

MATERIAL SAFETY DATA SHEET

I. MATERIAL IDENTIFICATION

Nuclead Inc. 415 North Elm St. West Bridgewater, MA	EMERGENCY PHONE: CALL: CHEMTREC 1 800-424-9300	INGREDIENTS: SEE LABEL ON CONTAINER OR SPOOL
TRADE NAME: SOLDER ALLOYS	CHEMICAL NAME: TIN/LEAD/SILVER/CADMIUM ANTIMONY/BISMUTH	FORM OF PRODUCTS: BARS, SOLID WIRE, RIBBON

II. CHEMICAL COMPOSITION

SOLDER ALLOYS MAY CONTAIN ONE OR MORE OF THE FOLLOWING INGREDIENTS:

ELEMENT	CAS NUMBER	RANGE-%	OSHA PERMISSIBLE EXPOSURE LIMIT - 8 HOUR TWA	ACGIH THRESHOLD LIMIT VALUE - 8 HOUR TWA
Antimony	7440-36-0	0 - 85	0.5 mg/m ³	0.5 mg/m ³
Arsenic	7440-38-2	0 - 1	0.01 mg/m ³	0.01 mg/m ³
Bismuth	7440-69-9	0 - 100	N/A	N/A
Cadmium	7440-43-9	0 - 100	0.005 mg/m ³	0.01 mg/m ³ Total dust/particulate 0.002 mg/m ³ Respirable fraction
Copper	7440-50-8	0 - 3	0.1 mg/m ³ Fume	0.2 mg/m ³ Fume
Indium	7440-74-6	0 - 100	0.1 mg/m ³	0.1 mg/m ³
Lead	7439-92-1	0 - 100	0.05 mg/m ³	0.15 mg/m ³
Silver	7440-22-4	0 - 5	0.01 mg/m ³	0.01 mg/m ³
Tin	7440-31-5	0 - 100	2 mg/m ³	2 mg/m ³

III. PHYSICAL DATA

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/in ³

IV: FIRE AND REACTIVITY DATA

Flash Point: N.A.	Flammable Limits: N.A.	Reactivity: Alloys are stable non-hazardous solids at room temperature
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CAUTION:
NEVER USE WATER AS A EXTINGUISHING MEDIA IN AREAS NEAR MOLTEN METAL

V. HEALTH HAZARD DATA

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	CANCER CAUSING AGENT 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	CANCER CAUSING AGENT 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.

Under certain circumstances, carcinogenic or reproductively toxic materials such as arsenic and lead contained in these alloys can be present in the fluids coming in contact with them and may be dangerous if ingested or released to the environment.

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.

VI. SPILL PROCEDURES

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.

VII. SPECIAL PROTECTION INFORMATION

Where dust or fume levels are in excess of levels in Section II NIOSH approved respiratory protection should be used. Heat resistant gloves should be worn when working with molten alloy. Eye protection should be worn during soldering operation.

VIII. SPECIAL PRECAUTIONS

Practice good personal hygiene. Wash hands thoroughly before eating, smoking or applying cosmetics.

Adequate ventilation should be used when material is in molten or dusty state.

SARA TITLE III SECTION 313 SUPPLIER NOTIFICATION

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.

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