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PRODUCT NAME: PATTERN 60/40 ALUMINUM SOLDER

HIRSCH METALS CORPORATION

MATERIAL SAFETY DATA SHEET

I - IDENTIFICATION

CHEMICAL NAME	CHEMICAL FORMULA	MOLECULAR WEIGHT
Tin/Lead/Alloy	Mixture Sn and Pb	Not Applicable

TRADE NAME
Solder

SYNONYMS
Soft Solder

DOT IDENTIFICATION NO.
Not Classified

II - PRODUCT AND COMPONENT DATA

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO.	% (Approx)	ACGIH TLV-TWA
Tin (Sn)	7440-31-5	1-99	2.0mg/M³
Lead (Pb)	7439-92-1	1-99	0.05mg/M³

No other hazardous material is present in concentration greater than 0.5% (0.1% for carcinogens)

III - PHYSICAL DATA

APPEARANCE AND ODOR Silvery colored metal - odorless	SPECIFIC GRAVITY 6.6 - 11.3
BOILING POINT (of lead) 1740°C	VAPOR DENSITY IN AIR (Air = 1) Not Applicable
VAPOR PRESSURE (of lead) 1mm Hg @ 973°C	% VOLATILE BY VOLUME Not Applicable
EVAPORATION RATE Not Applicable	SOLUBILITY IN WATER Insoluble

IV - REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID
Stable	Solid metal is essentially non-reactive; however, prior to introducing into molten metal, pre-heat to eliminate moisture. Adding moist solid metal to molten metal will cause violent splattering and/or explosions.

INCOMPATIBILITY (Materials to avoid)
Acid, bases, oxidizers and strong reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
Solder does not decompose; however, fumes of the alloying metals will evolve upon melting.

HAZARDOUS POLYMERIZATION
Will not occur

V - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS IN AIR
Non-Flammable	Non-Flammable

EXTINGUISHING AGENTS
Non-Flammable

UNUSUAL FIRE AND EXPLOSION HAZARDS
Avoid the use of water in fighting fires around molten metal. Mixing water with molten metal can result in violent splattering and/or explosions (See Section IV). Dry chemical or other such agents should be used to fight fires near molten metal. Avoid breathing fumes (See Section VII). In extremely high temperature , lead may emit toxic fumes. Use a self-contained respiratory system. When in proximity to highly oxidizing materials at very high temperatures, lead may react vigorously. Moderate hazard when high concentration of very fine metallic dust is exposed to high heat or open flame.

VI - TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemical is concurrent, the TLV must be defined in the workplace.)
ACGIH 8 hour TWA-TLVs - See Section II
OSHA 8 hour TWA-PELs: Tin - 2.0mg/M^3; Lead - 0.05mg/M^3
OSHA 8 hour TWA-Action Level: Lead - 0.03mg/M^3
OSHA Biological Monitoring Limit: Lead - 0.04mg/100 grams -whole blood
Refer to the OSHA Lead Standard (1910.1025) for additional information.

Effects described in this section are believed not to occur if expocures are maintained at or below appropriate TLVs.
Because of the wide variation in individual susceptibility, TLVs may not be applicable to all persons and those with medical conditions listed below.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Nervous, cardiovascular, liver, kidney, respiratory and/or blood forming system disease(s).
Exposure to dust or fumes may also aggravate existing eye and skin conditions.

ACUTE TOXICITY Primary route(s) of exposure: ☐ Inhalation ☐ Skin Absorption ☐ Ingestion

Acute overexposure to tin or tin oxide dust or fume may result in irritation of the eyes and respiratory system. Skin contact with tin or tin oxide may produce a mild dermatitis. There are no reports of toxicity associated with the ingestion of tin or tin oxide.

Lead is a potent systemic poison. A rare condition, called acute encephalopathy, can result if gross overexposure to lead through inhalation or ingestion occur. This condition affects the brain and may result in rapidly developing symptoms and outcomes such as seizures, coma, and death from cardiorespiratory arrest. Lead poisoning typically expresses itself in chronic overexposure situations (See Chronic Toxicity).

FIRST AID

Inhalation: Remove to fresh air. If difficulty in breathing occurs, administer oxygen and obtain medical attention immediately. If breathing stops, give artificial respiration and obtain medical attention immediately.

Eye & Skin Contact: If metal dust or fumes come in contact with the skin or eyes, flush eyes immediately with running water and obtain medical attention if irritation persists.

If contact with skin causes irritation wash with soap and water. Obtain medical attention if irritation persists.

If molten metal comes in contact with the skin or eyes, thermal burns will occur. Standard emergency first aid for thermal burns must be applied. Obtain medical attention immediately.

Ingestion: If person is conscious, induce vomiting. Obtain medical attention immediately for treatment of possible lead poisoning.

Note to physician: Prophylactic chelation to remove lead from the body must be done only under the supervision of a licensed physician in a clinical setting.

CHRONIC TOXICITY

Chronic overexposure (by inhalation) to tin or tin oxide dust or fume may result in stannosis, a benign pneumoconiosis (dusty lung). No cases of massive or progressive fibrosis or decreased pulmonary function have been reported as a result of chronic exposure to tin dust or fume alone. Stannosis has not been associated with illness or decreased life expectancy.

Chronic overexposure (by inhalation or ingestion) to lead has resulted in severe damage to blood forming, nervous, urinary, and reproductive systems in humans.

Lead overexposure disrupts the blood forming system resulting in decreased hemoglobin and ultimately anemia. Gross overexposure, resulting in severe lead poisoning can damage the central nervous system in general and the brain specifically (encephalopathy). Severe cases of brain encephalopathy often lead to death preceded by vomiting, tremor, stupor, poor memory, restlessness, irritability and convulsions. Muscle weakness often develops at the same time and may progress to a disease of the peripheral nervous system called "wrist drop" or "foot drop". Chronic overexposure to lead has also resulted in kidney disease with few if any symptoms until permanent damage has occurred. Lead poisoning may also affect the gastrointestinal system producing abdominal colic with pain.

Chronic overexposure to lead may also impair the reproductive systems of both sexes. Overexposure may result in impotence and sterility in men and decreased fertility and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected resulting in birth defects, miscarriage or still births. Acute and chronic non-reproductive effects of lead are rarely observed when blood lead levels are maintained below 40 micrograms lead per 100 grams of whole blood. OSHA recommends blood lead levels below 30 micrograms/100 grams of whole blood to minimize adverse reproductive health effects. (See OSHA Lead Standard for additional information).

Tin and lead are not listed in the IARC, NTP or OSHA lists of carcinogens.

VII - PERSONAL PROTECTION AND CONTROLS

RESPIRATORY PROTECTION

For exposures exceeding, or likely to exceed the OSHA Pel for lead, follow all respirator requirements that apply in the OSHA Lead Standard (1910.1025). All feasible engineering controls must be installed to minimize or eliminate the need for respirators.

Following respirator requirements for lead will result in respiratory protection for the other alloying metals.

VENTILATION

Use local exhaust or general ventilation to maintain dust and fume concentrations below all applicable TLVs or Pels. Dry sweeping of dusts must be avoided.

SKIN PROTECTION

Avoid skin contact with metal. Wear protective gloves. For molten metal, heat and flame resistant gloves and clothing must be worn.

EYE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when dusty conditions exist or are present. Face shields must be worn when working with molten metal. Safety eyewash stations should be in close proximity.

HYGIENE

Wash dust exposed skin with soap and water before eating, drinking or smoking. Do not eat, drink or smoke in work area. Wash work clothes separately after each use. Follow all OSHA Lead Standard provisions (1910.1025). Accumulated dust in the work area should be vacuumed and disposed of properly (See Section IX).

OTHER CONTROL MEASURES

Exposure monitoring for possible lead exposure is required by law. Exposure monitoring must be performed regularly to determine levels of exposure and appropriate control measures to be taken. Exposure levels in excess of applicable limits must be reduced by all feasible engineering controls, including (but not limited to) ventilation, fume and dust collectors, and enclosed workstations. Refer to OSHA Lead Standard (1910.1025) for additional requirements.

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VIII - STORAGE AND HANDLING PRECAUTIONS

While solder in wire, bar and, ingot form as produced by METAL-TECH ALLOYS INC. does not pose a significant health hazard, consideration must be given by the user to the state of the solder if it is to be melted and appropriate precautions taken.

Metal should be preheated to eliminate moisture before being introduced into molten metal since violent splattering or explosions can occur.

Avoid skin contact with metal and dusts. follow protective controls in Section VII.

IX - SPILL LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

See Sections IV, VII, and VII.

For molten metal, contain the flow over the surface with sand or other non-reactive material as a dam. Do not attempt to halt the flow of metal with shovels or hand tools. Due to possible excessive fumes involving spills of molten metal, wear appropriate respirator and protective clothing as required (See OSHA Lead Standard 1910.1025). Allow spills of molten metal to cool, then remelt as scrap.

WASTE DISPOSAL METHOD

Scrap drippings and drosses should be stored in a closed container and returned to a solder recycler. Disposal of solder in any form must be in compliance with all applicable Federal, State, and local laws and regulations.

X - TRANSPORTATION

DOT HAZARD CLASSIFICATION

Not Classified

PLACARD REQUIRED

None required for DOT

LABEL REQUIRED

None required for DOT

Label as required by the OSHA Hazard Communication Standard and any applicable state and local laws or regulations.

For Further Information

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HIRSCH METALS

HIRSCH METALS CORPORATION
6001 Broken Sound Parkway
502 Sabre Center II
Boca Raton, Florida 33487
407-241-7800 800-521-0352 FAX 407-241-7002