

SECTION 1: Chemical product and company identification

1.1 Product Identifier

Product form : Article, solid
Product Name : AgCuCo alloy preforms and -strips

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1 Relevant identified uses

Industrial/Professional use spec. : Industrial
For professional use only
Use of the substance/mixture : Brazing tab, soldering tab
Function or use category : Die-attach tab

1.2.2 Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Coining, Inc.
15 Mercedes Drive
Montvale, NJ 07645
Tel: +1(201)7914020
www.coininginc.com
martin.oud@ametek.com

1.4. Emergency Telephone Number

Emergency Number : CHEMTREC: 800-424-9300 for US/703-527-3887 outside US
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call
CHEMTREC-Day of Night.

SECTION 2: Hazards identification

2.1. Classification of the Substances or Mixture

Classification GHS-US : Skin sens. (cat 1)
Resp. sens. (cat 1)
Aquatic Chronic 4

Adverse physicochemical, human health and environmental effects

No additional information available.

2.2. Label Elements

In Accordance with 29CFR1910.1200 (f)(4): Not regulated for labeling.

Hazard Pictograms



Signal Word: Warning

Hazard Statements

H317 May cause allergic skin reaction
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H413 May cause long-lasting harmful effects to aquatic life

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Precautionary Statements

- P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P270 Do not eat, drink or smoke when using this product
P273 Avoid release to the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents/container in accordance with local, regional, national and international regulations.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixture

Name	Product Identifier	%	Classification according to Regulation GHS-US
Silver	(CAS No) 7440-22-4	0.1-95	Solid, not classified
Copper	(CAS No) 7440-50-8	0.1-95	Solid, not classified
Cobalt	(CAS No) 7440-48-4	0.1-5	Skin Sens. 1, H317 Resp. Sens. 1, H334 Aquatic Chronic 4, H413

Full text of H- phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show there label where possible).
- First-aid measures after inhalation : When symptoms occur; go into open air and ventilate suspected area.
- First-aid measures after skin contact : Removal of solidified molten material from skin requires medical assistance. Cool skin rapidly with cold water after contact with molten product
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Call a doctor/physician

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : Under normal conditions of use not expected to present a significant hazard. Under milling, or physical alteration metal dusts may be produced that cause irritation of the respiratory tract, skin, and may be harmful. Molten material may release toxic and irritating fumes.
- Symptoms/injuries after inhalation : Not expected to be a primary route of exposure. The primary acute health hazard associated with this product would be the potential for exposure to fumes during metal processing operations. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the

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	mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.
Symptoms/injuries after skin contact	: Skin contact is not considered a potential route of exposure. The primary acute health hazard associated with this product would be the potential for exposure to fumes during metal processing operations. Where possible allow molten material to solidify naturally. Removal of solidified molten material from skin requires medical assistance.
Symptoms/injuries after eye contact	: Not expected to be a primary route of exposure. Dust generated from material cutting may cause a slight irritation. Slivers may be generated, which could cause mechanical irritation or injure the eye.
Symptoms/injuries after ingestion	: Ingestion is not considered a potential route of exposure.
Chronic symptoms	: Silver: Chronic skin contact or ingestion of silver dust, salts or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes. Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure. Cobalt: Chronic inhalation may cause diffuse nodular fibrosis and respiratory sensitivity

4.3. Indication of any immediate medical attention and special treatment needed

If medical advice is needed, have product container or label at hand.

SECTION 5: Fire fighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Does not burn. Use extinguishing media appropriate for surrounding fire
Unsuitable extinguishing media	: None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Dust, chips, or ribbons can be ignited more easily, by an ignition source, by improper machining, or by spontaneous combustion if finely divided and damp. Alloys with nickel may also produce toxic nickel carbonyl.
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5.3. Advice for firefighters

Firefighting instructions	: Exercise caution when fighting any chemical fire.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Handle in accordance with good industrial hygiene and safety practice.
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6.1.1. For non-emergency personnel

Protective equipment	: Use appropriate personal protection equipment (PPE)
Emergency procedures	: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment	: Equip cleanup crew with proper protection.
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Emergency procedures : Ventilate area

6.2. Environmental precautions

Avoid release to the environment

6.3. Methods and material for containment and clean up

For containment : If metal is in molten form, allow cooling and collecting as a solid. If the metal is in solid form collect for remelting purposes.

Methods for cleaning up : Clear up spills. Immediately and dispose of waste safely. Recover the product by vacuuming preferably. Contact competent authorities after a spill.

6.4 Reference to other sections

See heading 8, exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Hygiene measures : Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a dry, cool and well-ventilated place.

Incompatible products : Strong acids. Strong oxidizers.

7.3. Specific end use(s)

Professional brazing.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Silver (7440-22-4)		
Mexico	OEL TWA (mg/m ³)	0.1 mg/m ³
USA ACGHI	ACGIH TWA (mg/m ³)	0.1 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	0.01 mg/m ³
Canada	TLV- TWA (mg/m ³)	0.1 mg/m ³
Canada	TLV-STEL (mg/m ³)	0.3 mg/m ³

Copper (7440-50-8)		
Mexico	OEL TWA (mg/m ³)	0.2 mg/m ³ (fume), 1 mg/m ³ (dust and mist)
Mexico	OEL STEL (mg/m ³)	2 mg/m ³ (fume), 2 mg/m ³ (dust and mist)
USA ACGHI	ACGIH TWA (mg/m ³)	0.2 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	0.1 mg/m ³ (fume), 1 mg/m ³ (dust and mist)
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	0.1 mg/m ³ (fume), 1 mg/m ³ (dust and mist)
USA IDLH	US IDLH (mg/m ³)	100 mg/m ³ (dust, fumes and mist)
Alberta	OEL TWA (mg/m ³)	0.2 mg/m ³
British Columbia	OEL TWA (mg/m ³)	1 mg/m ³
Manitoba	OEL TWA (mg/m ³)	0.2 mg/m ³
New Brunswick	OEL TWA (mg/m ³)	0.2 mg/m ³
Newfoundland & Labrador	OEL TWA (mg/m ³)	0.2 mg/m ³

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Nova Scotia	OEL TWA (mg/m ³)	0.2 mg/m ³
Ontario	OEL TWA (mg/m ³)	0.2 mg/m ³
Prince Edwards Island	OEL TWA (mg/m ³)	0.2 mg/m ³
Québec	VEMP (mg/m ³)	0.2 mg/m ³
Saskatchewan	OEL STEL (mg/m ³)	0.6 mg/m ³
Saskatchewan	OEL TWA (mg/m ³)	0.2 mg/m ³
Yukon	OEL Stel (mg/m ³)	0.2 mg/m ³
Yukon	OEL TWA (mg/m ³)	0.2 mg/m ³

Cobalt(7440-48-4)		
USA ACGIH	ACGIH TWA (mg/m ³)	0.02 mg/m ³
USA NIOSH	NIOSH REL TWA (mg/m ³)	0.05 mg/m ³ (dust and fume)
USA OSHA	OSHA PEL (TWA) (mg/m ³)	0.05 mg/m ³ (dust and fume)

8.2. Exposure controls

Appropriate engineering controls : Ensure adequate ventilation, especially in confined areas.
 Personal protective equipment : Protective goggles. Insulated gloves



Hand protection : If material is hot, wear thermally resistant protective gloves.
 Eye protection : During metal processing, chemical goggles or safety glasses.
 Respiratory protection : During metal processing, wear approved mask.
 Other information : When using, do not eat, drink or smoke.

SECTION 9: Physical and chemical properties

9.1. Information on basis physical and chemical properties

Physical state : Solid
 Appearance : Preforms, squares, rings, discs
 Color : Metallic, silvery (or gold if Au-plated)
 Odor : Odorless
 Odor threshold : Not applicable
 pH : Neutral
 Relative evaporation rate (butylacetate=1) : Not detected
 Melting point : No data available
 Freezing point : No data available

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Boiling point	: No data available
Flash point	: No data available
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor pressure at 20°C	: No data available
Relative density	: 7.86 g/cc
Solubility	: Insoluble
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

9.2 Other information: No other information available.

SECTION 10: Stability and reactivity

10.1 Reactivity	: Hazardous reactions will not occur under normal conditions.
10.2 Chemical stability	: Stable under normal conditions. Dust, chips or ribbons can be ignited more easily, by an ignition source, by improper machining, or by spontaneous combustion if finely divided and damp.
10.3 Possibility of hazardous reactions	: Hazardous polymerization will not occur.
10.4 Conditions to avoid	: Direct sunlight. Extremely high or low temperatures.
10.5 Incompatible materials	: Strong acids. Strong oxidizers.
10.6. Hazardous decomposition products	: Metal oxides.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity : Product, nNot classified

Component toxicity:

Silver (7440-22-4)	
LD50 oral rat	>2000 mg/kg

Cobalt (7440-48-4)	
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LC50 Inhalation rat	>10mg/l
LD50 oral rat	6170 mg/kg

Irritation : Not classified

Corrosivity : Not classified

Sensitization : Not classified

Repeated dose toxicity : Not classified

Carcinogenicity : Not classified

Component Carcinogenicity

Cobalt (7440-48-4)	
ACGIH	A3 – Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC	Monograph 86 [2006] (without tungsten carbide); Monograph 52[1991] (Group 2B (possibly carcinogenic to humans))

Mutagenicity : Not classified

Toxicity for reproduction : Not classified

SECTION 12: Ecological information

12.1 Toxicity : Not established for solids

Silver (7440-22-4)	
LC50 fishes 1	0.00155 (0.00155-0.00293)mg/l (Exposure time: 96 h-Species: Pimephales promelas [Static])
EC50 Daphnia 1	0.00024mg/l (Exposure time: 48h-Species: Daphnia magna [Static])
LC50 fish 2	0.0062mg/l (Exposure time: 96h –species: Oncorhynchus mykiss [flow-through])

Copper (7440-50-8)	
LC50 fishes 1	0.0068 (0.0068-0.0156)mg/l (Exposure time: 96 h-Species: Pimephales promelas)
EC50 Daphnia 1	0.03mg/l (Exposure time: 48h-Species: Daphnia magna [Static])
EC50 other aquatic organisms 1	0.0426 (0.0426-0.0535)mg/l (Exposure time: 72 h-Species: Pseudokirchneriella subcapitata [Static])
LC50 fish 2	0.3mg/l (Exposure time: 96h –species: Pimephales promelas [Static])
EC50 other aquatic organisms 2	0.031(0.031-0.054) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [Static])

Cobalt (7440-48-4)	
LC50 fishes 1	>100 mg/l (Exposure time: 96 h-Species: Brachydanio rerio [static])

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12.2 Persistence and degradability

Brazing Alloys	
Persistence and degradability	Not established

12.3 Bioaccumulative potential

Brazing Alloys	
Bioaccumulative potential	Not established

12.4 Mobility in soil

No additional information available.

12.5 Results of PBT and vPvB assessment

No additional information available.

12.6 Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal information

13.1 Waste treatment methods

Waste disposal recommendations : Dispose of waste material in accordance with all local, regional, national and international regulations.

SECTION 14: Transport information

14.1. In Accordance with DOT : Not regulated for transport.

14.2. In Accordance with IMDG : Not regulated for transport.

14.3. In Accordance with IATA : Not regulated for transport.

14.4. In Accordance with TDG : Not regulated for transport.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. US-Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix a), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Silver (7440-22-4)	
Listed on the United States TSCA (Toxic Substances Control Act) Inventory	
Listed on United States SARA Section 313	
SARA Section 313 – Emission Reporting	1%

Copper/Copper Alloys	
SARA Section 311/312 Hazard Classes	Delayed (chronic) health hazard

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Copper (7440-50-8)	
Listed on the United States TSCA (Toxic Substances Control Act) Inventory	
Listed on United States SARA Section 313	
SARA Section 313 – Emission Reporting	1%
Cobalt (7440-48-4)	
Listed on the United States TSCA (Toxic Substances Control Act) Inventory	
Listed on United States SARA Section 313	
SARA Section 313 – Emission Reporting	0. de minimis concentration

15.1.2. US-State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	MA	MN	NJ	PA	RI
Silver	7440-22-4	No	No	No	No	No	No
Copper	7440-50-8	No	Yes	No	Yes	Yes	No
Cobalt	7440-48-4	Yes	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): WARNING! This product contains a chemical known to the State of California to cause cancer.

15.1.3. Non-US Regulations

Component Analysis – WHMIS IDL (Canada)

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum concentration
Cobalt	7440-48-4	0.1%

Copper/Copper Alloys	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

15.2 Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Other information This Safety Data Sheet has been established in accordance with the SDS requirements of the OSHA Regulation 29 CFR 1910.1200

GHS Full Text Phrases:

Acute Tox.1 (Inhalation: dust, mist)	Acute toxicity (inhalation: dust, mist) Category 1
Acute Tox.2 (Dermal)	Acute toxicity (dermal) Category 2

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Acute Tox.3 (Oral)	Acute toxicity (oral) Category 2
Aquatic Acute 1	Hazardous to the aquatic environment-Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment-Chronic Hazard Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment-Chronic Hazard Category 3
Carc.2	Carcinogenicity Category 2
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Flam. Sol. 1	Flammable solids Category 1
Pyr. Sol. 1	Pyrophoric solids Category 1
Skin Corr. 1A	Skin corrosion/irritation Category 1A
Skin Sens. 1	Skin sensitization Category 1
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT Se 3	Specific target organ toxicity (single exposure) Category 3
H228	Flammable solid
H250	Catches fire spontaneously if exposed to air
H300	Fatal if swallowed
H310	Fatal in contact with skin
H314	Causes severe skin burns and eye damage
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H330	Fatal if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P270	Do not eat, drink or smoke when using this product
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
P501	Dispose of contents/container in accordance with local, regional, national and international regulations.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; ADG = Australian Code for the transport of Dangerous Goods by Road and Rail; ADR/RID = European Agreement of Dangerous by Road/Rail; AS = Standards Australia; DFG = Deutsche Forschungsgemeinschaft; DOT= Department of Transportation; DSL = Domestic Substances List; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances;

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ELINCS = European Lists of Notified Chemical Substances; EU = European Union; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association; IDLH= Immediately Dangerous to Life or Health; IMO = International Maritime Organization; MAK = Maximum Concentration Value in the Workplace; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety & Health ; NTP = National Toxicology Program; OSHA=Occupational Safety and Health Administration; PEL= Permissible Exposure Limits; REL= Recommended Exposure Limits; STEL = Short-term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA Time weighted Average.

This information is based on our current knowledge and is intended to describe the product for the purpose of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

STATEMENT OF LIABILITY-DISCLAIMER

*To the best of the **COINING, INC's** knowledge, the information and recommendations contained in this publication are reliable and accurate as of the date prepared. However, accuracy, suitability, or completeness are not guaranteed, and no warranty, guarantee, or representation, expressed or implied, is made by COINING, INC. as to the absolute correctness or sufficiency of any representation contained in this and other publications; COINING, INC. assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances. Data may be changed from time to time.*