

## Coining's Multi-Layer Clads

Coining specializes in supplying stamped multi-layer Kovar™, Cu, W and Mo based clad materials. Our in-house rolling, annealing and analytics capabilities ensure the clad materials meet required specifications.

## Cladding Defined

Cladding is a multi-step process where two or more metals are bonded or joined together under high pressure and temperature. Cladding allows dissimilar material to be joined for the creation of a 'new' material with engineered properties for conductivity, CTE, bondability and solderability, which are used in a wide variety of electronics applications including:

- Semiconductor die attachment with stringent thermal management and CTE requirements
- Wire bonding contact tabs requiring soldering to a PCB or ceramic or metal substrate
- Bond pads that bridge between Au based signal and Al based power circuitries.
- Solderable bridging conductors/straps.

## Product Offerings

### **Die Attachment**

Coining offers a variety of refractory metal based clads that provide a CTE similar to the semiconductor along with high thermal and electrical conductivities.

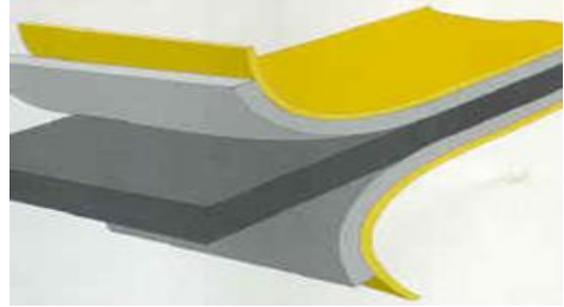
Typical die attach pads have metal layer combinations like:

- Ni/Mo/Ni/Au
- Cu/W/Cu/Au
- Au/Ni/Mo/Ni/Au80Sn20
- Au/Ni/Mo/Ni/Au88Ge12

**Thickness:** 0.010" typical

**CTE range:** 5-6 ppm/K typical

**Thermal Cond. range:** 135-185 W/m\*K typical



5-Layer Clad

## **Wire Bonding Contact Tabs/Terminals**

Typical clads for wire bonding terminals include:

- Kovar™/Ag72Cu28 (85% Kovar), Brazing temperature > 790°C
- Cu (or Ag)/Ag60Cu30Sn10 (85% Cu), Brazing temperature > 625°C

## **Bond Pads**

Bond pads are used in automotive and high power applications for connecting Al wire or ribbon to Cu tracked PCB or ceramic substrates/hybrids.

**Clad Layers:** Al/Cu (20-30% Al) typical

**Thickness:** 0.010" typical

## **Straps**

Coining manufactures standard, custom and complex precision stamped straps, which bridge conductive patterns on 2 different subassemblies.

The usually Cu-core straps are soldered at the intermediate or final assembly step when the solder clad is reflowed. All strap stamping is done in-house in our highly-integrated production facility.

## Custom Multi-Layer Clads

Contact Coining Engineering to discuss a custom multi-layer clad material designed to meet your requirements.

Direct inquiries may be submitted through our website: [www.ametek-ecp.com](http://www.ametek-ecp.com) under Ask An Engineer.