

Material Safety Data Sheet

S-Bond[®] 220 Alloy

Date of Preparation: 1/98

Revision: 3/2/2004

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: S-Bond[®] 220 Alloy

Chemical Formula: Sn-Ag-Ti alloy

CAS Number: See below

Other Designations: ISO designation = ISO-S-Sn90Ag4Ti

General Use: Alloy for material joining via soldering/brazing

Manufacturer: S-Bond Technologies, LLC. 811 West Fifth Street, Unit 2, Lansdale, PA 19446; Phone: (215) 631-7111; FAX: (215) 631-7115; Hours: (0830-1700 EST)

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt
Tin (Sn)	7440-31-5	91.5-93.5
Silver (Ag)	7440-22-4	3.5-4.0
Titanium (Ti)	7440-32-6	3.1-4.1
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

Toxicity Data:

Ingredient	OSHA PEL	ACGIH TLV
	TWA	TWA
Sn	2 mg/m ³	2 mg/m ³
Ag	.01 mg/m ³	.1 mg/m ³
Ti	20 mg/m ³	None established

Section 3 - 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: 7.3 g/ccm

Specific Gravity (H₂O=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: 220°C-240°C (488°F-525°F)

Viscosity: N/A

Refractive Index: N/A

Surface Tension: N/A

% Volatile: None

Evaporation Rate: N/A

Section 4 - Fire-Fighting Measures

Flash Point: None

Flash Point Method: N/A

Burning Rate: None

Autoignition 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 facepiece operated in pressure-demand or positive-pressure mode.

Section 5 - Stability and Reactivity

Stability: S-Bond 220 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 220 can produce no hazardous byproducts. Oxidation will produce titanium dioxide, tin oxide, or silver oxide.

Section 6 - Health Hazard Information

Potential Health Effects

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 220 (or any of its material components) as a carcinogen.

Medical Conditions Aggravated by Long-Term Exposure: None

Chronic Effects: None

Emergency and First Aid Procedures

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 7 - Spill, Leak, and Disposal Procedures

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

Ecological Information: None

EPA Regulations:

SARA 311/312 Codes:

SARA Toxic Chemical (40 CFR 372.65):

CAS #	Chemical Name	% of Alloy
7440-22-4	Silver	4.5 max.

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

Section 8 - Exposure Controls / Personal Protection

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 - Special Precautions and Comments

Handling Precautions: None

Storage Requirements: Dry cool atmosphere to prevent excessive oxidation and do not store in close proximity to incompatible materials (see section 5).

DOT Transportation Data (49 CFR 172.101):

Shipping Name: S-Bond 220 Alloy

Shipping Symbols: None

Hazard Class: None

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

Prepared By: RW Smith

Revision Notes: None

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