

SAFETY DATA SHEET (SDS)

LEAD-FREE SOLDER PASTE (IPC J-STD-005)

STIRRI

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Lead Free (LF) Solder Paste containing Antimony, Bismuth, Copper, Gold, Nickel, Silver, and Tin
BRAND: STIRRI™
SYNONYMS: Solder Paste, Liquid Solder, Paste
MANUFACTURER: STIRRI.com
ADDRESS: 166 Geary St., 15th Fl #1626 San Francisco, CA 94108 United States
PHONE: +1 (866) 478-4774 / +1 (866) iSTIRRI
FAX: +1 (866) 478-4774
EMERGENCY: Infotrac.net - +1-800-535-5053 (North America)
Infotrac.net - +1-352-323-3500 (International)
REVISION DATE: December 30, 2023
REVISION NUMBER: 231230
DOCUMENT NAME: SDS-SPF-231230

PRODUCT USE: Soldering components for bonding semiconductor chips and packages to circuit boards

SECTION 2: HAZARDS IDENTIFICATION

CHEMICAL NAME: N/A
CHEMICAL FAMILY: Mixture
CHEMICAL FORMULA: Proprietary

ROUTES OF ENTRY: Inhalation, Ingestion, Skin/Eye Contact

GHS:



Signal Word: Warning

Hazard Statement(s)

H302 Harmful if swallowed
H316 Causes mild skin irritation
H333 May be harmful if inhaled
H335 May cause respiratory irritation
H336 May cause drowsiness or dizziness

Precautionary Statement(s)

P102 Keep out of reach of children
P233 Keep container tightly closed
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P270 Do not eat, drink, or smoke when using this product
P280 Wear protective gloves/protective eye protection/face protection
P235 + P402 Keep cool. Store in a dry place.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302 + P352 IF ON SKIN: Wash with plenty of soap and water
P304 + P340 IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing
P305 + P351 IF IN EYES: Rinse continuously with water for several minutes

MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE:

Diseases of the blood-forming organs, kidneys, nervous and possibly reproductive systems

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: May cause moderate irritation, tearing, and reddening.

INHALATION: Inhalation of fumes or dust may cause local irritation to the respiratory system, dizziness, weakness, fatigue, nausea, and/or headache.

SKIN CONTACT: May cause mild skin irritation.

INGESTION: Harmful if swallowed. May cause irritation to the mouth, throat, and stomach. May cause abdominal discomfort, nausea, vomiting, and/or diarrhea.

POTENTIAL HEALTH EFFECTS (CHRONIC and OVEREXPOSURE)

Tin: Dust or fumes may cause irritation of the skin mucous membranes and may result in a benign Pneumoconiosis (Stannosis).

Silver: May cause discoloration of eyes and skin (Argyria).

Bismuth: May cause foul breath, a blue-black line on the gums, and Stomatitis.

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

SECTION 2: HAZARDS IDENTIFICATION (continued)

SECTION 2 NOTES:

STIRRI LLC does not recommend, manufacture, market, or endorse any of its products for human consumption.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients ⁽¹⁾	C.A.S. Number	Weight Percent	OSHA PEL mg/m ³	ACGIH TLV TWA mg/m ³
Modified Rosins ⁽²⁾	NA	<45	NE	NE
Mixed Carboxylic Acids ⁽²⁾	NA	<4	NE	NE
Tin	7440-31-5	Product contains one or more of these metallic elements in varying percentages	2.00	2.00
Silver	7440-22-4		0.01	0.10
Bismuth	7440-69-9		NE	NE
Antimony	7440-36-0		0.50	0.50
Copper	7440-50-8		1.00	1.00
Non-Hazardous Ingredients				
Surfactants	N/A	<4	NE	NE
Rheological Modifier	N/A	<5	NE	NE

SECTION 3 NOTES:

(1) Per 29 CFR 1910 the mixture has not been tested as a whole. All hazardous components, which comprise 1% of the mixture (0.1% carcinogenic), are listed. Percentages of individual components are not listed as this information is considered a trade secret.

(2) The identity of the specific chemical(s) is being withheld as a trade secret per 29 CFR 1910.1200. The hazardous properties of these ingredients are disclosed in this SDS.

SECTION 4: FIRST AID MEASURES

EYES: Flush with water, contact a physician. Dust and/or fumes may cause irritation. If contact lenses can be removed easily, flush eyes without contact lenses. Seek medical attention if irritation persists.

SKIN: After handling material wash hands thoroughly with soap and water. Dust, vapor, and/or fumes are not readily absorbed through the skin. If irritation persists, obtain medical attention.

INGESTION: Seek medical attention immediately. Do not induce vomiting.

INHALATION: Remove to fresh air. If breathing is difficult, seek immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Use extinguishers appropriate for conditions.

SPECIAL FIRE FIGHTING PROCEDURES: Use NIOSH-approved self-contained Breathing Apparatus and full protective clothing if involved in a fire. Do not use water on fire where molten metal is present.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Moderate in the form of dust when exposed to heat or flame.

SECTION 5 NOTES:

Molten solder alloys consisting of Antimony, Bismuth, Copper, Silver, and/or Tin do not produce significant quantities of fumes below 900 °F.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PRECAUTIONS AND EQUIPMENT: Material is extremely thick and will not flow out.

ACCIDENTAL RELEASE MEASURES: If material spills or leaks use a spatula to collect spilled paste and place it in a plastic or glass jar. Remove traces of paste residue using cloth rags or paper towels moistened with Isopropyl Alcohol. Exposure to spilled material may be irritating. Follow on-site personal protective equipment recommendations.

SECTION 6 NOTES:

See Sections 2, 4, and 7 for additional information.

SECTION 7: HANDLING AND STORAGE

HANDLING: Keep containers tightly closed when not in use. Use care to avoid spills. Wear appropriate personal protective equipment when working with or handling solder paste. Always wash hands thoroughly after handling this product. Dispose of following Federal, State/Provincial, and Local regulations.

STORAGE: Store product in tightly capped original containers in a cool, dry place. Keep away from food and drinking water. Keep away from heat and flames.

OTHER PRECAUTIONS: Empty containers may retain product residues in vapor, liquid, and/or solid form. All labeled hazard precautions should be observed.

SECTION 7 NOTES:

For industrial use only.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use only with production equipment designed for use with solder paste.

VENTILATION: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLVs.

RESPIRATORY PROTECTION: A NIOSH-approved air-purifying respirator with fume/organic chemical cartridge should be worn when airborne concentrations may be exceeded. General and local exhaust ventilation is the preferred means of protection.

EYE PROTECTION: Safety glasses are recommended to prevent contact with the eyes.

SKIN PROTECTION: Protective gloves should be worn when the possibility of skin contact exists.

PROTECTIVE CLOTHING OR EQUIPMENT: Remove contaminated clothes and laundry before reuse.

WORK HYGIENIC PRACTICES: Cosmetics/Food/Drink/Tobacco should not be consumed or used in areas where solder products may be used. Always wash hands after handling soldering products and before applying or using cosmetics/food/drink/tobacco.

OTHER: Maintain eye wash stations in work areas. Avoid the use of contact lenses in high fume areas. Clean protective equipment regularly. Clean up spills immediately.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray paste
ODOR:	Odorless
ODOR THRESHOLD:	Not established
pH as SUPPLIED:	N/A
MELTING POINT:	Varies
FREEZING POINT:	Varies
INITIAL BOILING POINT:	Varies
BOILING RANGE:	N/A (°F/°C)
FLASH POINT:	N/A (°F/°C)
EVAPORATION RATE:	N/A
FLAMMABILITY (SOLID):	Not established
UPPER/LOWER FLAMMABILITY:	Not established
UPPER/LOWER EXPLOSIVE LIMITS:	Not established
VAPOR PRESSURE (mmHg):	N/A (°F/°C)
VAPOR DENSITY (AIR = 1):	N/A (°F/°C)
RELATIVE DENSITY:	Not established
SOLUBILITY IN WATER:	Insoluble
PARTITION COEFFICIENT (n-octanol/water):	Not established
AUTOIGNITION TEMPERATURE:	Not established
DECOMPOSITION TEMPERATURE:	Not established
VISCOSITY:	

SECTION 9 NOTES:

Other physical and chemical properties depend on alloy composition. Some typical alloy compositions are:

96.5%Tin/3%Silver/0.5%Copper	99.3%Tin/0.7%Copper
95%Tin/5%Antimony	95.5%Tin/4.0%Silver/0.5%Copper
42%Tin/58%Bismuth	

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID (STABILITY):	Not established
INCOMPATIBILITY (MATERIAL TO AVOID):	Oxidizing materials, acids, hydrogen peroxide, bases
HAZARDOUS DECOMPOSITION/BY-PRODUCTS:	N/A
POSSIBILITY OF HAZARDOUS REACTIONS:	Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Antimony (7440-36-0)	
LD50 Ingested rat	7000 mg/kg

Silver (7440-22-4)	
LD50 Oral mouse	100/mg/kg

SKIN CORRISSION/IRRITATION:	Not established
SERIOUS EYE DAMAGE/IRRITATION:	Not available
RESPIRATORY OR SKIN SENSITIZATION:	Not established
GERM CELL MUTAGENICITY:	Not available
CARCINOGENICITY:	Not available
REPRODUCTIVE TOXICITY:	Not available
STOT-SINGLE EXPOSURE:	Not available
STOT-REPEATED EXPOSURE:	Not available
ASPIRATION HAZARD:	Not available

SECTION 11 NOTES:

This product is a solid that has not been tested as a whole to determine its hazards. Synergistic or additive effects of the above chemicals are unknown, as are the effects of exposure to these chemicals in addition to others present in the work place. See Section 2 for additional health hazards.

SECTION 12: ECOLOGICAL INFORMATION

TOXICITY:	Not established
PERSISTENCE AND DEGRADABILITY:	Not established
BIOACCUMULATIVE POTENTIAL:	Not established
MOBILITY IN SOIL:	Not established
OTHER ADVERSE EFFECTS:	Not established

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Scrap and waste solder products should be recycled or stored in a dry, sealed container for later disposal. Disposal must be in accordance with standards, regulations, laws, and statutes set forth by Federal, State/Provincial, and Local Regulations.

SECTION 14: TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

UN Number:	Not available
UN Proper Shipping Name:	Not available
Packaging Group:	Not applicable
Environmental Hazards:	None

TRANSPORT HAZARD CLASSES:

US DOT Hazardous Material Classification:	Solder Paste is not listed as a DOT hazardous material
Water Transportation:	Solder Paste is not listed as a hazardous material
IATA Hazardous Material Classification:	Solder Paste is not listed as IATA hazardous material

SECTION 15: REGULATORY INFORMATION

All ingredients are listed on the EPA TSCA Inventory. Finished product is not listed on the EPA TSCA Inventory.

U.S. FEDERAL REGULATIONS:	None
STATE REGULATIONS:	None
INTERNATIONAL REGULATIONS:	None

SECTION 16: OTHER INFORMATION

This SDS is a compilation of information supplied by the manufacturers of the chemicals contained in this product.

HMIS Rating: Health=1 Flammability=1 Physical Hazard=0 Personal Protection=X

PREPARATION INFORMATION:

This update supersedes all previously released documents.

KEY:

N/A: Not applicable
GHS: Global Harmonized System
OSHA: Occupational Safety and Health Administration
ACGIH: American Conference of Governmental Industrial Hygienists
NTP: National Toxicology Program
IARC: International Agency for Research on Cancer
CAS: Chemical Abstract Service
PEL: Permissible Exposure Limit
TLV: Threshold limit value
TWA: Time Weighted Average
NE: Not Established
NIOSH: National Institute for Occupational Safety and Health
LD50: Lethal Dose, 50% or median lethal dose
STOT: Specific target organ toxicity
US DOT: United States Department of Transportation
DOT: Department of Transportation
IATA: International Air Transport Association
EPA: Environmental Protection Agency
TSCA: Toxic Substance Control Act
HMIS: Hazardous Material Identification System

Prepared By: Compliance Officer

Approved By: Operations Manager

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