

Final Finishes and MEC Products



RAIG - *Uyemura invented, patented* - and perfected - Reduction-Assisted Immersion Gold*. It can deposit 2-8 μ m gold on electroless nickel or electroless palladium, with zero nickel corrosion, and with fewer components. RAIG was developed for applications requiring gold deposits greater than ENIG / ENEPIG specifications. Heavier gold deposits are achieved without significantly extending dwell times. Deposit uniformity is independent of PCB surface geometry.

**US Patent; 7985285(TWX), 7988773(TSB)*

TWX-42 RAIG - a Reduction Assisted Immersion Gold, and the successor to TWX-40. Displacement initially occurs on the nickel surface; an autocatalytic reaction prevents nickel corrosion. It is a proven "next gen" process for achieving heavier gold deposits on ENIG, ENEPIG, EPIG and EPAG without corrosion, and is compliant with IPC 4552/4556.

Other important advantages include fewer bath components and higher bath stability.

The pure gold deposit of TWX-42 is uniform and non-porous. It has exceptional solderability and wire bonding capability.

TWX-40 RAIG - a mixed reaction bath that delivers both immersion and autocatalytic (electroless) modes of deposition. This RAIG process is a proven alternative to earlier attempts to achieve heavier gold deposits on ENEPIG, i.e. extending the dwell time in the immersion bath. *That* practice forces the immersion bath to do what it was never designed to do, causing inevitable damage to the nickel underlayer.

Talon 3 – Electroless palladium phosphates directly onto electroless nickel, copper and zincated aluminum. and is the foundation for ENEPIG, EPIG and EPAG final finish layer deposits when top coated with immersion or RAIG gold.

Deposition rate and deposit quality are consistent throughout the life of the bath. Baths are highly stable and tolerant of impurities. ENEPIG deposits are gold and aluminum wire bondable with immersion gold top-coat.

TPD-23 – Altea TPD 23 is an electroless pure palladium process for surface mount applications and wire bonding. It is ideally suited to fine patterns and HF applications, and provides excellent thickness uniformity.

The process is autocatalytic, with excellent wire bonding for PCBs and IC packages when top-coated with RAIG or immersion gold.

Nimuden NPR-8 - a mildly acidic electroless nickel-phosphorus process for electroless nickel / gold plating to selective PCBs with dry film masking. Catalyst, electroless nickel, and immersion gold components have been optimized for highest productivity and bath life. The NPR-8 bath is highly stable in continuous use; phosphorus content in the deposit remains constant regardless of metal turn-overs.

NPR-8 is chemical corrosion-resistant, especially against OSP treatment chemicals, including pretreatment, and is ideal with lead-free solders. It is used with TAM 55 or RAIG gold to produce the highest quality ENIG, with the highest yields.



Final Finishes



TCU-38/41 DIG – UIC Direct Immersion Gold processes meet the highest standards for high frequency applications and fine pattern capability. Ductile deposits are compatible with flex PWB applications. They also provide high solder joint reliability, and wire bondability. TCU-38 produces dense, homogeneous non-porous gold up to 0.3 μ m; TCU-41 deposits up to 0.1 μ m.

EPIG/EPAG – Developed for high frequency, microwave and flex circuit applications, the UIC EPIG/EPAG process plates fine patterns with L/S of ≤ 20 microns. UIC electroless palladium plates directly onto copper. Nickel-free formula generates less build-up on circuits, resulting in resolution of finer geometries. EPIG/EPAG is highly solderable and gold wire bondable.

IGEPIG – Immersion Gold / Electroless Palladium / Immersion Gold is a palladium activator-free process. Its unique chemistry provides the finest pattern-ability by preventing palladium over-plating. The absence of electroless nickel makes signal and insertion loss extremely low.

The IGEPIG process has excellent SJR, and multi-reflow capability at 240°C. AES wide scan analysis shows that neither copper nor palladium diffuse to the surface.

In addition, where other wire bonding final finishes have poor reliability at high temperatures, the wire bonding performance of IGEPIG is uniquely maintained, even at high temperatures. Other processes do not have this advantage.

ETCHBOND CZ-2030 - organic acid-type, single-component product provides CT-910 performance with fewer components. It is an ideal copper surface roughening treatment for use prior to resist or solder-mask, with a unique surface topography that provides exceptional adhesion on resin systems.

CZ-2030 has a stable etching rate, and provides maximum soldermask adhesion at a low etch (less than 40 μ m). CZ-2030's single-component system, coupled with its high copper capacity (55 g/l) reduces storage and waste.

ETCHBOND CZ 8201 – an organic micro-etchant that optimizes copper bonding to resins – specifically low-loss resins – or soldermask. The surface topography of CZ 8201 is unique, has an etch rate of less than 20 μ m, and cannot be duplicated with conventional etchants.

Copper depth can be tailored to the application. Oxygenated chemistry produces the most stable etching rate available.

CZ8201 is ideal for high-adhesion applications, including pretreatment for built-up resin lamination, dry film lamination and solder mask application.

Organic Filmbond – provides etch-free inner layer bonding and high adhesion performance for HF applications, including those involving low loss dielectric resins.

The treated copper surface is smoother than that of chemical roughening; its surface profile is identical to plated copper.

