MATERIAL SAFETY DATA SHEET

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SECTION 1: GENERAL INFORMATION

Product Name:	Solder Alloys of Lead, Tin, Silver, Bismuth, Antimony, Indium & Copper
Chemical Family:	Inorganic Metals
D.O.T. Hazard Class:	Not Determined

SECTION 2: HAZARDOUS INGREDIENTS

(Product contains one or more of these metallic elements in varying percentages)

Ingredient	CAS Number
Lead	7439-92-1
Tin	7440-31-5
Silver	7440-22-4
Bismuth	7440-69-9
Antimony	7440-36-0
Indium	7440-74-6
Copper	7440-50-8

	OSHA PEL	ACGIH TLV
Lead	0.05 MG/M^3	0.15 MG/M^3
Tin	2.0 MG/M^3	2.0 MG/M^3
Silver	0.01 MG/M^3	0.1 MG/M^3
Bismuth	Not Established	Not Established
Antimony	0.5 MG/M^3	0.5 MG/M^3
Indium	Not Established	0.1 MG/M^3
Copper	1.0 Mg./Cu. M.	1.0 Mg./Cu. M.

SECTION 3: PHYSICAL DATA

Boiling Point Deg. F (760 mm Hg)	NA
Vapor Pressure	NA
Solubility in Water	Insoluble
Appearance and Odor	Silver-gray metal, odorless, various shapes and sizes
% Volatile by Weight	NA
Evaporation Rate	NA
ph	NA

SECTION 4: REACTIVITY DATA

Stability	Stable
Incompatibility (materials to avoid)	Oxidizing materials, acids, hydrogen peroxide
Hazardous Decomposition Products	Lead oxide fume and/or lead particulate may be evolved
Hazardous Polymerization	Will not occur

SECTION 5: SPILL OR LEAK PROCEDURES

Avoid inhalation of solder fume or dust. Vacuuming is recommended. Do not use dry sweeping or compressed air cleaning systems. Scrap or waste solder should be recycled or stored in sealed dry containers for later disposal. Must be in accordance with federal, state and local regulations.

SECTION 6: SPECIAL PROTECTION

Respiratory:	A NIOSH-approved dust/fume respirator should be worn where applicable limits may be exceeded.
Eyewear:	Safety glasses and/or face protection is recommended for exposures to dust or splash of hot metal.
Clothing/Gloves:	Protective gloves should be worn to reduce burn exposure. Work clothes should be worn and laundered in accordance with current OSHA lead standards.
Ventilation:	Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV's.
Special Precautions:	Food and drink should not be consumed or tobacco products used, or cosmetics applied in areas where solder may be used. Always wash hands after handling solder and before eating, drinking or smoking.
Other Precautions:	Since empty containers may retain product residues (vapor, liquid, or solid), all labeled hazard precautions must be observed. For industrial use only. Keep out of the reach of children. Do not take internally.

SECTION 7: ADDITIONAL INFORMATION
Composition of solder varies widely, therefore no weight percent or specific gravity is given. Some typical alloy compositions are: (60% tin, 40% lead) – (62% tin, 36% lead, 2% silver) – (95%tin, 5% silver) – (95% tin, 5% antimony) Molten solder alloys consisting of lead, tin, silver, bismuth, antimony and indium do not produce significant quantities of fume below 900^{O}F.

SECTION 8: FIRE AND EXPLOSION HAZARD DATA
Estimated flammable limits (% by volume in air)

LEL:	NA
UEL:	NA
Flash Point (Deg. F):	NA
Extinguishing Media:	NA

Special fire-fighting procedures: Use NIOSH approved self-contained breathing apparatus and full protective clothing if involved in a fire.

Unusual fire and explosion hazard: Moderate in the form of dust when exposed to heat or flame. When heated to high temperatures, lead emits highly toxic fumes.

SECTION 9: HEALTH HAZARD DATA
(A)
Lead: Exposure to high levels of airborne or ingested lead may produce symptoms of anemia, weakness, constipation, nausea and abdominal pain. Prolonged overexposure may result in kidney and nervous system involvement.

Chronic Toxicity: Women of child-
bearing age should avoid exposure to lead and its inorganic compounds due to post-natal effects on reproduction. See additional information for California state "Proposition 65" warning: "Warning! This product contains lead known to the state of California to cause birth defects or other reproductive harm."

For overexposure to tin, silver, bismuth, antimony, and indium see additional information.

Listed carcinogens: None of the metal elements of this product are listed as carcinogenic by NTP,IARC or OSHA.
Medical conditions possibly aggravated: Diseases of the blood-forming organs, kidneys, nervous and possibly reproductive systems.

(B)
Inhalation (Lead): Excessive overexposure may result in an acute or chronic illness. If symptoms are present, the individual should be removed from exposure and a physician consulted.
Ingestion: Call a physician or poison control center immediately.
Skin Contact: For hot metal burns, exposed area should be cooled with water and medical attention sought. After handling solid wire, bar, etc., wash thoroughly with soap and water. Dust, vapor, and/or fume are not readily absorbed through the skin.
Eye Contact: Flush with water, contact a physician. 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 foul breath, a blue-black line on the gums.

Overexposure to Antimony: May cause gastrointestinal upset, sleeplessness, irritability and muscular pain.

Overexposure to Indium: May cause weight loss, pulmonary edema, blood damage and degenerative changes in liver and kidney.

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