

Electroglow

Electropolish for Cu alloys



Electronics

Functional electronic coatings

atotech.com

Universal electropolish for Cu alloys

<0,1

percent RSAI

Relative surface area increase with Electroglow compared to theoretical surface area

Electroglow

reduces effectively the surface roughness and the amount of residues on Cu and Cu alloys. Base material variations are thus minimized and the performance of the subsequent plating processes is significantly improved. As an example, formation of pores in Ni sulphamate and hard Au is suppressed resulting in improved corrosion resistance. Moreover, it helps also to minimize the required Nickel and Au thickness while passing accelerated aging test as the Nitric Acid Vapor test.

Electroglow is widely used as an anodic pretreatment step in modern R2R lines.

Features and benefits

- Applicable for Cu, brass, bronze and other Cu alloys
- For R2R and strip to strip plating tool
- Etch rate linear with anodic current density
- Effective removal of residues, nodules and other surface irregularities
- For smooth surfaces with lower defect rates

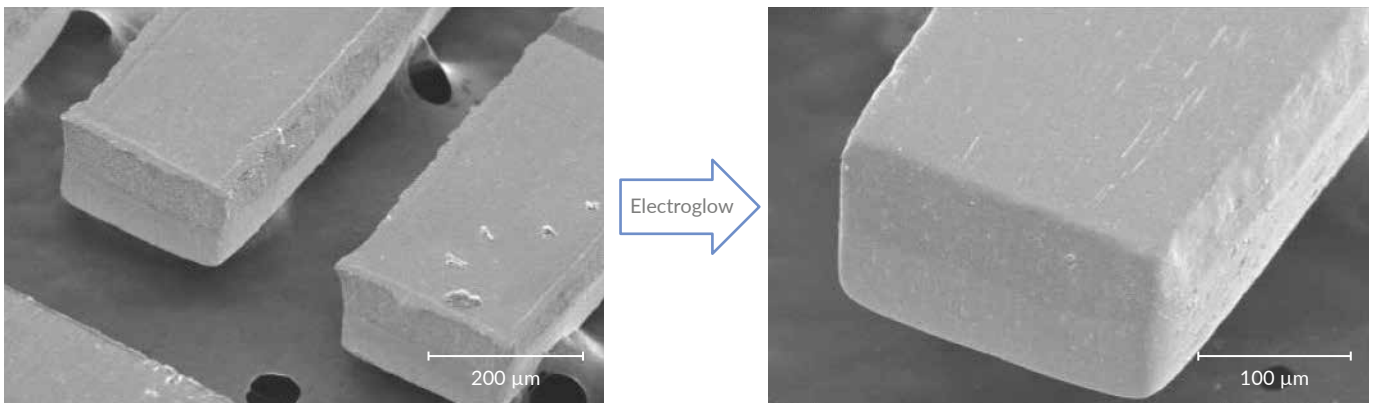


Figure 1-2: Effect of electropolish with Electroglow for 15s at 40 ASD

Electroglow – electropolish for Cu alloys

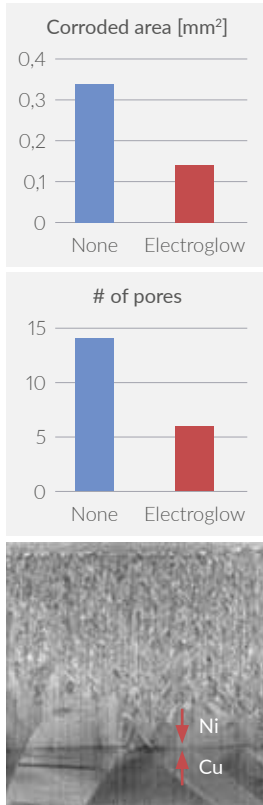


Figure 3-5:
Effect of Electroglow.
Top: NAV test with 1.5 µm Ni and 0.3 µm Au
Middle: No of pores after plating 1.5 µm Ni and 0.3 µm Au
Bottom: Epitaxial growth of Ni on electropolished brass.

Corrosion protection

Electroglow improves corrosion resistance by i) removal of residues ii) smoothing the surface and iii) reduction of pore formation. A one to one comparison with a non treated surface reveals a better performance in the Nitric Acid Vapor test: a reduced corroded area and fewer pores formation.

The smoothed Cu alloy surface allows an epitaxial growth of Ni sulfamate on the underlying base material.

Minimum Relative Surface Area Increase – RSAI

The degree of smoothing a surface is best expressed by the term RSAI. It is the measured surface area compared to an absolutely flat surface. The rougher the surface the higher the RSAI. RSAI values are measured with a scanning force microscopy on a 624 x 624 µm² area. Another important classification number is SA which describes the macro roughness.

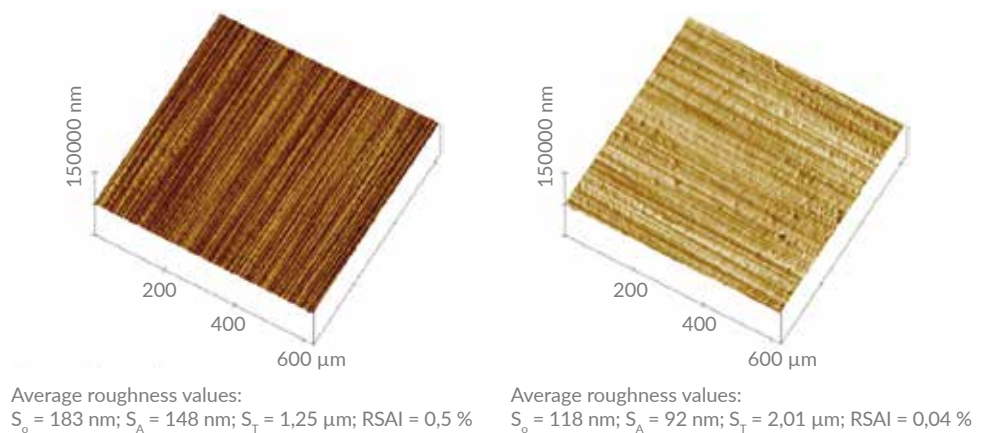


Figure 6 and 7: Effect of Electroglow on CuSn. Left before Electroglow and right after Electroglow

Features and benefits

- Anodic treatment: 30-40 ASD
- Treatment time: 5 – 90 s
- Temperature: 20-30 °C
- Etch rate linear with anodic current density

