

LEAD-FREE SOLDER ALLOYS OF, TIN, BISMUTH, SILVER, & COPPER

MSDS Number: M2000 ---Effective Date: 07/19/01 Revised Date: 01/05/2010

I. Product Identification**Synonyms:** Lead-Free Solder Alloys, CuLox 2000 Series, 2100, 2400, 2600, 2800.**2. Composition/Information on Ingredients**

Ingredient	CAS No	Nominal Percent by Weight			
		CuLox 2100 Wt%	CuLox 2400 Wt%	CuLox 2600 Wt%	CuLox 2800 Wt%
Tin	7440-31-5	96.5	42.0	60.0	80.0
Silver	7440-22-4	3.5	--	--	--
Copper	7440-50-8	0.5	--	--	--
Bismuth	7440-69-9	--	58.0	40.0	20.0

3. Hazards Identification**Potential Health Effects****Acute (Short Term) Health Hazards:**

Inhalation of fumes or ingestion may cause headache, nausea, muscular pain, irritation of eye and nose may result from contact with soldering fumes.

Chronic (Long Term) Health Hazards:

Anemia, insomnia, weakness, constipation and abdominal pains due to ingestion, skin rash and damage to mucous membranes due to skin exposure and inhalation.

Signs and Symptoms of Exposure:

Irritation of pulmonary system, skin rash.

Aggravation of Pre-existing Conditions:

Pre-existing conditions of the lungs, diseases of the blood and blood forming organs; kidneys, nerves and possibly reproductive systems.

Skin Contact:

Dust, vapor, and/or fume are not readily absorbed through the skin.

Eye Contact:

Dust or fume may cause irritation.

Overexposure to Tin:

Dust or fume may cause irritation of the skin mucous membranes, and may result in a benign Pneumoconiosis (Stannosis).

Overexposure to Silver:

May cause discoloration of eyes and skin (Argyria).

Overexposure to Bismuth:

May cause kidney damage.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

4. First Aid Measures

Perform the following First Aid Procedures; consult a Physician and get proper medical attention when necessary, in case of contact with smoke from soldering or repeated skin contact.

Inhalation:

Remove person to fresh air.

Ingestion:

Seek medical attention.

Skin Contact:

Wash thoroughly with soap and water; use lotion to prevent dryness.

Eye Contact:

Flush eyes with plenty of water for 15 minutes.

5. Fire Fighting Measures

Flash Point:

N/A

Flammable Limits in Air % by Volume:

LEL Lower: N/A

UEL Upper: N/A

Auto Ignition Temperature:

N/A

Unusual Fire and Explosion Hazards:

None known

Fire Extinguishing Media:

Moist powder or fine dust may ignite in air. Cover burning material with an inert powder, such as dry sand or limestone, to exclude oxygen.

Special Information:

Use NIOSH approved self-contained breathing apparatus and full protective clothing if this material is in the vicinity of fire.

6. Accidental Release Measures

Scoop up powder and deposit in appropriate containers. Clean up residual with Isopropanol or detergent water.

Dispose of in accordance with local, state and federal regulations.

7. Handling and Storage

Do not store or use near spark of flame. Keep containers closed tightly and upright to prevent leakage.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

Name	OSHA PEL mg/m3	ACGIH TLV mg/m3
Tin	2.0 mg/m3	2.0 mg/m3
Silver	0.01 mg/m3	0.10 mg/m3
Copper	0.20 mg/m3	0.20 mg/m3
Bismuth	Not Established	Not Established

Ventilation System:

Use adequate general or local ventilation to keep airborne levels below the PEL & TLV limits.

Personal Respirators:

Usually not required. A NIOSH approved dust/fume respirator should be worn where applicable limits may be exceeded.

Skin Protection:

Wear neoprene or rubber gloves to prevent skin exposure.

Eye Protection:

Safety glasses and/or face protection is recommended for exposure to dust or splash of hot metal.

Other:

Food and drink should not be consumed or tobacco products used, or cosmetics applied in areas where solder may be used. Wash hands after handling of product, avoid prolonged or repeated contact with skin or breathing fumes and vapors. Do not take internally.

9. Physical and Chemical Properties

Appearance:

Metallic gray powder

Odor:

Odorless

Solubility:

Insoluble in water

% Volatile by Weight:

N/A

Boiling Point:

N/D

Melting Range:

Type 2100: 217 - 219 ° C

Type 2400: 150 ° C

Type 2600: 160 ° C

Type 2800: 180 ° C

Vapor Density (Air=1):

N/A

Vapor Pressure (mm Hg):

N/A

Evaporation Rate:

N/A

10. Stability and Reactivity

Stability:

Stable

Hazardous Decomposition or Byproducts:

Fumes may be evolved at high temperatures.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong Acids, Strong Oxidizers.

Conditions to Avoid:

N/A

11. Toxicological Information

Copper – LD50 – Intraperitoneal mouse 3.5 mg/kg.

Silver – LD50 – Oral – rat >5000 mg/kg

Bismuth – LD50 – Oral – rat >5000 mg/kg

12. Ecological Information

Copper – Toxicity to daphnia and other aquatic invertebrates mortality NOEC –Daphnia 0.004 mg/l – 24 h

13. Disposal Considerations

Dispose of in a manner consistent with federal, state and local regulations.

14. Transport Information

Transport in accordance with applicable regulations and requirements.

Not regulated under US DOT (United States Department of Transportation)

Solid metal mixtures are not hazardous under shipping regulations (ground/air/sea)

15. Regulatory Information

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substance Control Act. Chemical Substance Inventory.

Tin, Silver, Copper and Bismuth: Uncontrolled product according to WHMIS classification criteria.

SARA Title III: Section 313 – The following toxic chemical is subject to the Community Right-To-Know reporting requirements: Silver, CAS# 7440-22-4.

16. Other Information

Revision Information:

No changes

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