

# COINING

## LEAD-FREE



### WHAT IS AFFECTED?

- Large & small household appliances
- Monitoring and control instruments
- IT & Telecommunication equipment
- Consumer equipment
- Automatic dispensers
- Medical equipment systems
- Electrical and electronic tools
- Toys
- Lighting equipment
- Automotive electronics

**Global Supplier of Soldering  
and Brazing Preforms**



## Go lead-free or else!

Lead is a known environmentally toxic element, with significant adverse effects on human health. As such, it has become the focus of worldwide governmental efforts to eliminate its use wherever possible. Europe has enacted EC directives (WEEE/RoHS) banning lead in many applications. Japan has banned lead from most industrial uses, and the Americas are moving in this direction as well. Companies that fail to heed these regulations or warning signs to eliminate lead usage wherever possible, face dire consequences ranging from loss of customers and applications to outright prohibition from participating in certain markets. Regardless of regulation, intelligent manufacturers and consumers will increasingly demand lead-free products.

## Go lead-free with Coining

With its extensive experience and expertise in lead-free technology, Coining can provide a comprehensive array of lead-free alloys and preforms. Coining advantages include:

- **Over 100 hundred lead-free alloys** with melting points (both eutectic and non-eutectic) ranging from 90° C to 1,100° C. Typically your requirements can be met with one of these alloys.
- **Precision stamping capabilities** supported by an extensive inventory of standard tools including discs, frames, rectangles, squares and washers. Coining's in-house ability to rapidly build complex dies from micro to macro scale enables expeditious delivery of standard, custom and complex shapes in sizes ranging from 0.0035" (0.09mm) to over 6" (15cm), and as thin as .0002" (5 microns).
- **An experienced staff of R&D metallurgists** to work with you to develop a custom alloy if an existing alloy does not meet your lead-free needs.
- **Completely integrated manufacturing** capability which enables Coining to efficiently move from the creation of an alloy to the completion of a finished part.

There is no single "magic" lead-free alloy that can be universally substituted for the existing lead-based soldering alloys. Your specific needs will define the best lead-free substitute. Coining's expertise will ensure that you receive a high quality product quickly and efficiently.



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## Coining Advantages

From top to bottom Coining is a customer-service driven company. This philosophy stems from the efforts of every individual and is further enhanced by an efficient and comprehensive technological and manufacturing structure.

The combined advantages of extensive standard tooling, alloying resources, and in-house capabilities enable Coining to quickly service your needs. Typically, a request for a quotation is responded to within a single business day. Samples of standard shapes or those from the tool list can be in your hands within two weeks, and it is not uncommon for Coining to ship within a few days.

## Partial list of lead-free alloys

Please refer to Coining's website, [www.coiningllc.com](http://www.coiningllc.com), or contact Sales or Customer Service for a complete list.

CHART KEY: S= Solidus L= Liquidus E= Eutectic Wt= Weight% Gr/cc= Density						
Alloy#	S/°C	L/°C	E	Composition/Wt		Gr/cc
3024	93	93	E	44 In, 42 Sn, 14 Cd		7.96
3033	95	95	E	51.5 In, 32 Bi, 16.5 Sn		7.31
3003	120	122		52 In, 48 Sn		7.30
361	138	140		57 Bi, 42 Sn, 1 Ag		8.57
349	139	139	E	57 Bi, 43 Sn		8.59
3006	144	144	E	97 In, 3 Ag		7.31
3000	156	156	E	100 In		7.69
2153	193	199		85.2 Sn, 8 In, 4.1 Ag, 2.2 Bi, 0.5 Cu		7.44
2147	195	201		88.5 Sn, 8 In, 3 Ag, 0.5 Cu		7.43
2165	199	199	E	91.2 Sn, 8.8 Zn		7.28
340	200	225		93.5 Sn, 5 Bi, 1.5 Ag		7.29
2155	209	212		93.3 Sn, 3.1 Ag, 3.1 Bi, 0.5 Cu		7.43
2156	210	215		92 Sn, 4.7 Bi, 3.3 Ag		7.46
2128	210	216		96.3 Sn, 2.5 Ag, 0.7 Cu, 0.5 Sb		7.38
2010	215	222		95 Sn, 5 In		7.29
2136	217	218		96.5 Sn, 3 Ag, 0.5 Cu		7.37
2138	217	218		95.5 Sn, 3.9 Ag, 0.6 Cu		7.39
2133	217	218		96 Sn, 3.5 Ag, 0.5 Cu		7.38
2005	221	221	E	96.5 Sn, 3.5 Ag		7.37
2009	221	240		95 Sn, 5 Ag		7.40
2112	227	227	E	99.3 Sn, 0.7 Cu		7.31
2061	227	300		97 Sn, 3 Cu		7.33
2000	232	232		100 Sn		7.30
2067	232	237		97 Sn, 3 Sb		7.28
2024	233	233	E	65 Sn, 25 Ag, 10 Sb		7.81
10004	278	278		80 Au, 20 Sn		14.52
10121	278	290		79 Au, 21 Sn		14.34
10013	280	303		78 Au, 22 Sn		14.18
10003	356	356		88 Au, 12 Ge		14.67

## Coining's In-House Capabilities Include:

Melting and Alloying from Raw Materials • Extrusion and Continuous Casting • Rolling • Cladding • Sphere-Making  
Stamping • Tack Welding • Inspection • Packaging • Tooling & Die Making

**COINING...the capability of working from raw material to finished product within our own facility.**