

SN42Bi57Ag1 LOW TEMPERATURE SOLDER PASTE

4902P

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Sn42Bi57Ag1 Low Temperature Solder Paste

SDS Code: 4902P

Related Part # 4902P-15G, 4902P-25G

Recommended Use and Restriction on Use

Use: Solder paste

Uses Advised Against: Brazing (torch welding/soldering)

Details of Manufacturer or Importer

Manufacturer

MG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADA

MG Chemicals (Head Office)
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Surrey, British Columbia V4N 4E7
CANADA

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E-MAIL info@mgchemicals.com

E-MAIL (Competent Person): sds@mgchemicals.com

Emergency Phone Number

For hazardous material incidents ONLY (leaks, spills, fires, exposures or accidents) USA or CANADA—Call CHEMTREC at **+1-800-424-9300**



For emergencies involving the transport of dangerous goods; 24/7 service CANADA—Call CANUTEC collect at **+1-613-996-6666** or ***666** on cellular phones

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Section 2: Hazard(s) Identification
Classification of Hazardous Chemical
GHS Categories

Criteria		Category	Signal Word	Pictograms
Sensitization	Respiratory	1B	Danger	Health
Sensitization	Skin	1	Warning	Exclamation
Hazardous to the Aquatic Environment	Chronic	2	None	None

Note: The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

Label Elements

Signal Word	DANGER
Pictograms	Hazard Statements
	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled H317: May cause an allergic skin reaction
	H411: Toxic to aquatic life with long lasting effects
Prevention	Precautionary Statements
P261	Avoid breathing fume/vapors.
P284	In case of inadequate ventilation wear respiratory protection.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves.
P273	Avoid release to the environment.

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Response	Precautionary Statements
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P382 + P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage
Disposal	Precautionary Statements
P501	Dispose of contents/container in accordance to local/regional/international regulations.

Hazards Not Otherwise Classified

Other Criteria	Hazard Statements/Precautionary Statement	Signal Word	Pictograms
Argyria Warning	Long term exposure to silver powder or compounds can lead to an irreversible blue-grey discoloration of the skin.	None	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	% (weight)
7440-69-9	bismuth	51%
7440-31-5	tin (powder)	38%
8050-09-7	rosin ^{a)}	3%
505-48-6	octanedioic acid	3%
7440-22-4	silver	<1%
110-30-5	1,2-bis(octadecanamido)ethane	0.5%

a) also called colophony, gum rosin

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Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF INHALED	P304 + P340, P342 + P311
Immediate Symptoms	<i>cough, irritation, asthma, wheezing</i>
Response	Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
IF ON SKIN	P302 + P352, P333 + P313, P382 + P364
Immediate Symptoms	<i>redness, allergic contact dermatitis</i>
Response	Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
IF IN EYES	P305 + P351 + P338
Immediate Symptoms	<i>low toxicity: redness</i>
Response	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED	P301 + P330 + P331
Immediate Symptoms	<i>low toxicity: no symptoms known or expected</i>
Response	Rinse mouth. Do NOT induce vomiting.

Section 5: Fire-Fighting Measures

Extinguishing Media	In case of fire: Use extinguish media suitable for surrounding. In presence of molten metal, do NOT use water on fires.
Specific Hazards	Not flammable or combustible, but burns if involved in a fire. Produces irritating and toxic fumes in fires or in contact with hot surfaces. Prevent fire-fighting wash from entering waterway or sewer system.
Combustion Products	May produce carbon oxides (CO, CO ₂), tin oxides (SnO _x), bismuth oxides and silver metal fumes.
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

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Personal Protection	See personal protection equipment in Section 8.
Precautions for Response	Avoid breathing the fumes/vapors. Remove or keep away all sources of extreme heat.
Environmental Precautions	Avoid release to the environment. Prevent spill from entering drains and waterways. Do not flush to sewer.
Containment Methods	None required—this product is not readily flowable.
Cleaning Methods	Collect paste in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe up further residue with paper towel and place dirty towels in container. Wash spill area with soap and water to remove the last traces of residue.
Disposal	Dispose of spill waste according to Section 13.

Section 7: Handling and Storage

Prevention	Avoid breathing fumes/vapors. Avoid release to the environment.
Handling	In case of inadequate ventilation wear respiratory protection. Wear protective gloves. Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace. Collect spillage.
Storage	RECOMMENDATION: Keep in a dry and clean area, away from incompatible substances.

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Section 8: Exposure Controls/Personal Protection
Substances with Occupational Exposure Limit Values

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)	Notation
tin	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	2 mg/m ³ 2 mg/m ³ 2 mg/m ³ 2 mg/m ³ 2 mg/m ³ 2 mg/m ³	Not established Not established Not established Not established Not established Not established	
rosin colophony (<i>solder thermal decomposition</i>)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	Keep low Not established Not established Keep low Keep low 0.1 mg/m ³	Not established Not established Not established Not established Not established Not established	L, S, asthma L, S L
silver	ACGIH U.S.A. OSHA PEL ^{a)} Canada AB ^{b)} Canada BC ^{c)} Canada ON ^{d)} Canada QC	0.1 mg/m ³ 0.01 mg/m ³ 0.1 mg/m ³ 0.01 mg/m ³ 0.1 mg/m ³ 0.1 mg/m ³	Not established Not established Not established 0.03 mg/m ³ Not established Not established	

Note: The ACGIH¹, OSHA, and Canadian provinces exposure limits were consulted. Limits from the RTECS database² and from suppliers' SDS were also consulted. Short term exposure limits (STEL) are usually for 15 min and long term permissible exposure limits (PEL) for 8 h.

(L) Keep low

(S) Sensitization

a) metal dust, mist

b) metal

c) Ag and its compounds

d) metal, dust, fumes

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Keep airborne concentrations below the occupational exposure limits (OEL).

Soft soldering temperatures (<450 °C) are generally too low to generate significant amounts of metal vapors, but dust, metal oxide, or flux decomposition fumes can occur.

RECOMMENDATION: For frequent or prolonged soldering processes, use of a local exhaust system to avoid exposure to thermal decomposition products. Reflow oven are typically vented outside or use a specially designed filtered recirculation system.

Personal Protective Equipment**Eye protection**

Wear appropriate protective eyeglasses or chemical safety goggles.

RECOMMENDATION: Ensure that glasses have side shields for lateral protection.

Skin Protection

For likely contacts, use of protective butyl rubber or other chemically resistant gloves.

Respiratory Protection

If exposed to fumes or dust above the exposure limit, a suitable wear respirator meeting local/regional/national guidelines.

Generally, for emergencies and exposure above 0.5 mg/m³, use a self-contained breathing apparatus with full face piece operated in a pressure positive mode.

RECOMMENDATION: Consult your local safety supply store to ensure that your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in Section 3. The respirator should be fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

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Section 9: Physical and Chemical Properties

Physical State	Solid, paste	Lower Flammability Limit	Not available
Appearance	Metallic Grey	Upper Flammability Limit	Not available
Odor	Aromatic	Vapor Pressure @20 °C	Not available
Odor Threshold	Not available	Vapor Density	Not available
pH	Not available	Specific Gravity @25 °C	8.6
Freezing/Melting Point	219 °C [426 °F]	Solubility in Water ^{b)}	Slightly soluble flux mixture
Boiling Point ^{a)}	138 °C [280 °F]	Partition Coefficient	Not available
Flash Point	Not available	Auto-ignition Temperature	Not available
Evaporation Rate	Not available	Decomposition Temperature	Not available
Flammability (solid, gas)	Not available	Viscosity @40 °C	Not available

a) Lowest literature value for organic solvent component

b) Metal components are sparingly soluble

Section 10: Stability and Reactivity

Reactivity	Not available.
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Avoid extreme temperatures above 450 °C, such as those due to welding.
Incompatibilities	oxidizing agents, strong acids
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

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Section 11: Toxicological Information
Summary of Effects and Symptoms by Routes of Exposure

Eyes	Low toxicity: redness
Skin	May cause redness, irritation and/or allergic contact dermatitis.
Inhalation	May cause nose, throat and lung irritation. Overexposure to dust or metal fumes may lead to pneumoconiosis or stansosis.
Ingestion	Low toxicity: no symptoms known or expected
Chronic	Prolonged or repeated exposure to silver or silver compounds by ingestion or inhalation can cause an irreversible blue-grey skin discoloration. Repeated or prolonged skin contact may cause allergic skin reaction.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
bismuth	>5 000 mg/kg Rat	Not available	Not available
tin	>2 000 mg/kg Rat	>2 000 mg/kg Rabbit	4.75 mg/m ³ Rat 4 h
rosin, hydrogenated	>2 000 mg/kg Rat	>2 000 mg/kg Rabbit	Not available
octanedioic acid	>2 000 mg/kg Rat	Not available	Not available
silver	>2 000 mg/kg Rat	>2 000 mg/kg Rat	5.16 mg/L 4 h Rat (dust)
1,2-Bis(octadecanamido) ethane	Not available	Not available	Not available

Note: Toxicity data from the RTECS² and ECHA databases were consulted. The data from supplier (M)SDS were also consulted.

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Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/irritation	May cause eye irritation and lesions. Contains mechanically abrasive particles.
Sensitization (allergic reactions)	Pure rosin is not a skin sensitizer according to reliable animal studies; however, its oxidation products are known to cause skin sensitization. Solder thermal degradation fume inhalation is a recognized causes of occupational asthma.
Carcinogenicity (risk of cancer)	Not classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.
Mutagenicity (risk of heritable genetic effects)	Based on available data, the classification criteria are not met.
Reproductive Toxicity (risk to sex functions)	Based on available data, the classification criteria are not met.
Teratogenicity (risk of fetus malformation)	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Not applicable. The material doesn't contain any known class 1 aspiration hazard components and it is a high viscosity material.

Section 12: Ecological Information

Ecological classifications are based on the IMDG/GHS criteria in conjunction with ecotoxicological data from our suppliers, the European Chemical Agency database (<http://echa.europa.eu>), and other reliable sources.

Contains particles of silver of less than a 1 mm but more than 100 nm (larger than nanoparticles), which release ionic silver levels that is very toxic to the environment. While massive silver are insoluble in water, their powders is considered sufficiently soluble to give rise to an ecological hazard by EU regulators. The classification that follows takes into account to chronic aqueous toxicity of category 1 (M = 10 for silver) of the EU.

Based on available data for bismuth, tin, rosin, octanedioic acid and 1,2-Bis(octadecanamido)ethane the GHS aqueous toxicity classification criteria are not met.

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Category 2

Toxic to aquatic life

Chronic Ecotoxicity

Category 2

Toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

Biodegradability

Not readily biodegradable

Other Effects

Not available

Section 13: Disposal Information

Dispose of contents in accordance with all local, regional, national, and international regulations.

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Section 14: Transport Information

Ground

Refer to TDG regulations (Canadian Transportation of Dangerous Goods regulations); **USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Sizes under 450 kg	<i>FOR REFERENCE ONLY</i>
NOT REGULATED in TDG per Special Provisions 99	UN number: UN3077
Sizes 5 kg and under	Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (silver particles <1 mm)
NOT REGULATED in 49 CFR per exception 171.4 (c)(2)	Class: 9
	Packing Group: III
	Marine Pollutant: Yes

Special Provision 99 (2): These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting of less than 450 kg of UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., or less than 450 L of UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., on a road vehicle or a railway vehicle. The dangerous goods must be contained in one or more small means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety.

Air

Refer to ICAO-IATA regulations.

Sizes 5 kg and under: Cat. No. 4902P-15G, 4902P-25G

NOT REGULATED
Not Restricted, as per Special Provisions A197

Special Provision A197: These substances when transported in single or combination packagings containing net quantity per single or inner packaging of less than 5 L or less for liquids or having a net mass of 5 kg or less for solids, are not subject to any other provisions of these Regulations provided the packagings meet the general provisions 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

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Sea

Refer to IMDG regulations.

Sizes 5 kg and under: Cat. No. 4902P-15G, 4902P-25G

NOT REGULATED
per 2.10.2.7

2.10.2.7: Marine pollutants packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 kg or less for solids are not subject to any other provision of this Code relevant to marine pollutants provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. In the case of marine pollutants also meeting the criteria for inclusion in another hazard class, all provisions of this Code relevant to any additional hazards continue to apply.

Section 15: Regulatory Information

Canada

Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)

All hazardous ingredients are listed on the DSL/NDSL.

Hazardous Products Act (R.S.C., 1985, c. H-3)

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2015.

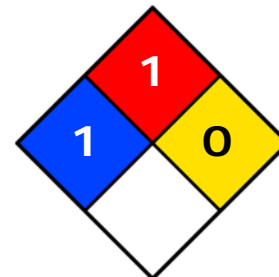
USA

Other Classifications

HMIS® RATING

HEALTH:	*	1
FLAMMABILITY:		1
PHYSICAL HAZARD:		0
PERSONAL PROTECTION:		

NFPA® 704 CODES



Approximate HMIS and NFPA Risk Ratings Legend:

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

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SN42BI57Ag1 LOW TEMPERATURE SOLDER PASTE**4902P****CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain substances that are listed as hazardous air pollutants.

EPCRA (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product contains silver (CAS# 7440-22-4; reportable quantity = 1 000 lb), which are subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372

TSCA (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

California Proposition 65 (Chemicals known to cause cancer or reproductive toxicity, June 06, 2014 revision, USA).

This product does not contain any of the listed substances.

Europe**RoHS** (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

WEEE (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

Section 16: Other Information

SDS Prepared by	Michel Hachey
Date of Issue	10 August 2017
Supersedes	05 April 2017
Reason for Changes:	Updated information in section 4, 8, 11.

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- 1) ACGIH 2017 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2017).
- 2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
EL50	Half maximal effective loading
NOELR	No observable effect loading ratio
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
PEL	Permissible Exposure Limit
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

Technical Queries Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at www.mgchemicals.com.

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