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UYEMURA INTERNATIONAL CORPORATION

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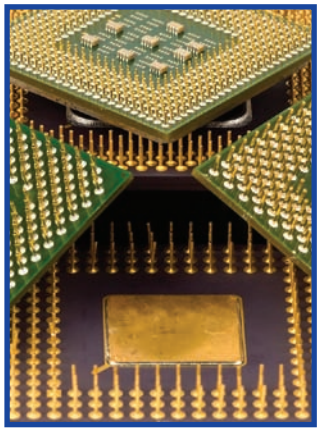
New ENEPIG Buzz Based on Reliability, Risk Prevention

ENEPIG - Electroless Nickel / Electroless Palladium / Immersion Gold is today generating more "buzz" than when it was introduced over a decade ago. The reason: its suitability for both wire bonding and as a way to produce reliable solder joints with lead-free SAC alloys, while eliminating the risk of black nickel. ***(It is also useful in preventing BGA fractures, and has potential for replacing the SIT used for HDI cellular phone PCBs.)***

Black nickel is not common, but it carries a hefty price, even when the severity is minor. Numerous factors cause it, including insufficient phosphorus, too-aggressive chemical reactions in the immersion gold as it attaches to the nickel, and immersion gold that is too thick, or too porous. What is certain, however, is that when it manifests, entire board lots are ruined. ENEPIG is increasingly regarded as an ideal solution. ***Continued on page 4***

Immersion Tin for PWG/PKG Produces Thick Deposit, Mitigates Tin Whiskers



Uyemura has introduced a "universal" immersion tin bath that deposits a solderable surface finish for PWBs. It is "universal" in that it is compatible with virtually all commercial solder masks, and can be used in vertical or horizontal equipment.

Presa RMK-30 Immersion Tin is deposited via displacement, only on the copper surface. The tin deposit maintains excellent solderability, even with higher temperatures, and even following long storage. The bath is fluoride-free and operates at relatively low temperatures. It delivers consistent performance throughout its long service life.

The RMK-30 finish is compatible with both eutectic and lead-free solder, and meets the requirements of press fit connections.

"Precious Metals Price to Rise 21% in 2010?"

Platinum Group Metals to Lead the Advance

By Don Walsh, *Director of Operations*

A January 6, 2010 article published in *Purchasing* Magazine predicts that precious metal prices will increase by 21% in 2010, led by a 40% increase in the cost of palladium to $370/troy ounce from $264 in 2009.

Platinum is projected to increase to an average $1442/oz, a 20% gain from $1200 in 2009.

The platinum group metals, which include rhodium, are projected to rise in price due primarily to increased demand from manufacturers of catalytic converters. Rhodium is forecast to rise 19% to a transaction price average of $1723/oz vs. $1445 in 2009.

Analysts at J.P. Morgan Securities predict an equilibrium in supply-demand fundamentals for gold during 2010, but believe that prices for gold and silver will remain volatile, rising in sync with concerns about global inflation and dollar depreciation.

Also driving metals prices is the growing popularity of ETFs (Exchange Traded Funds) which many investors regard as a way to invest in precious metals at low cost. At the close of 2009, global ETF assets broke through the $1 trillion mile-stone. According to Barclays Stockbrokers, there was a 31% increase in ETF investments in Q4, 2009, compared to Q4, 2008. This activity, too, pushes prices higher.

The consensus price of gold in 2010 was, as of January, $1225/oz, an increase of 26% from $972 in 2009. Silver is predicted to rise 15% to $16.90/oz from $14.70.

These predictions sound credible and convincing, but they are not universal. A survey of the trade and business press is consistent only in that it presents equal numbers of analysts forecasting moves in both directions!

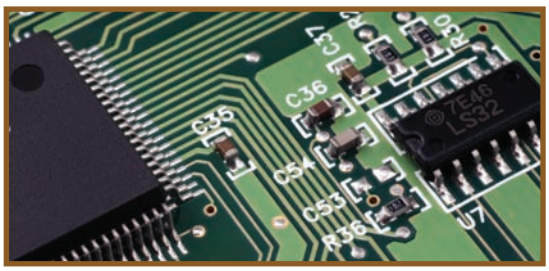
The bottom-line is that customers are concerned about volatility. We can all adjust to a new price level, but wide swings, particularly upward, strike fear in everyone, and confound long-range planning.

More often than we'd like to acknowledge, those who are plating gold, who are experiencing difficulties, are having problems because there is virtually no gold **IN** the gold bath! We are not sure whether a hope for alchemy or something else is at work here, but gold concentrations must be monitored and managed for the bath to process effectively. Fortunately, there are excellent tools to do this – and Uyemura has the industry's most experienced technical support team to help.

Whether your choice is immersion gold, immersion silver or tin, or if you're receptive to alternatives to the system you are using, Uyemura offers expert field and lab testing, and plating solutions to every application.

"The science of alchemy I like very well, and indeed, 'tis the philosophy of the ancients."

- Martin Luther's *Table Talk*



The Uyemura Online Library *offers a wealth of information about PCB manufacturing, final finishes, developments in DIG, ENIG, and ENEPIG, gold wire bonding, UBM, Electroless Plating for LTCC Metallization, and much more. Visit:* www.uyemura.com *and click the "library" icon under the ISO logo.*

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Uyemura International Recognized by IPC

IPC honored Uyemura with the Peter Sarmanian Corporate Recognition Award for 2009.

LEFT: Don Gudeczauskas, Technical Director; Mario Orduz, Product Manager; Don Walsh, Director of Operations; Tony Revier, President; and George Milad, National Accounts Manager, accept the Peter Sarmanian Award, bestowed by IPC at the organizations annual conference. The award recognized Uyemura's long history of technical and management leadership.

George Milad receives the President's Award from IPC CEO Denny McGuirk.

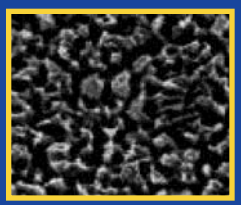
The **IPC Peter Sarmanian Corporate Recognition Award** honors and recognizes an IPC member corporation in the printed circuit board industry that has made contributions to the printed circuit board industry, while demonstrating support of IPC through participation in technical and/or management programs.

This award recognizes companies who have actively made our industry better. The award is named for former IPC Board Chairman Peter Sarmanian.

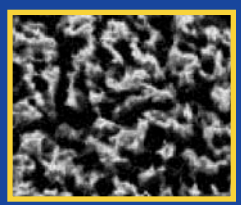
Also, in 2009, George Milad received the coveted IPC Presidents Award. This prestigious award is presented to IPC members who have exhibited ongoing leadership in IPC and have made significant contributions to the association and the electronic interconnect industry.

Milad has nearly 25 years experience in the PCB industry and is Uyemura's National Accounts Manager of Technology.

New MEC Technologies Deliver Maximum Adhesion, Less Waste, Low Energy Processing



EtchBond CZ-2030 - 20 microinches



EtchBond CZ-2030 - 40 microinches

MEC, world-leader in advanced etchants for micro-roughening coppers in the circuit board and semiconductor industries, has introduced three new products in the US that are now available exclusively from Uyemura.

MEC V-Bond is an H2SO4-H2O2-type microetching agent developed as an alternative to black oxide treatment. The unique surface topography produced by V-Bond enhances the adhesion of copper to all resins, including high Tg and HF (halogen-free). It has proven to provide the highest-available peel strength in the industry, while having a high copper capacity (45 g/l) for less waste. Its bath operates at low temperature and is engineered to be sludge-free for up to 1 year. V-Bond offers the best performance with all materials

MECSEAL CL-5018 Organic Solderability Preservative enhances solderability by forming an anti-tarnish film that provides exceptional resistance to moisture and heat. CL-5018 was engineered as a low-energy-consuming process. It is usable at room temperature, and is environmentally friendly. CL-5018 is compatible with lead-free solder and maintains excellent solderability after multiple heat shocks.

EtchBond CZ-2030 is a single-component copper treatment for use prior to resist or soldermask. Its unique surface topography provides the very best adhesion on resin systems. CZ-2030 has a stable etching rate, and provides maximum soldermask adhesion at a low etch (less than 40 µ inch). CZ-2030's single-component system coupled with its high copper capacity (55 g/l) reduces storage needs and minimizes waste.

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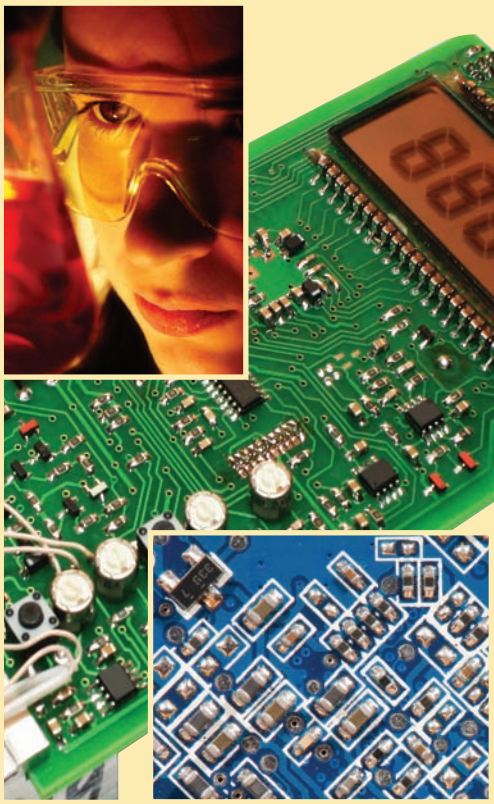
Continued from Page 1

Studies conducted at Uyemura's Central Research Laboratories have demonstrated that ENEPIG produces a highly reliable solder joint with copper-bearing LF alloys like the SAC series. The solder joint reliability is higher than any joint formed, even with eutectic solder. The Ni/Sn IMC formed incorporates the copper and the palladium, and is theorized to be (Cu,Ni) 6Sn5+Pd, with palladium evenly dispersed throughout the IMC. The IMC formed shows minimum propagation even after exposure to 1000+ hours of thermal stress (150°C).

Medium-sized shops have taken the lead in installing ENEPIG technology; two of the largest shops have also followed suit. More often than not, ENEPIG is installed alongside ENIG, rather than being its replacement.

ENEPIG is formed by the deposition of electroless Ni (120 - 240 µins) followed by 5 - 15 µins of electroless Pd with an immersion gold flash (1 - 2 µins). Uyemura's leading ENIG is offered in combination with our TMX Electroless Gold – and in combination with our Talon Electroless Palladium for the *Ultimate* ENEPIG.



About Uyemura

Uyemura specializes in plating chemistries for the PWB, packaging and decorative industries. Among its specialties are acid copper products, HASL alternative products: electroless nickel/ immersion gold (ENIG), nickel/ palladium/ gold ENEPIG, immersion silver, immersion tin and direct immersion gold (DIG), and copper surface treatments. Uyemura offers a variety of decorative electroless nickel products, including lead and cadmium-free nickel, black nickel and diamond reflective products.

"Have you ever worked for a green company before?"

UYEMURA INTERNATIONAL CORPORATION

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And for this we are very grateful!