



MATERIAL SAFETY DATA SHEET

Metallic Resources, Inc.

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM) Sn/63 HASL Electrolytic Grade Solder		PRODUCT CODE#	
CHEMICAL NAME Tin-Lead Alloy			
FORMULA Sn-Pb		MOLECULAR WEIGHT Not Applicable	
ADDRESS (No., STREET, CITY, STATE AND ZIP CODE) 2116 Enterprise Parkway Twinsburg, Ohio 44087			
CONTACT Metallic Resources, Inc. or contact any emergency room within 15 minutes of your location.		PHONE NUMBER (330) 425-3155	ISSUED DATE: 11/25/85 REVISED DATE: 1/4/95

B. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	C.A.S. #	WT. %	PERMISSIBLE AIR CONCENTRATION
Tin	7440-31-5	63	2.0 mg/cu.m.
*Lead	7439-92-1	37	.05 mg/cu.m.
*Regulated as a toxic substance under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.			<input checked="" type="checkbox"/> OSHA <input type="checkbox"/> ACGIH <input type="checkbox"/> OTHER

C. FIRST AID MEASURES

INHALATION: Remove from exposure; place individual under care of physician.

INGESTION: See a physician immediately.

D. HAZARDOUS INFORMATION**HEALTH**

INHALATION Lead intoxication may result from chronic high lead exposures with symptoms of anemia, insomnia, weakness, constipation, and gastrointestinal disorders. Stannosis - a benign pneumoconiosis may result from excessive tin exposure.

INGESTION Ingestion of lead may cause lead intoxication with accompanying symptoms of nausea and abdominal pain. Tin is relatively non-toxic but may cause fever, nausea, stomach cramps or diarrhea.

SKIN Possible mechanical irritation of skin.

EYES Mechanical irritation.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED Diseases of the blood and blood-forming organs, kidneys, nervous and possibly reproductive systems. Should be determined by physician.

UNUSUAL CHRONIC TOXICITY Damage to liver, kidneys, nervous system and blood forming activity. Potential injury to developing fetus and possible effects on reproduction. Should be determined by physician.

FIRE AND EXPLOSION

FLASH POINT	°C	AUTO IGNITION TEMPERATURE	°C	FLAMMABLE LIMITS IN AIR (% BY VOL.)
Not Applicable		Not Applicable		Not Applicable
<input type="checkbox"/> OPEN CUP	<input type="checkbox"/> CLOSED CUP			

UNUSUAL FIRE AND EXPLOSION HAZARDS
Not Applicable

E. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED
No specific agents recommended.

FIRE EXTINGUISHING AGENTS TO AVOID
No specific agents.

SPECIAL FIRE FIGHTING PRECAUTIONS
Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.

ENGINEERING CONTROLS
Local exhaust ventilation is required for melting, grinding, screening, soldering, or other operations where excessive exposures may occur.

NORMAL HANDLING
Use of approved respirators is required for applications where adequate ventilation cannot be provided. When melted, the temperature should be kept as low as possible

STORAGE
No Special Requirements.

SPILL OR LEAK
A clean-up procedure which minimizes exposure is required. Vacuuming is preferred. Place all material in closed containers. Do not use compressed air for cleaning. Use approved respiratory protection if possibility of dust/fume exposure exists.

SPECIAL: PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS
Signs and labels in work areas and for contaminated containers or equipment may be required under OSHA regulations.

PERSONAL HYGIENE
Practice good housekeeping and personal hygiene procedures. No tobacco or food in work area. Wash thoroughly before eating or smoking. Avoid ingestion or inhalation. Take a shower and change clothes at end of shift. Do not wear contaminated clothing home. Do not use compressed air for blowing dust off clothes.

F. PERSONAL PROTECTIVE EQUIPMENT**RESPIRATORY PROTECTION**

NIOSH/MSHA approved respirator for toxic dust and/or fume.

EYES AND FACE

Safety glasses recommended for grinding or other operations generating flying materials.

HANDS, ARMS, AND BODY

Gloves recommended for grinding or other operations with significant skin contact.

OTHER CLOTHING AND EQUIPMENT

Protective clothing is required if lead exposures exceed the OSHA PEL or significant contact occurs. Remove all work clothing before leaving plant premises.

G. PHYSICAL DATA**MATERIAL IS (AT NORMAL CONDITIONS):**

Liquid Solid Gas

APPEARANCE AND ODOR

Silver-gray metal, odorless
 Various shapes and sizes

BOILING POINT

Melting Point 361° - 370°

SPECIFIC GRAVITY

(H₂O = 1)
 8.42

VAPOR DENSITY

(AIR = 1)
 Not Applicable

SOLUBILITY IN WATER

(% by Weight) Insoluble

pH

Not Applicable

VAPOR PRESSURE

(mm Hg at 20°C) (PSIG)
 Not Applicable

EVAPORATION RATE

(Butyl Acetate = 1) (Ether = 1)
 Not Applicable

% VOLATILES BY VOLUME

(At 20°C)
 Not Applicable

H. REACTIVITY DATA**STABILITY**

UNSTABLE STABLE

CONDITIONS TO AVOID

Not Applicable

INCOMPATIBILITY (MATERIAL TO AVOID)

Halogen gases, oxidizers or acids may react violently or explode. Contact with hydrogen peroxide may cause a violent reaction.

HAZARDOUS DECOMPOSITION PRODUCTS

At temperatures above the melting point, metal oxide fumes may be evolved.

HAZARDOUS POLYMERIZATION

MAY OCCUR WILL NOT OCCUR

CONDITIONS TO AVOID

Not Applicable

I. ENVIRONMENTAL**EPA HAZARDOUS SUBSTANCE?**

Yes No

IF SO, REPORTABLE QUANTITY: _____

40 CFR
 116-117

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS)

If hazardous under 40 CFR 261, Subparts B and C, material must be treated or disposed in a facility meeting the requirements of 40 CFR 264 or 265. If non-hazardous, material should be disposed in a facility meeting the requirements of 40 CFR 257. This material may have value on a recycled basis.

RCRA STATUS OF UNUSED MATERIAL:

If discarded in unaltered form material should be considered a hazardous waste due to listing in 40 CFR 216.11 (3), Appendix VIII. Under specific circumstances, application can be made to the EPA Administrator to have a particular waste designated non-hazardous.

40 CFR
 261

J. REFERENCES

PERMISSIBLE CONCENTRATION REFERENCES

OSHA regulations 29 CFR 1910.1000 and 1910.1025

HAZARD INFORMATION REFERENCES

"Documentation of the Threshold Limit Values," 4th Ed., ACGIH Patty's Industrial Hygiene and Toxicology, Vol. 2A, 3rd Rev. Ed., 1981 NFPA "Fire Protection Guide on Hazardous Materials." 6th Ed., 1975 "Registry of Toxic Effects of Chemical Substances," NIOSH, 1980 Hamilton A. and Hardy, H. "Industrial Toxicology" 3rd Ed., 1974.

GENERAL

"Handbook of Chemistry and Physics, 57th Ed., "1976-77, Weast, R.C. Editor, CRC Inc.

K. ADDITIONAL INFORMATION

One should remember that when handling this material when molten, any malaise, such as headache, nausea, vomiting or vertigo can be related to the flux used in conjunction with the alloy.

Due to the unpredictable responses of an individual to fumes and vapors it is advisable not to allow pregnant women in a soldering area.

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