MATERIAL SAFETY DATA SHEET
TIN/LEAD ALLOYS-SOLDER

Contact Information:
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1-800-779-1102
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1. PRODUCT INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
<th>Exposure Limit LD50</th>
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<tbody>
<tr>
<td>oral, rat</td>
<td>Tin (Sn)</td>
<td>7440-31-5</td>
<td>0-100</td>
<td>2.0 mg/m³ 72 mg/kg</td>
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<tr>
<td>(mouse)</td>
<td>Lead (Pb)</td>
<td>7439-92-1</td>
<td>0-100</td>
<td>0.05 mg/m³ 790</td>
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No other hazardous material is present in concentration greater than 1% (.01% for carcinogens)

2. PHYSICAL DATA

Material is Appearance and Odor
SOLID SILVER-WHITE METAL
Melting Point Boiling Point Specific Gravity Vapor Density
METAL 179-312°F >1300°C 7.3-11.3 N/A
Solubility in Water Vapor Pressure Evaporation Rate pH
INSOLUBLE N/A N/A N/A

3. FIRE AND EXPLOSION DATA

Flash Point Flammable Limits Auto Ignition Temp.
METAL N/A N/A N/A
CORE - 300°F
Unusual Fire and Explosion Hazards
MOLTEN METALS PRODUCE FUME OR VAPOR THAT MAY BE TOXIC AND/OR RESPIRATORY IRRITANTS. REACTS VIOLENTLY WITH OXIDIZING AGENTS.
Fire Extinguishing Agents Recommended
USE CO2 OR DRY CHEMICAL ON SURROUNDING FIRE
Fire Extinguishing Agents to Avoid
DO NOT USE WATER ON FIRE WHERE MOLTEN METAL IS PRESENT
Special Fire Fighting Precautions
USE NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS AND FULL BODY PROTECTIVE CLOTHING.

NFPA RATING 1 0 HEALTH 1, FLAMMABILITY 0,
0 REACTIVITY 0, SPECIAL 0

4. HEALTH HAZARD INFORMATION

Primary Routes of Entry
INGESTION X INHALATION ABSORPTION
Proposition 65
WARNING: THIS PRODUCT CONTAINS LEAD, WHICH IS KNOWN TO THE STATE OF
CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Acute Overexposure (symptoms and effects)
SEVERE SHORT-TERM OVEREXPOSURE MAY LEAD TO CENTRAL NERVOUS SYSTEM DISORDERS, CHARACTERIZED BY DROWSINESS, SEIZURES, COMA AND DEATH. IT SHOULD BE RECOGNIZED THAT EXPOSURES OF THIS MAGNITUDE IN AN INDUSTRIAL ENVIRONMENT ARE EXTREMELY UNLIKELY.

Chronic Overexposure (symptoms and effects)
PROLONGED OVEREXPOSURE OF LEAD CAN RESULT IN SYSTEMIC POISONING WITH SYMPTOMS OF METALLIC TASTE, ANEMIA, INSOMNIA, WEAKNESS, CONSITPATION, ABDOMINAL PAIN, GASTROINTESTINAL DISORDERS, JOINT AND MUSCLE PAIN AND MUSCULAR WEAKNESS AND MAY CAUSE DAMAGE TO THE BLOOD-FORMING, NERVOUS, KIDNEYS AND REPRODUCTIVE SYSTEMS. DAMAGE MAY INCLUDE REDUCED FERTILITY IN BOTH MEN AND WOMEN, DAMAGE TO THE FETUS OF EXPOSED PREGNANT WOMEN, ANEMIA, MUSCULAR WEAKNESS AND KIDNEY DYSFUNCTION.

Medical Conditions Possibly Aggravated By Exposure
DISEASES OF THE BLOOD AND BLOOD FORMING ORGANS, KIDNEYS, NERVOUS AND POSSIBLY REPRODUCTIVE SYSTEMS.

First Aid Procedures
INHALATION: REMOVE FROM EXPOSURE AND CALL A PHYSICIAN.
SKIN CONTACT: WASH AFFECTED AREAS WITH SOAP AND WATER. IF BURNS SHOULD OCCUR FROM MOLTEN METAL, TREAT FOR BURN AN GET IMMEDIATE MEDICAL ASSISTANCE.
EYE CONTACT: FLUSH EYES WITH WATER FOR 15 MINUTES, CALL A PHYSICIAN.
INGESTION: INGEST LARGE QUANTITIES OF WATER, CALL A PHYSICIAN.

5. PRECAUTIONS/PROCEDURES
OVERHEATING OF ALLOY CAN PRODUCE METAL FUMES AND OXIDES. MACHINING OPERATIONS SUCH AS GRINDING, SAWING OR BUFFING CAN GENERATE AIRBORNE PARTICULATE IN THE WORK AREA. EXPOSURE LEVELS INDICATED IN SECTION 1 ARE RELEVANT TO THESE AND OTHER OPERATIONS.

Normal Handling
USE OF APPROVED RESPIRATORS IS REQUIRED FOR APPLICATIONS WHERE ADEQUATE VENTILATION CANNOT BE PROVIDED. ACTIVITIES WHICH GENERATE DUST OR FUME SHOULD BE AVOIDED. WHEN MELTED, THE TEMPERATURE SHOULD BE KEPT AS LOW AS POSSIBLE.

Spill or Leak
ANY METHOD THAT KEEPS DUST TO A MINIMUM IS ACCEPTABLE. VACUUMING IS PREFERRED. USED OF APPROVED RESPIRATORY PROTECTION WHERE POSSIBILITY OF DUST/FUME EXPOSURE EXISTS. DO NOT USE COMPRESSED AIR FOR CLEANING.

Personal Hygiene
AVOID INHALATION OR INGESTION. PRACTICE GOOD HOUSEKEEPING AND PERSONAL HYGIENE PROCEDURES. A SHOWER IS RECOMMENDED IF SIGNIFICANT DUST EXPOSURE OCCURS.

Engineeirng Controls
LOCAL EXHAUST VENTILATION IS RECOMMENDED FOR DUST AND/OR FUME GENERATION OPERATIONS WHERE AIRBORNE EXPOSURES MAY EXCEED PERMISSIBLE AIR CONCENTRATIONS.

Storage
GENERAL STORAGE PROCEDURES ACCEPTABLE.

Special Precautions, Procedures, Label Instruction
SPECIAL ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE OSHA LEAD STANDARD (1910.1025) AND RESPIRATOR STANDARD (1910.134) SHOULD AIRBORNE EXPOSURES EXCEED THE OSHA ACTION LEVEL OR PEL.

6. PERSONAL PROTECTIVE EQUIPMENT
Respiratory Protection
WHERE AIRBORNE EXPOSURES MAY EXCEED OSHA/ACGIH PERMISSIBLE AIR
CONCENTRATIONS. THE MINIMUM RESPIRATORY PROTECTION RECOMMENDED IS A
NEGATIVE PRESSURE AIR PURIFYING RESPIRATOR WITH CARTRIDGES THAT ARE NIOSH/
MSHA APPROVED AGAINST DUST, FUMES AND MISTS HAVING A TWA NOT LESS THAN 0.05
MG/CU M.
Eyes and Face
SAFETY GLASSES RECOMMENDED WHERE THE POSSIBILITY OF GETTING DUST PARTICLES
IN EYES EXISTS OR WHEN HANDLING MOLTEN METAL.
Other Clothing and Equipment
GLOVES AND OTHER PROTECTIVE CLOTHING RECOMMENDED IF SKIN CONTACT IS
APPRECIABLE.

7. REACTIVITY DATA
Stability: STABLE Conditions to Avoid: NOT APPLICABLE
Incompatibility: STRONG OXIDIZERS MAY CAUSE VIOLENT REACTION
Hazardous Decomposition Products: AT TEMPERATURES ABOVE THE MELTING POINT,
TOXIC FUMES OR VAPORS MAY BE EMITTED.

8. ENVIRONMENTAL
Regulated by DOT? NO
Waste Disposal Method(DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL
DISPOSAL OR DISCHARGE LAWS)
IF HAZARDOUS UNDER 40 CFR261, SUBPARTS B AND C, MATERIAL MUST BE TREATED OR
DISPOSED IN A FACILITY MEETING THE REQUIREMENTS OF 40 CFR254 OR 265. IF NON-
HAZARDOUS, MATERIAL SHOULD BE DISPOSED IN A FACILITY MEETING THE
REQUIREMENTS OF 40 CFR257.
RCRA Status of Unused Material
IF DISCARDED IN UNALTERED FORM, MATERIAL SHOULD BE TESTED TO DETERMINE IF IT
MUST BE CLASSIFIED AS A HAZARDOUS WASTE FOR DISPOSAL PURPOSES. UNDER
SPECIFIC CIRCUMSTANCES, APPLICATION CAN BE MADE TO THE EPA ADMINISTRATOR TO
HAVE A PARTICULAR WASTE DESIGNATED NON-HAZARDOUS.

9. ADDITIONAL INFORMATION
Precautions to be taken in handling and storing: NONE
Other Precautions: NONE

10. TRANSPORTATION REQUIREMENTS
D.O.T. HAZARD CLASS N/A
D.O.T. PROPER SHIPPING NAME *
D.O.T. LABELS REQUIRED N/A
D.O.T. PLACARD REQUIRED N/A
UN/NA CODE N/A
*THIS PRODUCT IS NOT REGULATED BY THE D.O.T. AS SHIPPED.
THIS MATERIAL IS ONLY REGULATED BY THE D.O.T. IF IN A POWDER FORM WITH A
PARTICLE SIZE LESS THAN 100 MICROMETERS. (0.0040 INCHES)

11. CERCLA INFORMATION
THIS PRODUCT CONTAINS THE FOLLOWING CHEMICALS SUBJECT TO THE RELEASE
REQUIREMENTS OF SECTION 302:
CHEMICAL NAME: LEAD
REPORTABLE QUANTITY (LBS) 1.0 CERCLA STATUTORY RQ
SPILLS TO BE ENVIRONMENT EXCEEDING THE REPORTABLE QUANTITY IN ANY 24 HOUR
PERIOD MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER (1-800-424-8802). NO
REPORTING OF RELEASES OF THE HAZARDOUS SUBSTANCE IS REQUIRED IF THE
DIAMETER OF THE PIECES OF THE SOLID METAL RELEASED IS EQUAL TO OR EXCEEDS 100
MICROMETERS (0.400 INCHES).
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