COINING™ / AMETEK® SPECIALTY METAL PRODUCTS









MICROSTAMPINGS

Microstampings are primarily used to dissipate heat or provide an interface for an electronic circuit or component. COINING holds a unique position in the microstamping industry based on our superior cladding capability.

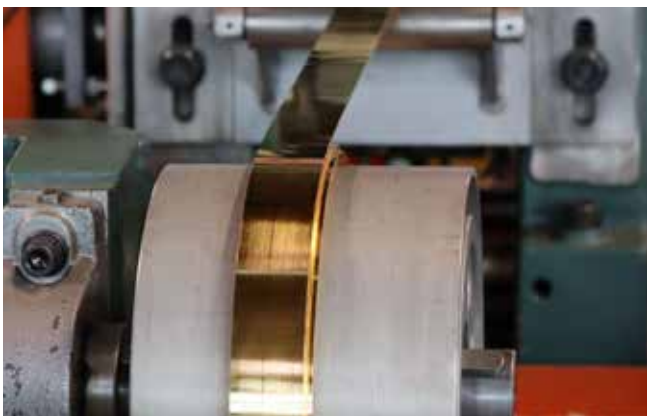
Microstampings have the following benefits:

- Strong electrical conductivity
- Thermal conductivity
- Cross-sectional thicknessess less than 0.010 inches (0.25 mm)

Introduction and overview

COINING's custom metal stamping process includes stamping the correct micro-size from the material for various uses. We work with Kovar™, molybdenum, tungsten, copper, Silvar™, Silvar-K™, and various other metallic materials commonly found in metal and ceramic packages.

Other COINING stampings are manufactured from cladded strip consisting of two or more metal layers bonded together in a specialty rolling operation, also known as metallic bonding. During this process, we run two layers of strip through a roll-compacting mill that bonds the two layers of metal together.



Rolling operation that bonds two layers of strip through a roll-compacting mill



Microstampings with Tape and Reel packaging

COINING creates metal stampings that are used for:

- Jumper chips
- Bond pads
- Covers
- Heat sinks
- Lead frames
- Tabs
- Terminals
- Other components on microelectronic assemblies and packages

Applications

- Automotive
- Medical
- Space
- Phonotics
- Defense
- Optical communications

Microstampings and Solder Preforms

More than 100 Presses:

- 3 ton to 85 ton
- High speed (>2000 strokes/min)
- High precision, 4 post presses
- Hot presses for stamping exotic metals such as Molybdenum and Tungsten



COINING's stamping presses



Stamping machine stamping metal strip

COINING Differentiators

Material Processing Capability:

- In-house advanced casting, rolling and cladding
- Plating to customer specifications
- Specializing in custom alloys

Tool & Die Capability:

- More than 15,000 dies in inventory
- Customized designs
- Precision tooling designed to match material characteristics
- Progressive stamping up to 16 stations
- Deep draw designs available
- In-house EDM based tool manufacturing

Parts delivered Clean Room ready

Industry-leading Applications Support Team



Casting process: melted materials being poured into a mold

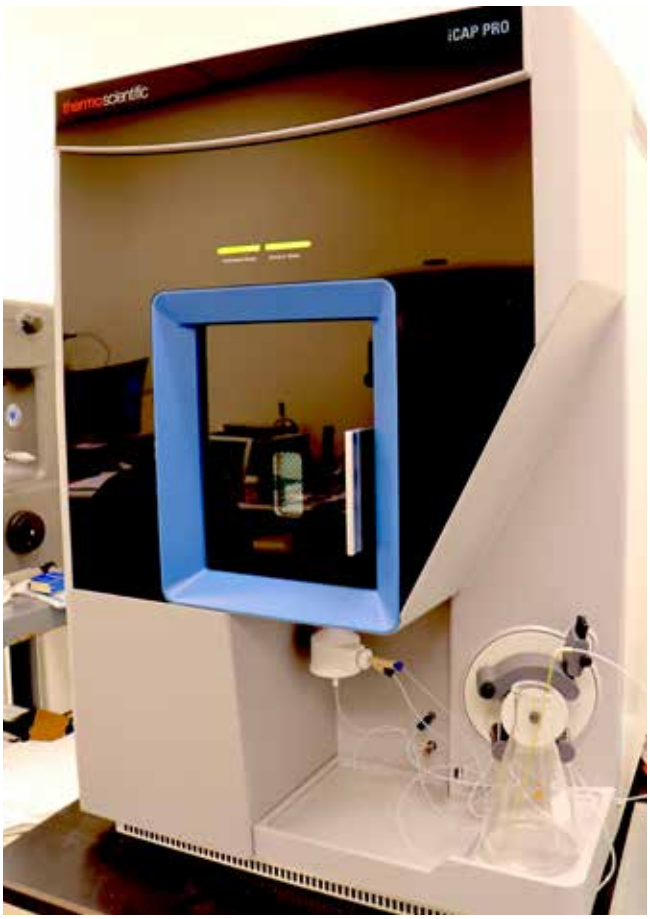
Applications Support

Expert Engineering Team:

- Our material scientists and manufacturing engineers have more than 100 years experience.

Analytical capabilities:

- DSC (Differential Scanning Calorimetry) to evaluate proper melting point and characteristics
- Wetting tests to ensure optimal wetting and spread of solder alloys
- SEM with EDS capability for detailed metallurgical analysis and FA
- LECO O2, N2, C and S analyzers
- ICP instrument



Our ICP instrument provides optimum testing capabilities

Stamping Capabilities

Capabilities include:

- Precision stamping
- Coining
- Drawing
- Punching

A wide varity of High Precision Parts available:

- We have design flexibility to create simple to complex shapes
- Thicknesses less than 1mil

All tooling designed, manufactured & maintained in-house:

- Enables rapid prototyping
- Ensures prime condition of tooling



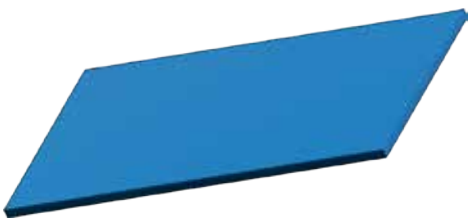
Our metallurgist using our scanning electron microscope

Stamping Capabilities Rectangles & Discs

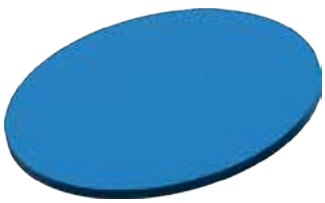
Rectangle & Disc		
Shape	Linear Dimension	Tolerance
Rectangle & Disk	0.005 to 1.0 1.0 to 3.0 3.0 to 6.0	± 0.0004 ± 0.002 ± 0.003

Rectangle & Disc		
Thickness	Tolerance	Material
0.0005 to 0.030 0.030 to 0.125	± 0.0001 ± 0.001	Gold, Tin, Silver, Nickel, Kovar ™, Stainless Steel, CRS, Molybdenum, Tungsten

Note: All dimensions, thicknesses and tolerances are typical.
Other specifications available upon request.



Rectangle



Disk

Stamping Capabilities: Washers & Frames

Shape	Linear Dimensions (inches)	Tolerance	Thickness (inches)	Tolerance
Washer	ID 0.015 to 1.0	0.0004	0.001 to 0.30	0.0005
	ID 1.0 to 3.0	0.002	0.030 to 0.125	0.001
	OD 0.030 to 1.0	0.001		
	OD 1.0 to 3.0	0.002		
		0	0.0005 to 0.001	
Frame	ID 0.040 to 1.0	0.001	0.001 to 0.30	0.0005
	ID 1.0 to 3.0	0.002	0.030 to 0.125	0.001
	OD 0.060 to 1.0	0.001		
	OD 1.0 to 3.0	0.002		
Materials	Gold, Tin, Silver, Nickel, Kovar™, Stainless Steel, CRS			

Note: All dimensions, thicknesses and tolerances are typical. Specifications available upon request.



Washer



Frame

Stamping Capabilities Various Standard Shapes

	Base Plate	Bent Parts	Battery Can
Dimensions * (inches)	0.200 to 1.0 ± 0.0004 1.0 to 2.0 ± 0.002 2.0 to 6.0 ± 0.003	0.200 to 1.5 ± 0.005	0.100 to 1.0 ± 0.0004 1.0 to 2.0 ± 0.003
Thickness (inches)	0.001 to 0.030 ± 0.0005 0.030 to 0.125 ± 0.001	0.005 to .125 ± 0.002	0.025 to .0500 ± 0.001 0.050 to 0.1875 ± 0.002
Material *	Gold, Tin, Silver, Nickel, Copper, Kovar ™ , Stainless Steel, Tungsten (W), Molybdenum (Mo), others		

** For Base Plates COINING can stamp W and Mo up to 0.040" thick.*

Note: All dimensions, thicknesses and tolerances are typical. Other specifications available upon request.



Base Plate



Bent part



Battery Can

Key Benefits To Working With COINING

In-house Materials Science Knowledge combined with Tool and Die Expertise:

- Enables fabrication of precision complex stamped parts
- Ensures rapid delivery of high quality parts

Delivery of low and high volume Microstampings

Reliable On Time Delivery schedules

MICROSTAMPINGS



COINING at a Glance

COINING is a world-class manufacturer of micro components that have a big impact on people's lives. From sensors and satellites to implantable electronics, our high-performance metal products operate in a vast range of mission critical applications worldwide.

For people who demand precision, flexibility, and speed, COINING is the market leader in custom alloys, microstampings and solder preforms. COINING also offers specialized bonding wire, precision thermal management materials, and hermetic solutions. In fact, we're the largest solder preform manufacturer in the world. With a broad range of products, the most extensive library of preform dies in the industry - about 15,000 different tools - and our very own COINING labs to make custom alloys, we can move faster to market than our competition.

COINING is part of the AMETEK Specialty Metals business within AMETEK Inc., a leading global provider of electronic instruments and electromechanical devices.

COINING™

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SPECIALTY METAL PRODUCTS

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