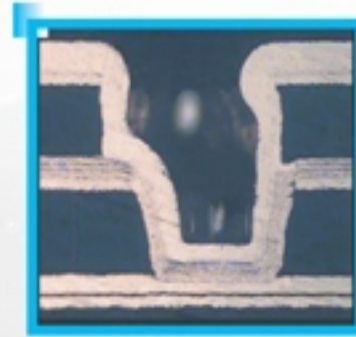
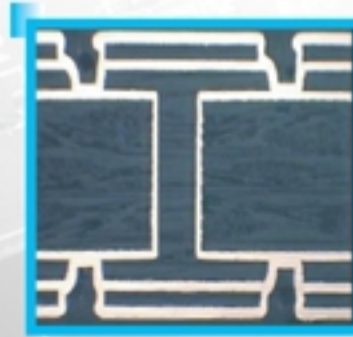
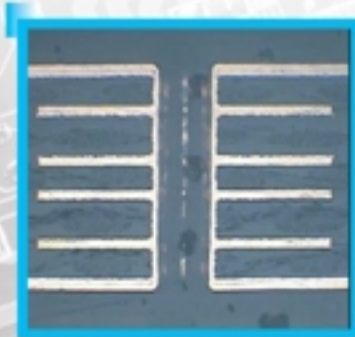
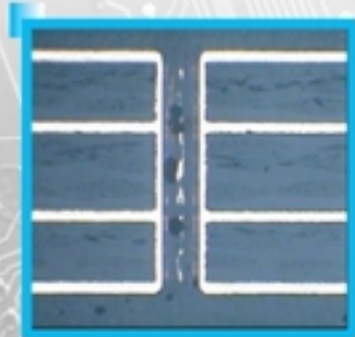
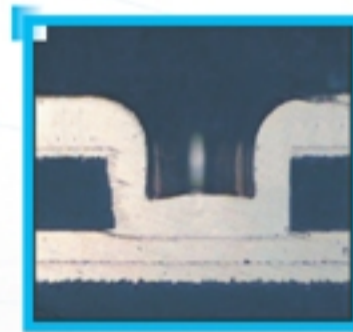
Plating (Through Hole & Blind via Hole)

- Plating-State of hole wall (Through hole type) after Electro copper plating process

Through Hole

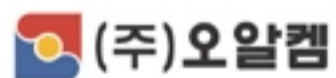


Blind via Hole



사람을 가까이- 자연을 소중히- 미래를 희망으로-

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