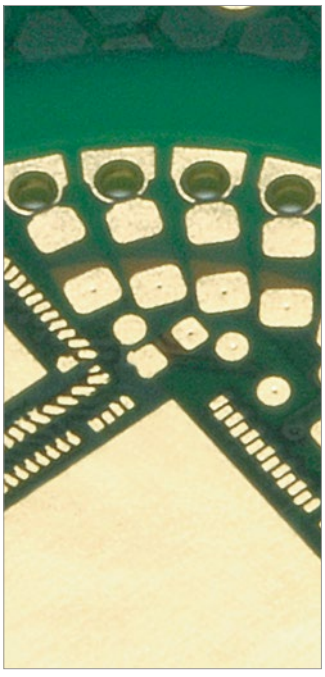
Au Pd

Version: 10 April 2017

umicore Electroplating

EPIG PROCESS

ELECTROLESS PALLADIUM AND IMMERSION GOLD PLATING

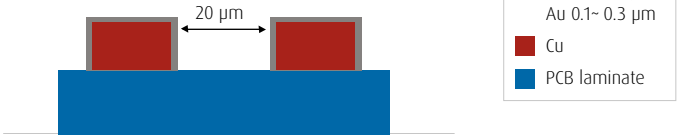


Electroless Palladium and Semi-Autocatalytic Gold Plating

Umicore's palladium and gold plating process (EPIG) provides customers a high performance nickel-free coating which meets most of the common assembly requirements like multiple solderability and bondability with aluminium and gold wire even by existing thermal ageing stress before assembly.

Due to its outstanding film characteristics EPIG deposition is very well suited to withstand the higher requirements of PCB designer concerning fine pattern ability and high performance regarding soldering and bonding process signal transfer in combination with complying newest RoHs and WEEE regulations.

EPIG as Final Finish



EPIG plating on PCB

Advantages

- Nickel free coating
- Thin and very uniform electroless deposition
- Suitable for (ultra) fine pitch layouts
- Ductile film compatible for flex PCB applications
- Dense and homogenous gold protection layer up to 0.3 µm feasible
- High solderjoint reliability (SJR) due to low void formation
- Excellent Al-, Au-, Cu-(Pd coated) and Ag-wire bondability

Applications

- Flexboard PCB (FPC)
- Multi-functional assembly
- Fine pattern PCB design

EPIG PROCESS

ELECTROLESS PALLADIUM AND IMMERSION GOLD PLATING

TECHNICAL SPECIFICATIONS ELECTROLESS PALLADIUM PLATING

Electrolyte characteristics Altarea® TPG-39	
Electrolyte type	Autocatalytic process
Metal content	0.6 (0.45 - 0.75) g/l Pd
pH value	7.2 (7.0 - 7.5)
Operating temperature	60 °C
Deposition rate	0.6 µm / 10 min

Coating characteristics	
Coating composition	Palladium-Phosphorus
Colour of film	Grey
Recommended thickness	0.1 - 0.3 µm

TECHNICAL SPECIFICATIONS (SEMI AUTOCATALYTIC) GOLD PLATING

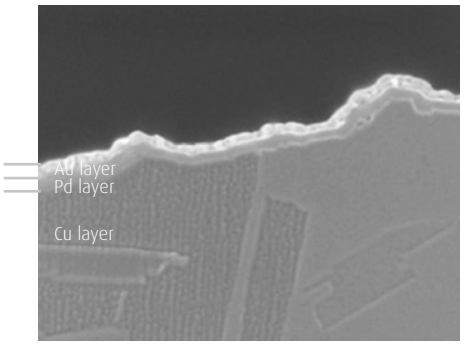
Electrolyte characteristics Gobright® TWX-40	
Electrolyte type	Semi autocatalytic
Metal content	1.2 (1.0 - 1.4) g/l Au
pH value	7.1 (6.9 - 7.4)
Operating temperature	78 (76 - 84) °C
Deposition rate	0.12 µm/15 min at 78°C

Coating characteristics	
Coating composition	Fine gold
Purity	99.9 wt %
Colour of film	Yellow
Recommended thickness	0.05 - 0.2 µm

EPIG PROCESS

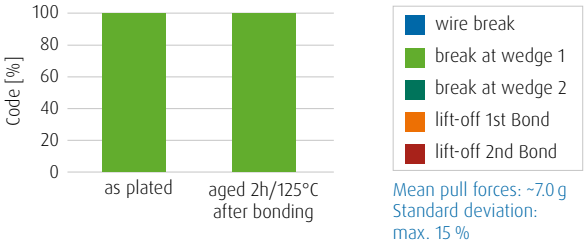
ELECTROLESS PALLADIUM AND IMMERSION GOLD PLATING

Cross-Section Observation by FIB of EPIG Film



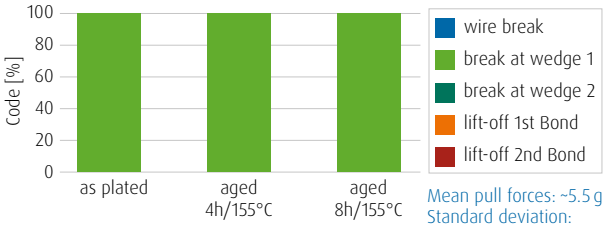
Thin and uniform Au/Pd deposition

Aluminium Wire Pull Test Results



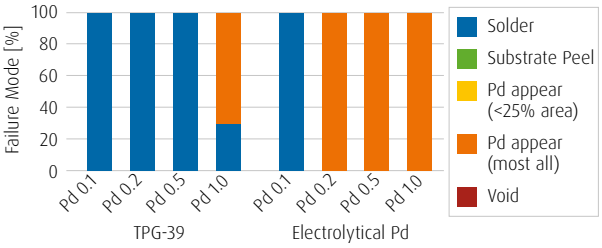
Mean pull forces: ~7.0 g
Standard deviation: max. 15 %
No lift-offs

Gold Wire Pull Test Results



Mean pull forces: ~5.5 g
Standard deviation: max. 15 %
No lift-offs

Comparison of EPIG and Pd Film Type for SJR



EPIG used Pd-P had excellent SJR when Pd thickness was less than 0.5µm. On the other hand, EPIG used pure Pd had poor SJR when Pd thickness was more than 0.2µm.

Umicore Galvanotechnik GmbH
Klarenbergstrasse 53-79
73525 Schwaebisch Gmuend (Germany)

Technical Support: Phone +49 7171 607-357
Sales Department: Phone +49 7171 607-229

www.ep.umicore.com

umicore Electroplating

The information and statements contained herein are based on our experience in the fields of research and applied technology and are believed to be accurate at the time of publication, but - unless agreed in writing - we make no warranty with respect thereto, including but not limited to any results to be obtained. This product information sheet in the English language prevails any translation.