

# Safety Data Sheet

## S-Bond® 140 Alloy

### Section 1 - Identification

**Product Identifier:** S-Bond® 140 Alloy

**Other Designations:** ISO designation = ISO-S-Bi54Sn42Ag2Ti

**General Use:** Alloy for material joining via soldering/brazing

**Manufacturer:** S-Bond Technologies, LLC. 2299 Amber Drive, Hatfield PA 19440; Phone: (215) 631-7111; FAX: (215) 631-7115; Hours: (0830-1700 EST)

### Section 2- Hazards Identification

**Classification of the mixture:** The product is placed on the market in solid form

**Classification in accordance with GHS-US**

Acute Tox. 4 (Oral)	H302
STOT RE2	H373
Repr. 2	H361
Resp.Sens 1B	H334
Skin Sens. 1	H317
Aquatic Chronic 4	H413

**Label elements:**

**GHS-US labeling**

**Hazard Pictograms (GHS-US):**



GHS07



GHS08

**Signal word (GHS-US):** Danger

**Hazard statements (GHS-US):**

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317 May cause an allergic skin reaction

**Precautionary statements:**

P285 In case of inadequate ventilation wear respiratory protection.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P312 IF SWALLOWED: call a POISON CENTER or doctor or physician if you feel unwell.

P302+P350 IF ON SKIN: Gently wash with plenty of soap and water.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P501 Dispose of contents and container in accordance with local regional/national international regulations.

Other hazards: No additional information available

Unknown acute toxicity (GHS-US): No data available.

**Flammability Classification:** N/A

**Unusual Fire or Explosion Hazards:** Water on molten metal may cause steam explosion.

**Hazardous Combustion Products:** None

### Section 3- Composition / Information on Ingredients

**Chemical Formula:** Sn-Bi -Ag-Ti alloy

**CAS Numbers:** See below

<b>Ingredient Name</b>	<b>CAS Number</b>	<b>% wt</b>
Bismuth (Bi)	7440-69-9	50 - 55
Tin (Sn)	7440-31-5	40.- 45
Silver (Ag)	7440-22-4	1.5 – 2.8
Titanium (Ti)	7440-32-6	1.8 – 2.8
Other active elements (e.g. Ga, Ce)		0.0-0.2
Other inactive elements (e.g. Fe, Cu, Ni)		0.0-0.1
Trace Impurities		2000 ppm max

### Section 4- First Aid Measures

**Inhalation:** N/A

**Eye Contact:** For molten alloy, rinse with water, ice, and call physician.

**Skin Contact:** For contact with molten alloy, ice and treat as a second degree burn.

**Ingestion:** If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical attention.

*After first aid, get appropriate in-plant, paramedic, or community medical support.*

**Note to Physicians:** None

**Special Precautions/Procedures:** None

### Section 5- Fire Fighting Measures

**Flash Point:** None

**Flash Point Method:** N/A

**Burning Rate:** None

**Auto ignition Temperature:** None

**Flammability Classification:** N/A

**Extinguishing Media:** Sand, dry ice, or dry chemical should be used on surrounding fire, DO NOT use water on molten metal.

**Unusual Fire or Explosion Hazards:** Water on molten metal may cause steam explosion.

**Hazardous Combustion Products:** None

**Fire-Fighting Instructions:** Do not release runoff from fire control methods to sewers or waterways.

**Fire-Fighting Equipment:** If fighting a fire where these products may be present, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode

### Section 6- Accidental Release Measures

**Spill /Leak Procedures:** For molten alloy, first allow the alloy to solidify. Once cooled to room temperature, collect the solids following appropriate disposal procedures for tin.

**Small Spills:** See above

**Large Spills**

**Containment:** None required

**Cleanup:** No special requirements

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

**Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

**Disposal Regulatory Requirements:** N/A

**Container Cleaning and Disposal:** N/A

### Section 7- Handling and Storage

**Handling Precautions:** None

**Storage Requirements:** Dry cool atmosphere to prevent excessive oxidation and do not store in close proximity to incompatible materials.

## Section 8 – Exposure Controls / Personal Protection

Ingredient	OSHA PEL	ACGIH TLV
	TWA	TWA
Bi	NE	NE
Sn	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
Ag	0.01 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Ti	20 mg/m <sup>3</sup>	None established

**Engineering Controls:** None

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2).

**Administrative Controls:** N/A

**Respiratory Protection:** Alloy is non-respirable, but always seek professional advice prior to respirator selection and use.

Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

**Protective Clothing/Equipment:** Wear thermally protective gloves, boots, aprons and gauntlets to prevent skin contact with the molten alloy. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

**Safety Stations:** No special systems required, but make emergency eyewash stations, safety/quick-drench showers and washing facilities available in work area.

**Contaminated Equipment:** No special requirements

**Comments:** Never eat, drink or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

## Section 9 - Physical and Chemical Properties

**Physical State:** Metallic Solid

**Appearance and Odor:** Metallic Gray/Silver - No odor

**Odor Threshold:** N/A

**Vapor Pressure:** N/A

**Vapor Density (Air=1):** N/A

**Formula Weight:** N/A

**Density:** 8.5 g/cc

**Specific Gravity (H<sub>2</sub>O=1, at 4 °C):** N/A

**pH:** N/A

**Water Solubility:** Insoluble

**Other Solubilities:** N/A

**Boiling Point:** Not established (> than 1800°C ( 3270°F))

**Freezing/Melting Point:** 140°C-150°C

**Viscosity:** N/A

**Refractive Index:** N/A

**Surface Tension:** N/A

**% Volatile:** None

**Evaporation Rate:** N/A

## Section 10 - Stability and Reactivity

**Stability:** S-Bond 140 is stable at room temperature in closed containers under normal storage and handling conditions.

**Polymerization:** Hazardous polymerization cannot occur.

**Chemical Incompatibilities:** Strong acids and bases

**Conditions to Avoid:** Do not add water to molten metal, resultant steam may cause an 'explosion'

**Hazardous Decomposition Products:** Thermal oxidative decomposition of S-Bond 140 can produce no hazardous byproducts. Oxidation will produce bismuth oxides, titanium dioxide, tin oxide, or silver oxide.

## Section 11 – Toxicological Information

**Primary Entry Routes:** Ingestion

**Target Organs:** N/A

**Acute Effects**

**Inhalation:** N/A.

**Eye:** May cause irritation. Direct contact with molten alloy can cause burns.

**Skin:** Molten alloy will burn unprotected skin.

**Ingestion:** May irritate stomach lining.

**Carcinogenicity:** IARC, NTP and OSHA do not list S-Bond 140 (or any of its material components) as a carcinogen.

**Medical Conditions Aggravated by Long-Term Exposure:** None

**Chronic Effects:** None

## 12 – Ecological Information

**Ecological Information:** None

**EPA Regulations:**

SARA 311/312 Codes:

SARA Toxic Chemical (40 CFR 372.65):

None

**SARA EHS (Extremely Hazardous Substance) (40 CFR 355):** Not listed, Threshold Planning Quantity (TPQ)

**OSHA Regulations:**

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

OSHA Specifically Regulated Substance: Not listed

**State Regulations:** N/A

## 13 – Disposal Information

None

## Section 14 – Transport Information

**DOT Transportation Data (49 CFR 172.101):**

**Shipping Name:** S-Bond 140 Alloy

**Shipping Symbols:** None

**Hazard Class:** None

\*\* Shipment is not controlled by  
USDOT/IATA/ICAO/IMO regulations.

**15 – Regulatory Information**

Tin (CAS No) 7440-31-5				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. California - Proposition 65 - Reproductive Toxicity - Female	U.S. California - Proposition 65 - Reproductive Toxicity - Male	No Significance risk level (NSRL)
Yes				

Silver (CAS No) 7440-22-4				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. California - Proposition 65 - Reproductive Toxicity - Female	U.S. California - Proposition 65 - Reproductive Toxicity - Male	No Significance risk level (NSRL)
Yes				

Tin (CAS No) 7440-31-5	
U.S. - Massachusetts - Right To Know List	
U.S. - Minnesota - Hazardous Substance List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Silver (CAS No) 7440-22-4	
U.S. - Massachusetts - Right To Know List	
U.S. - Minnesota - Hazardous Substance List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	

**International Inventories**

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Bismuth	X	X	-	231-177-4	-		X	-	X	X	X

**Legend:**

- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
- XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base

**Production and Site Reports (40 CFR 710(B)).**

- Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
- Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

TSCA 12(b)	Not applicable
SARA 313	Not applicable
SARA 311/312 Hazard Categories	See section 2 for more information
CWA (Clean Water Act)	Not applicable
Clean Air Act	Not applicable
OSHA	Not applicable
CERCLA	Not applicable
California Proposition 65	This product does not contain any Proposition 65 chemicals
U.S. State Right-to-Know Regulations	Not applicable

- U.S. Department of Transportation**
  - Reportable Quantity (RQ): N
  - DOT Marine Pollutant N
  - DOT Severe Marine Pollutant N
- U.S. Department of Homeland Security**

This product does not contain any DHS chemicals.

## 16 – Other Information

### Full text of H-phrases:

H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction
P285	In case of inadequate ventilation wear respiratory protection
P280	Wear protective gloves/protection clothing/eye protection/face protection.
P301+P312	IF SWALLOWED: call a POISON CENTER or doctor or physician if you feel unwell
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P302+P350	IF ON SKIN: Gently wash with plenty of soap and water
P501	Dispose of contents/container in according with local/regional/national regulations

NFPA health hazard:

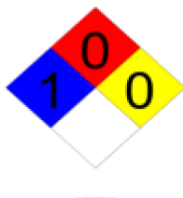
1 – Slightly hazardous

NFPA fire hazard:

0 – Will not burn

NFPA reactivity:

0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health:

1 – Slight Hazard

Flammability:

0 – Minimal Hazard

Physical:

0 - Minimal Hazard

**Prepared By:** RW Smith

**Date of Preparation:** 07/30/2018

**Revision Notes:** None

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