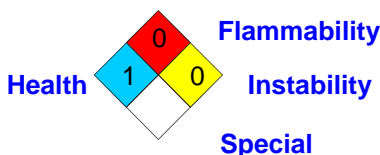


## Material Safety Data Sheet

**Emergency phone:** US & Canada: 800 424-9300  
Mexico: 01 800 022 1400, (55) 5559 1588



Health	1
Flammability	0
Physical hazards	0
Personal protection	

## 1. Product and company identification

<b>Product name</b>	: <b>Solder Alloy 97Sn/3Cu</b> Bar, Solid Wire, Ribbon, Preforms Vaculoy, Hi-Flo, SMG, HAL, JetFlo, Fry-Lo, Exactalloy, Copperflo, Flo-Temp, Cleanwave	
<b>Product Code</b>	: 106206	
<b>Manufacturer</b>	: Cookson Electronics 109 Corporate Blvd. South Plainfield, NJ 07080 Toll Free: (800) 367-5460 Main Phone: (908) 791-3000 Fax: (908) 791-3090 www.alphametals.com	: Cookson Electronics Mexico, S.A. de C.V Avenida Nafta No. 800, Parque Industrial Stiva Aeropuerto Apodaca, Nuevo León, C.P. 66600 Mexico www.cooksonelectronics.com Customer Service: (814) 946-1611
<b>Validation date</b>	: <b>2/3/2009.</b>	<b>Supersedes Date</b> : 6/11/2008
<b>Prepared by</b>	: T. Valverde (203)-799-4917	

## 2. Hazards identification

<b>Physical state</b>	: Solid.
<b>Odor</b>	: None.
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Emergency overview</b>	: <b>WARNING!</b> Harmful if swallowed. Irritating to eyes, respiratory system and skin. Do not ingest. Avoid contact with eyes, skin and clothing. Contains material that can cause target organ damage. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
<b>Routes of entry</b>	: Inhalation. Ingestion.
<b>Potential acute health effects</b>	
<b>Inhalation</b>	: Irritating to respiratory system.
<b>Ingestion</b>	: Harmful if swallowed. Can cause target organ damage. Ingestion may cause gastrointestinal irritation and diarrhea.
<b>Skin</b>	: Irritating to skin. Skin inflammation is characterized by itching, scaling, reddening or, occasionally, blistering.

## 2. Hazards identification

**Eyes** : Irritating to eyes. Adverse symptoms may include the following: redness, itching, swelling, pain

### Potential chronic health effects

**Chronic effects** : Adverse symptoms may include the following:  
**tin**: Prolonged or repeated exposure may cause benign pneumoconiosis (Stannosis).  
**copper**: Other adverse effects: metal fume fever, coughing, headache, shortness of breath/breathing difficulty, anemia. Chronic effects: jaundice, ulcerations.

**Target organs** : Contains material which causes damage to the following organs: upper respiratory tract, skin, eye, lens or cornea.  
Contains material which may cause damage to the following organs: kidneys, liver.

**Carcinogenicity** : Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.

**Mutagenicity** : No conclusive data is available to indicate product or any component present at greater than 0.1% may cause heritable genetic effects.

**Developmental effects** : No conclusive data is available to indicate product or any component present at greater than 0.1% may cause developmental abnormalities.

**Fertility effects** : No conclusive data is available to indicate product or any component present at greater than 0.1% may impair fertility.

**Medical conditions aggravated by over-exposure** : Pre-existing digestive disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

## 3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>% by weight</u>
tin	7440-31-5	80-100
copper	7440-50-8	1-5

**Any ingredient not listed in Section 3 is non-regulated or present in the product in concentrations below legal disclosure limits.**

## 4. First aid measures

**Eye contact** : Check for and remove any contact lenses. Get medical attention if irritation occurs. Immediately flush eyes with running water for at least 30 minutes, keeping eyelids open.

**Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Clean shoes thoroughly before reuse. Seek medical attention if irritation persists. In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

## 4 . First aid measures

- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wear suitable protective clothing, gloves and eye/face protection. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.

## 5 . Fire-fighting measures

- Flammability of the product** : No specific fire or explosion hazard.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous combustion products** : metal oxide/oxides
- Special remarks on fire hazards** : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
- Special remarks on explosion hazards** : Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## 6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.
- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

## 7. Handling and storage

### Handling

: Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or approved alternative container. Containers should be kept closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

### Storage

: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.  
Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

## 8. Exposure controls/personal protection

### Product name

### CAS number

### Exposure limits

tin

7440-31-5

**OSHA PEL (United States, 9/2005).**

TWA: 2 mg/m<sup>3</sup> 8 hour(s).

**ACGIH TLV (United States, 1/2008).**

TWA: 2 mg/m<sup>3</sup> 8 hour(s).

**NIOSH REL (United States, 6/2008). Notes: Note: The REL and PEL also apply to other inorganic tin compounds (as Sn) except tin oxides.**

TWA: 2 mg/m<sup>3</sup> 10 hour(s).

copper

7440-50-8

**OSHA Final Rule (United States, 1989). Notes: As copper**

TWA: 1 mg/m<sup>3</sup> 8 hour(s). Form:

TWA: 0.1 mg/m<sup>3</sup> 8 hour(s). Form:

**NIOSH REL (United States, 6/2008). Notes: Note: The REL and PEL also apply to other copper compounds (as Cu) except Copper fumes.**

TWA: 1 mg/m<sup>3</sup> 10 hour(s). Form: Dusts and Mists

**OSHA PEL (United States, 11/2006).**

TWA: 1 mg/m<sup>3</sup> 8 hour(s). Form: Dusts and Mists

TWA: 0.1 mg/m<sup>3</sup> 8 hour(s). Form: Fume

**OSHA PEL 1989 (United States, 3/1989). Notes: as Cu**

TWA: 1 mg/m<sup>3</sup>, (as Cu) 8 hour(s). Form: Dusts and Mists

TWA: 0.1 mg/m<sup>3</sup>, (as Cu) 8 hour(s). Form: Fume

**ACGIH TLV (United States, 1/2008). Notes: as Cu**

TWA: 1 mg/m<sup>3</sup>, (as Cu) 8 hour(s).

**ACGIH TLV (United States, 1/2008). Notes: Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Adopted Values enclosed are those for which changes are proposed. Consult the Notice of Intended Changes for current proposal. See Notice of Intended changes.**

TWA: 0.2 mg/m<sup>3</sup> 8 hour(s). Form: Fume

## 8 . Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Processes should be designed to minimize airborne and skin exposure to hazardous substances.

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Remove/Take off immediately all contaminated clothing. Contaminated work clothing should not be allowed out of the workplace.

### Personal protection

**Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment.

**Eyes** : Avoid contact with eyes. Safety eyewear should be used when there is a likelihood of exposure.

**Skin** : Avoid contact with skin and clothing. Wear protective clothing. Body garments used should be based upon the task being performed (e.g., lab coat, chemical resistant protective suit, sleevelets, synthetic apron, gauntlets) to avoid exposed skin surfaces. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## 9 . Physical and chemical properties

<b>Physical state</b>	: Solid.
<b>Flash point</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not available.
<b>Flammable limits</b>	: Not available.
<b>Color</b>	: Gray.
<b>Odor</b>	: None.
<b>pH</b>	: Not available.
<b>Boiling/condensation point</b>	: Not available.
<b>Melting/freezing point</b>	: Not available.
<b>Vapor pressure</b>	: Not available.
<b>Vapor density</b>	: Not available.
<b>Odor threshold</b>	: Not available.

*Continued on next page*

## 9 . Physical and chemical properties

<b>Evaporation rate</b>	: Not available.
<b>VOC</b>	: 0 g/l
<b>Solubility</b>	: Insoluble in the following materials: cold water and hot water.

## 10 . Stability and reactivity

<b>Stability</b>	: The product is stable.
<b>Conditions to avoid</b>	: No specific data.
<b>Incompatibility with various substances</b>	: Reactive with oxidizing agents, reducing agents, acids, alkalis. peroxides, Chlorine
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
<b>Other Hazardous decomposition products</b>	: metal oxides, toxic. fumes
<b>Hazardous polymerization</b>	: Under normal conditions of storage and use, hazardous polymerization will not occur.

## 11 . Toxicological information

Alpha has not conducted specific studies on the toxicity of this product.

## 12 . Ecological information

### Aquatic ecotoxicity

<b>Product/ingredient name</b>	<b>Test</b>	<b>Result</b>	<b>Species</b>	<b>Exposure</b>
copper	-	Acute EC50 0.017 to 0.026 mg/L Fresh water	Daphnia - Water flea - Daphnia obtusa - Neonate - <24 hours	48 hours
	-	Acute EC50 12 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	-	Acute EC50 11 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	-	Acute EC50 9 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	-	Acute EC50 1.6 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours - 0.25 mm	48 hours
	-	Acute LC50 161 to 566 ug/L Fresh water	Crustaceans - Shrimp - Paratya australiensis	48 hours
	-	Acute LC50 120 ug/L Marine water	Crustaceans - Giant river prawn - Macrobrachium rosenbergii - LARVAE	48 hours
	-	Acute LC50 105	Crustaceans -	48 hours

*Continued on next page*

## 12 . Ecological information

-	ug/L Marine water Acute LC50 85 to 138 ug/L Marine water	Calanoida Crustaceans - Fleshy prawn - Penaeus chinensis	48 hours
-	Acute LC50 57 to 64 ug/L Fresh water	Crustaceans - Water flea - Simocephalus vetulus - <24 hours	48 hours
-	Acute LC50 30 ug/L Fresh water	Fish - Chinook salmon - Oncorhynchus tshawytscha - 3 months - 1.35 g	96 hours
-	Acute LC50 27.8 to 42 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - <1 months	96 hours
-	Acute LC50 24 ug/L Fresh water	Fish - Striped bass - Morone saxatilis - LARVAE - 16 days	96 hours
-	Acute LC50 >20 ug/L	Fish - Chinook salmon - Oncorhynchus tshawytscha - 1.35 g	96 hours
-	Acute LC50 20 ug/L Fresh water	Fish - Chinook salmon - Oncorhynchus tshawytscha - 3 months - 1.35 g	96 hours
-	Acute LC50 17 to 21 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia reticulata - <4 hours	48 hours
-	Acute LC50 17 to 23 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <12 hours	48 hours
-	Acute LC50 14 to 17 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate	48 hours
-	Acute LC50 12 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
-	Acute LC50 240	Crustaceans -	48 hours

## 12 . Ecological information

	ug/L Marine water	Giant river prawn - Macrobrachium rosenbergii - LARVAE	
-	Acute LC50 10.3 to 15.6 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - <1 months	96 hours
-	Acute LC50 >10 ug/L	Fish - Chinook salmon - Oncorhynchus tshawytscha - 1.35 g	96 hours
-	Acute LC50 9.4 to 11.5 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - <1 months	96 hours
-	Acute LC50 195 ug/L Marine water	Crustaceans - Giant river prawn - Macrobrachium rosenbergii - LARVAE	48 hours
-	Acute LC50 183 to 477 ug/L Fresh water	Crustaceans - Shrimp - Paratya australiensis	48 hours
-	Acute LC50 255 ug/L Marine water	Crustaceans - Giant river prawn - Macrobrachium rosenbergii - LARVAE	48 hours
-	Acute LC50 248 to 2340 ug/L Fresh water	Crustaceans - Shrimp - Paratya australiensis	48 hours
-	Chronic NEL 0.01 mg/L Fresh water	Daphnia - Water flea - Daphnia magna - 24 hours	48 hours
-	Chronic NOEC 11.7 ug/L Fresh water	Fish - Chinook salmon - Oncorhynchus tshawytscha	96 hours



## 13 . Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## 14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG* Label	Additional information
DOT Classification	Not regulated.	-	-	-	

PG\* : Packing group

## 15 . Regulatory information

### United States

**HCS Classification** : Irritating material  
Target organ effects

**U.S. Federal regulations** : All ingredients comply with applicable rules or orders under United States TSCA.  
All components are listed or exempted.  
TSCA 5(a)2 proposed significant rules: No products were found.  
TSCA 5(a)2 final significant rules: No products were found.  
TSCA 12(b) one-time export: No products were found.

### SARA 313

**Form R - Reporting requirements** : Product name  
copper

**Supplier notification** : copper

### Canada

**WHMIS (Canada)** : Not controlled under WHMIS (Canada).

**Canada inventory** : All components are listed or exempted.

### International lists

**China inventory (IECSC)** : All components are listed or exempted.

**Europe inventory** : All components are listed or exempted.

**Australia inventory (AICS)** : All components are listed or exempted.

**Japan inventory (ENCS)** : Not determined.  
Not determined.

**Korea inventory (KECI)** : All components are listed or exempted.

**Philippines inventory (PICCS)** : All components are listed or exempted.

## 16 . Other information

### Definition of Terms

ACGIH	American Conference of Governmental Industrial Hygienists
Ceiling	Maximum exposure limit defined by OSHA
CAS	Chemical Abstract Service
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
REL	Recommended Exposure Limit
RTK	Right to Know
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TLV	ACGIH Threshold Limit Value
TLV-C	ACGIH Threshold Limit Value, Ceiling
TRADE SECRET	Claimed as allowed under 29CFR§1910.1200
TSCA	Toxic Substances Control Act
PPE	Personal Protection Equipment
CEPA	Canadian Environmental Protection Act
DSL	Domestic Substance List
NDSL	Non-Domestic Substance List
NSN	New Substance Notification Rules

### Disclaimer

The information contained herein is based on data considered accurate. However, no warranty is expressed of implied regarding the accuracy of these data or the results to be obtained from the use thereof. Additionally, Cookson Electronics assumes no responsibility for injury to the vendee or third persons proximately caused by the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.



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