



Code: AG-SN-PASTE
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WOLVERINE JOINING TECHNOLOGIES, LLC.

MATERIAL SAFETY DATA SHEET

Product: SILVALOY SOLDER PASTE, F8B3W964

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common Name : SILVER-TIN BRAZING ALLOY
Chemical Name : SILVER-TIN BRAZING ALLOY
Formula : Ag-Sn
Product CAS No.: CHEMICAL MIXTURE
Product Use : Soldering

Supplier : WOLVERINE JOINING TECHNOLOGIES, LLC.
Address : 235 KILVERT STREET
City, St, Zip : WARWICK, RI 02886
Phone : 1-401-739-9550

FOR CHEMICAL EMERGENCY CALL CHEMTREC (24 HOURS):
1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)
1-703-527-3887 (Outside Above Area)

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	% Wt.
TIN	7440-31-5	70-80
SILVER	7440-22-4	1-4
TRIETHYLENEGLYCOL	112-27-6	3-7
POLYETHYLENEGLYCOL	25322-68-3	2-7
POLY (ETHYLENEGLYCOL)	37225-26-6	3-8
LINE-A-LASTICPIO	NoneFound	0.5-3

NOTE: See Section 8 for Exposure Limits and Section 11 for Toxicological Information.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Metallic paste

Slight Ammonia Odor

Flash Point: 210 °F ASTM D-93

Prolonged or repeated inhalation of dust or fume may cause lung injury. May cause respiratory tract irritation. Overexposure to freshly formed fumes may cause a flu-like illness called "metal fume fever".

May cause eye and skin irritation.

Harmful if large amounts are swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

ROUTES OF ENTRY

Eyes? YES

Skin? YES

Inhalation? YES

Ingestion? YES

POTENTIAL HEALTH EFFECTS

EYE CONTACT, severely irritating and corrosive to the eyes. Vapors may irritate the eyes and nose.

SKIN CONTACT, severely irritating and corrosive to the skin. Prolonged skin contact may result in irritation, redness and severe swelling and blistering.

INHALATION of tin oxide may lead to benign pneumoconiosis. Certain tin salts are mild irritants to the skin and mucous membranes. Over exposure to silver dusts or fumes may cause a permanent grayish pigmentation of the skin and can cause irritation of the skin and mucous membranes.

INGESTION results in severe irritation of the mouth, throat and stomach. May cause nausea, dizziness. Pre-existing conditions of the lungs, diseases of the blood and blood forming organs, kidney, nervous system and possibly reproductive system may be irritated.

NOTE: The potential health effects described above only apply if dust or fume is formed.

CARCINOGENICITY

NTP? NO

IARC? NO

OSHA? NO

CHRONIC HEALTH HAZARDS

Prolonged or repeated inhalation may cause a benign pneumoconiosis.

Prolonged or excessive exposures may result in argyria, a permanent localized blue-gray discoloration of the eyes, skin or mucous membranes.

Prolonged exposure to SILVER can cause damage to the nasal septum.

Refer to Potential Health Effects.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

May aggravate existing respiratory and/or skin ailments.

NOTE: See Section 8 for Exposure Limits, Section 11 for Toxicological Information and Section 12 for Ecological Information.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: For dust or solution in eyes, flush immediately for 15-20 minutes with large amounts of water. Seek medical evaluation of potential corneal damage.

SKIN CONTACT: Promptly wash with soap and water; then flush with water until all chemical is removed. Remove contaminated clothing promptly and wash before reuse. If symptoms persist, get medical attention.

INHALATION: Immediately remove to fresh air. If breathing is difficult, give oxygen if a qualified operator is available. Get medical evaluation. If not breathing, administer artificial respiration. Call a physician and give supportive treatment for chills and fever.

INGESTION: Do not induce vomiting. If conscious, give soluble calcium or magnesium in any form: milk, calcium gluconate or calcium lactate solutions, if available; or milk of magnesia; otherwise give large amounts of water. Call a physician. Do not give carbonates or bicarbonates.

SECTION 5: FIRE-FIGHTING MEASURES

Flash Point: 210 °F ASTM D-93

Auto-Ignition: Not Applicable

LEL: 2.0%

UEL: 12%

NFPA HAZARD CLASSIFICATION

Health: 1

Flammable: 1

Reactivity: 1

HMIS HAZARD CLASSIFICATION

Health: 1

Flammable: 1

Reactivity: 1

Special: B

EXTINGUISHING MEDIA

Use carbon dioxide, chemical foam or dry chemical. Use any means for extinguishing surrounding fire.

Do NOT use water on metal fires.

SPECIAL FIRE FIGHTING PROCEDURES

Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Contain spillage and scoop up or vacuum. Avoid dusting. Notification of the National Response Center (800/424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean-up of spills, including reuse or disposal as appropriate (see Section 13: Disposal Considerations).

****NOTE**** In the event of an accidental release of this material, the above procedures should be followed. Additionally, proper exposure controls and personal protection equipment should be used (see Section 8: Exposure Control/Personal Protection), and disposal of the material should be in accordance with Section 13: Disposal Considerations.

SECTION 7: HANDLING AND STORAGE

Wash thoroughly after handling.

Keep container closed.

Store in a cool, dry location away from incompatible materials. Avoid moisture and excessive heat during storage

Avoid contact with eyes, skin and clothing.

Avoid breathing any dust, mist or fumes resulting from the use of this product.

Use only with adequate ventilation.

Do not eat, drink, or smoke in work area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

INGREDIENT	PEL-OSHA	TLV-ACGIH
TIN CAS NO.: 7440-31-5	2 mg/m3	2 mg/m3
SILVER CAS NO.: 7440-22-4	0.01 mg/m3	0.1 mg/m3
POLYETHYLENE GLYCOL CAS NO.: 25322-68-3	None Found	None Found
POLYETHYLENEGLYCOL CAS NO.: 37225-26-6	None Found	None Found
TRIETHYLENEGLYCOL CAS NO.: 112-27-6	None Found	None Found
LINE-A-LASTICPIO CASNO.:NA	NoneFound	NoneFound

NOTE: Both OSHA and the ACGIH list welding fumes as having an exposure limit of 5 mg/m3 (total particulate not otherwise classified). However, the ACGIH states that welding fumes must be tested frequently for individual components which are likely to be present to determine whether specific exposure limits are exceeded.

NOTE: The permissible exposure limits (PELs), threshold limit values (TLVs), potential health effects statements and SARA hazard categories may not be applicable as the hazardous ingredients listed are in the solid form. If dust, powder or fume is generated then these statements will be applicable.

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only). All ACGIH TLVs refer to the 1998 Standards. All OSHA PELs refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989.

RESPIRATORY PROTECTION

If dust or fume is generated, a NIOSH/MSHA approved respirator may be necessary. Follow all requirements for respiratory programs and selection set forth in the OSHA regulations (29 CFR 1910.139).

VENTILATION

General; local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLVs during the use of this product. Recommended air flow 100 linear ft/min at brazing/soldering zone, 2000 cu ft/min/brazer.

PROTECTIVE EQUIPMENT

Refer to ANSI/ASC Z49.1-94 (Safety in Welding, Cutting and Allied Processes), published by the American Welding Society, for further information on the selection of personal protective equipment.
Safety glasses (with side shields).
Gloves.
Body protection as necessary to prevent skin contact.

PERSONNEL SAMPLING PROCEDURE

For SILVER: Refer to NIOSH Manual of Analytical Methods (NMAM), 4th Edition, Method 7300.

For TIN COMPOUNDS: Refer to NIOSH Manual of Analytical Methods, 2nd Edition, Volume 3, April 1977, P&CAM, #S183.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Gray paste
Odor: Slight Ammonium Odor
Boiling Point: 176 °F
Specific Gravity (H2O=1): Not Determined
Melting Point: 430 °F
Vapor Pressure (mm Hg): Not Applicable
Vapor Density (Air=1): 2.0 (IPA)
Evaporation Rate: Not Applicable
% Solubility In Water: Partially
pH: Not Determined

SECTION 10: STABILITY AND REACTIVITY

Stability: Generally considered stable.
Avoid: None expected.

INCOMPATIBILITY (Materials to Avoid)

Strong acids and bases, acetylene, ammonia, hydrogen peroxide, chlorine, bromine, iodine and turpentine.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS

Toxic metal oxides are emitted when heated above the melting point. The amount of fume evolved increases as the temperature rises.

Polymerization: Polymerization is not expected to occur.
Avoid: Not applicable.

SECTION 11: TOXICOLOGICAL INFORMATION

CHEMICAL NAME	% Wt. LD50	LC50
TIN		
CAS NO.: 7440-31-5	70-80 Not Available	Not Available
SILVER		
CAS NO.: 7440-22-4	1-4 Not Available	Not Available

NOTE: See Sections 3, 8 and 12 for additional information.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY

No data available.

ENVIRONMENTAL FATE

No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

US EPA Waste Number: D011

This product contains SILVER or silver compounds and disposal may be regulated under EPA hazardous waste regulations, waste number D011. Before disposal, this product or mixtures containing this product should be tested for toxicity characteristics (TC) under the current EPA Hazardous Waste Regulations TCLP testing procedures, 40 CFR Part 261 et seq. Disposal/recycling/reclamation requirements will vary by location and type of disposal selected. Consult with state and local regulatory authorities.

****NOTE**** Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

INTERNATIONAL

UN Number: Not Regulated

UNITED STATES

EPA Waste Number: D011
DOT Classification: Not Regulated

CANADA
PIN Number: Not Regulated
TDG Class: Not Regulated

EC
DGL: Not Determined

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

TSCA: IN TSCA

SARA 311 AND 312 HAZARD CATEGORIES

IMMEDIATE (Acute) Health Hazard: YES
DELAYED (Chronic) Health Hazard: YES
FIRE Hazard: NO
REACTIVITY Hazard: NO
Sudden Release of PRESSURE: NO

SARA SECTION 313 NOTIFICATION

This product contains a toxic chemical (or chemicals) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

CHEMICAL NAME	CAS Number	% Wt.
SILVER	7440-22-4	1-4

OZONE DEPLETING SUBSTANCES (ODS)

This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

VOLATILE ORGANIC COMPOUNDS (VOC)

None

US STATE REGULATIONS

VOLATILE ORGANIC COMPOUND (CARB): Not Determined

CANADIAN REGULATIONS

"This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations."

DSL/NDL: DSL
WHMIS Classification: Uncontrolled Product

EUROPEAN REGULATIONS

EINECS: Yes

OTHER REGULATIONS

MITI (Japan): Yes

AICS (Australia): Yes

SECTION 16: OTHER INFORMATION

REVISIONS 3

Revision Number:

PREPARATION INFORMATION

Prepared By: Wolverine Joining Technologies, and Wolverine Tube Inc.
Corporate Environmental, Health and Safety Group.

Phone Number/Address: See Section 1

This Material Data Sheet is offered pursuant to OSHA's Hazard Communication Standard (29 CFR 1910.1200). Other government regulations must be reviewed for applicability to these products. The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, and management and for persons working with or handling these products. The information presented in the MSDS is premised upon proper handling and anticipated uses and is for the material without chemical additions/alterations. We believe this information to be reliable and up-to-date as of the date of publication, but make no warranty that it is. Additionally, if this Material Safety Data Sheet is more than three years old, please contact the supplier at the phone number listed in Section 1 to make certain that this sheet is the most current. Copyright Wolverine Joining Technologies, LLC. License granted to make unlimited copies for internal use only.