



# LEAD SOLDER ALLOYS WITH CADMIUM

## SAFETY DATA SHEET

According to 1907/2006/EC, Article 31

### I. MATERIAL IDENTIFICATION

COMPANY: TORREY S. CRANE CO PO BOX 374 492 SUMMER ST PLANTSVILLE, CT. 06479 cranesolder@aol.com	EMERGENCY PHONE: CALL: CHEM-TEL 1 800-255-3924 Contract #MIS0004515	INGREDIENTS: SEE LABEL ON CONTAINER OR SPOOL
TRADE NAME: LEAD SOLDER ALLOYS WITH CADMIUM	CHEMICAL NAME: TIN/LEAD/COPPER/SILVER/ ANTIMONY/BISMUTH/INDIUM/CADMIUM	FORM OF PRODUCTS: BARS, SOLID WIRE, RIBBON

### 2 HAZARDS IDENTIFICATION

#### CARCINOGEN LISTED IN: ECHA (Substance of very high concern)

Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article F)

#### PRIMARY ROUTES OF ENTRY:

⊗Eye ⊗Inhalation ⊗Skin ⊗Ingestion NTP IARC OSHA

#### Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008**



GHS08 Health hazard

Resp. Sens. 1B H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.



GHS07

Skin Sens. 1B H317 May cause an allergic skin reaction.



cadmium, lead, atimony

#### Label elements

**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

Hazard pictograms



GHS08



GHS07

Signal word Danger

### Hazard statements

H302	Harmful if swallowed
H317	May cause an allergic skin reaction
H320	Causes eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H332	Harmful if inhaled
H351	Suspected of causing cancer (lead) (cadmium)
H360	May damage fertility or the unborn child (applicable to lead containing product)
H373	May cause damage to organs through prolonged or repeated exposure (applicable to lead containing product)
H400+H413	Very toxic to aquatic life, may cause long lasting harmful effects to aquatic life (lead)
H401+H413	Toxic to aquatic life, may cause long lasting harmful effects to aquatic life (antimony)
EUH201A	Warning! Contains lead Review listing.
EUH207:	Warning! Contains cadmium. Dangerous fumes are formed during use. Comply with the safety instructions. Review listing.

#### Precautionary statement(s)

P233	Keep container tightly closed
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
P301 +P314	IF SWALLOWED: Get Medical advice/attention if you feel unwell
P302 +P352	IF ON SKIN: Wash with plenty of soap and water
P304 + 341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + 351	IF IN EYES: Rinse continuously with water for several minutes

Review alloy table for product used. Review applicable health, safety and environmental information.

### OTHER HAZARDS:

#### **POTENTIAL HEALTH EFFECTS:**

**Eye Contact:** Contact with powdered metal alloy or fume from molten metal may cause irritation. Severe eye damage may result from hot molten metal being splashed into the eyes. Wear safety glasses and face shield when working with molten metal.

**Ingestion:** Harmful if swallowed.

**Inhalation:** Inhalation of fume or dust may cause local irritation to the respiratory system. Rosin may cause occupational asthma. Product may contain lead or cadmium which may cause harm if inhaled.

**Skin Contact:** Normal handling of solid metal should not cause any adverse health effects. Hot molten metal may cause burns to the skin. Wear protective equipment when handling molten metal. Protect skin when grinding/cutting, may cause irritation.

#### **Chronic:**

**TIN:** Has been shown to increase incidence of sarcoma in animal tests.

**LEAD:** Prolonged exposure to vapors or fumes at higher temperatures may cause respiratory irritation and systematic lead poisoning. Symptoms of lead poisoning include headache, nausea, abdominal pain, muscle and joint pain and damage to the nervous system, blood system and kidneys. Signs and symptoms of exposure – anemia.

**BISMUTH:** May cause kidney damage

**CADMIUM:** Overexposure can cause damage to the lungs and kidneys. Cadmium is a toxic metal and ingestion or inhalation of fumes and dust can be harmful. Included effects may be obstructive lung disease such as emphysema, bone demineralization, micro-fractures and osteomalacia, gastrointestinal symptoms, rhinitis and discoloration of the teeth.

**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

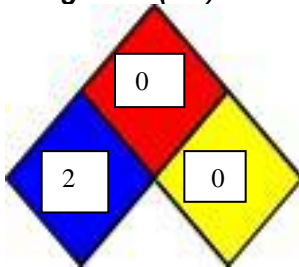
**INDIUM:** May cause damage to respiratory system if inhaled over long periods of time.

**ZINC:** Prolonged exposure to high concentrations of zinc fumes may cause “zinc shakes” an MSDS – involuntary twitching of the muscles. Repeated inhalation may cause chronic bronchitis.



Classification system: *NFPA ratings (scale 0-4)*

*HMIS rating scale (0-4)*



Health = 2  
Fire = 0  
Reactivity = 0

HEALTH	2
FIRE	0
REACTIVITY	0
PPE	

Health = 2  
Fire = 0  
Reactivity = 0

### 3: COMPOSITION OF MIXTURE

**Chemical characterization: Mixtures Lead alloys having varying compositions**

**Description:** Mixture: consisting of the following components.

LEAD SOLDER ALLOYS MAY CONTAIN ONE OR MORE OF THE FOLLOWING INGREDIENTS: (none of which is listed as a chemical of concern by the “European Chemicals Agency” (echa)).					
ELEMENT	CAS NUMBER	ECHA NUMBER	RANGE -%	OSHA PERMISSIBLE EXPOSURE LIMIT - 8 HOUR TWA	ACGIH THRESHOLD LIMIT VALUE - 8 HOUR TWA
Antimony	7440-36-0	231-146-5	0 - 85	0.5 mg/m3	0.5 mg/m3
Bismuth	7440-69-9	231-177-4	0 - 100	N/A	N/A
Copper	7440.50-8	231-159-6	0 - 6	0.1 mg/m3 Fume	0.2 mg/m3 Fume
Indium	7440.74-6	231-180-0	0 - 100	0.1 mg/m3	0.1 mg/m3
Silver	7440-22-4	231-131-3	0 - 6	0.01 mg/m3	0.01 mg/m3
Tin	7440-31-5	231-141-8	0 - 100	2 mg/m3	2 mg/m3
Lead	7439-92-1	231-100-4	0 - 100	0.05 mg/m3	0.15 mg/m3
Cadmium	7440-43-9	231-152-8	0 - 50	0.005 mg/m3	0.01 mg/m3 Total dust/particulate 0.002 mg/m3 Respirable fraction

\* see 29 CFR 1910.1025

**Additional information:**

Composition and weight percent of solder alloys varies widely and can be determined by product label. This solder product contains a Substance of Very High Concern (SVHC) on the European Chemicals Agency (ECHA) candidate list. CADMIUM as of 6/20/2013

## 4: FIRST AID MEASURES

### Description of first aid measures

**After inhalation:** Supply fresh air; consult doctor if symptoms persist

**After skin contact:** Immediately wash with water and soap and rinse thoroughly.

**After eye contact:** Rinse opened eye for several minutes under running water.

### After swallowing:

If symptoms persist consult doctor.

Seek immediate medical advice.

### Information for doctor:

Most important symptoms and effects, both acute and delayed No further relevant information available.

Indication of any immediate medical attention and special treatment needed No further relevant information available.

## 5: FIRE AND REACTIVITY DATA

### Extinguishing media

**Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.

### Special hazards arising from the substance or mixture

*In case of fire, the following can be released:*

Nitrogen oxides (NO<sub>x</sub>)

Carbon monoxide (CO)

### Advice for firefighters

### Protective equipment:

*Fire fighters should be fully trained and wear full protective clothing including an approved, self-contained breathing*

*apparatus which supplies a positive air pressure within a full face-piece mask.*

CAUTION:

NEVER USE WATER AS AN EXTINGUISHING MEDIA IN AREAS NEAR MOLTEN METAL

## 6 ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures** Ensure adequate ventilation

**Environmental precautions:** Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:** Pick up mechanically.

### Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

## 7 HANDLING & STORAGE

### Handling:

**Precautions for safe handling** Prevent formation of dust.

**Information about protection against explosions and fires:** No special measures required.

### Conditions for safe storage, including any incompatibilities

### Storage:

Requirements to be met by storerooms and receptacles: Store in a cool location.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: None.

**Specific end use(s)** No further relevant information available.

## 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

overheating of alloy can produce metal fumes and oxides. Machining operations such as grinding, sawing, buffing can generate airborne particulate in work area. The exposure levels indicated in section II are relevant to these and other operations. Following are symptoms of overexposure to the various ingredients:

Antimony	Metallic taste, gastrointestinal upset, vomiting, diarrhea, dermatitis
Arsenic	Nausea, vomiting, diarrhea. Exposure to inorganic compounds may cause liver, skin, lung and lymphatic cancers.
Cadmium	<b>CANCER CAUSING AGENT</b>
	Dryness of throat, headache, shortness of breath and vomiting may occur from overexposure to fumes or dust.
Copper	Exposure to fume may cause dryness of throat, fatigue, head and body ache, chill and fever.
Indium	Indium dust or fume may cause lung irritation and chemical pneumonitis. This produces a widespread reduction in alveolar clearance similar to alveolar proteinosis and indium poisoning evidenced by weight loss, pulmonary edema, and blood and liver damage.
Lead	<b>CANCER CAUSING AGENT</b>
	Chronic overexposure to high levels of airborne or ingested lead may result in anemia, insomnia, weakness, constipation, nausea and abdominal pain. Prolonged overexposure may result in kidney and nervous system involvement and reproductive effects. Exposure may result in injury to a developing fetus
Silver	Argyria a blue-gray discoloration of the skin, mucous membranes, and eyes may result from inhalation of silver
Tin	Dust of tin oxide may cause pneumoconiosis.

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=0 REACTIVITY=0

**FIRST AID:** Burns from molten metal should be treated as you would a burn from hot grease, cool exposed area with water and seek medical attention. Overheating of metal may generate fumes and/or particulate. If overexposure is suspected employee should be removed from area and a physician consulted. Ingestion of appreciable quantities of alloy is unlikely to occur. Inhalation of fumes – remove to fresh air. Fumes in eyes – flush with water. **\*\*REFER TO SECTION 3 FOR EXPOSURE LIMITS\*\***

### EXPOSURE CONTROLS

#### Personal protective equipment:

General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.

Wash hands before breaks and at the end of work.

Breathing equipment:

Exposure Controls: Use appropriate engineering control such as process enclosures, local exhaust ventilation to control

airborne levels below recommended exposure limits.

When ventilation is not sufficient to remove airborne levels from the breathing zone, a NIOSH safety approved respirator or

self-contained breathing apparatus should be worn. Consult with local procedures for selection, training,

inspection and maintenance of the personal protective equipment.

Protection of hands:

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.



#### Protective gloves

Heat resistant gloves should be worn when working with molten alloy material of gloves:

*The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.*

*Nitrile rubber, NBR*

*Natural rubber, NR*

*Penetration time of glove material:*

*The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.*

*Eye protection:* should be worn during soldering operation.



*Face Shield with Safety Glasses*

## 9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State: (normal Conditions) SOLID		Appearance and Odor: METALLIC GRAY - ODORLESS	
Melting Point: 117 - 1000 F	Boiling Point: N.A.	Vapor Pressure: N.A.	Density: 0.26 - 0.42lb/in3

### Appearance:

Form: Metal  
Color: Silver grey  
Odor: Odorless

## 10 STABILITY AND REACTIVITY

### Reactivity

#### Chemical stability

Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known.

**Conditions to avoid** No further relevant information available.

**Incompatible materials:** Strong acids, strong oxidizers.

**Hazardous decomposition products:** No dangerous decomposition products known.

## 11 TOXICOLOGICAL INFORMATION

### Information on toxicological effects

#### Acute toxicity:

Primary irritant effect:

on the skin: Irritant to skin and mucous membranes.

on the eye: Irritating effect.

**Additional toxicological information:**

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure:

Exposure to lead fume, if applicable, may cause harm by inhalation and ingestion. Chronic exposures to lead fume, if applicable, can cause potential harm to the developing fetus. Lead exposure can be toxic. Cadmium may cause cancer.

*Carcinogenic categories*

**Listing OSHA:** Yes – cadmium is listed as a possible carcinogen (US Occupational Safety & Health Administration)

*ARC (International Agency for Research on Cancer), NTP (National Toxicology Program)*

## 12 ECOLOGICAL INFORMATION

### Toxicity

**Aquatic toxicity:** No further relevant information available.

**Additional ecological information:**

#### General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Danger to drinking water if even extremely small quantities leak into the ground.

#### Results of PBT and vPvB assessment

**PBT:** Not applicable.

**vPvB:** Not applicable.

## 13 DISPOSAL CONSIDERATIONS

No special precautions are required for spills of bulk material. Scrap alloy can be reclaimed for reuse. Follow Federal, State and local regulations for disposal.

## 14 TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.  
Not regulated/non - hazardous under US DOT (United States Department of Transportation).  
Not regulated/non - hazardous under international shipping requirements.

## 15 REGULATORY INFORMATION

The information in this Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated hereunder (29 CFR 1910.1200 ET. SEQ.).

All ingredients are listed on the USEPA TSCA Inventory.

All ingredients are listed on EINECS.

Safety data sheet was developed using EC 1907/2006 amended as of 20 May 2010 EU No 453/2010 and information as stated under regulation EC No 1272/2008 CLP Regulation.

GHS = Global Harmonized System

CLP= Classification, labeling and packaging

Product does not contain any substances ozone depleting substances and therefore not subject to EC 2037/2000.

**Chemical safety assessment:** None performed for mixture.

Solder alloys contain chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1985 and 40 CFR Part 372.

### **California Proposition 65**

*WARNING: This product contains a chemical(s) known to the State of California to cause cancer. "LEAD"  
Chemicals known to cause reproductive toxicity:*

*WARNING: This product contains a chemical(s) known to the State of California to cause birth defects and/or other reproductive harm. "LEAD"*

## 16 OTHER INFORMATION

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Torrey Crane extends no warranties, makes no representations and assumes no responsibility as to the accuracy, completeness or suitability of this data for any purchaser's use. The data on this Safety Data Sheet relates only to this product and does not relate to use with any other material or in any process. All chemical products should be used only by, or under the direction of, technically qualified personnel who are aware of the hazards involved and the necessity for reasonable care in handling. Hazard communication regulations require that employees must be trained on how to use a Safety Data Sheet as a source for hazard information.

DATE ISSUED:8/6/2014

PREPARED BY: DAVID E. BAKER, PRESIDENT

The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.