

SN42BI57Ag1 LOW TEMPERATURE SOLDER PASTE

4902P

# Safety Data Sheet

## Section 1: Identification



### Product Identifier and Other Means of Identification

**Product Identifier:** 4902P**Other Means of Identification:** Sn42/Bi57/Ag1 Low Temperature Solder Paste**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 +1-800-340-0772**FAX** +1-800-340-0773**E-MAIL** [support@mgchemicals.com](mailto:support@mgchemicals.com)**WEB** [www.mgchemicals.com](http://www.mgchemicals.com) +1-905-331-1396**FAX** +1-905-331-2682**E-MAIL** (Competent Person): [sds@mgchemicals.com](mailto:sds@mgchemicals.com)

### Emergency Phone Number

**For hazardous material incidents ONLY** (leaks, spills, fires, exposures or accidents)USA or CANADA—Call Verisk 3E at **+1-866-519-4752** or **+1-760-476-3962**  
(Service access code: 335388)**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**

<b>Signal Word</b>	<b>DANGER</b>
<b>Pictograms</b>	<b>Hazard Statements</b>
	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
<b>Prevention</b>	<b>Precautionary Statements</b>
P261	Avoid breathing fume or 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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<b>Response</b>	<b>Precautionary Statements</b>
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P333 + P313	If skin irritation or rash occurs: Get medical advice or attention.
P382 + P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage
<b>Disposal</b>	<b>Precautionary Statements</b>
P501	Dispose of contents in accordance to local, regional, national, and international regulations.

**Hazards Not Otherwise Classified**

<b>Other Criteria</b>	<b>Hazard Statements/Precautionary Statement</b>	<b>Signal Word</b>	<b>Pictograms</b>
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**

<b>CAS #</b>	<b>Chemical Name</b>	<b>%(weight)</b>
7440-69-9	bismuth	51%
7440-31-5	tin (powder)	38%
8050-09-7	rosin <sup>a)</sup>	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>
<b>IF INHALED</b>	P304 + P340, P342 + P311
<b>Immediate Symptoms</b>	<i>cough, irritation, asthma, wheezing</i>
<b>Response</b>	Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing.  If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
<b>IF ON SKIN</b>	P302 + P352, P333 + P313, P382 + P364
<b>Immediate Symptoms</b>	<i>redness, allergic contact dermatitis</i>
<b>Response</b>	Wash with plenty of water.  If skin irritation or rash occurs: Get medical advice or attention.  Take off contaminated clothing and wash it before reuse.
<b>IF IN EYES</b>	P305 + P351 + P338
<b>Immediate Symptoms</b>	<i>low toxicity: redness</i>
<b>Response</b>	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>IF SWALLOWED</b>	P301 + P330 + P331
<b>Immediate Symptoms</b>	<i>low toxicity—no symptoms known or expected</i>
<b>Response</b>	Rinse mouth. Do NOT induce vomiting.

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**Section 5: Fire-Fighting Measures**

<b>Extinguishing Media</b>	In case of fire: Use extinguish media suitable for surrounding. In presence of molten metal, do NOT use water on fires.
<b>Specific Hazards</b>	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.
<b>Combustion Products</b>	May produce carbon oxides (CO, CO <sub>2</sub> ), tin oxides (SnO <sub>x</sub> ), bismuth oxides and silver metal fumes.
<b>Fire-Fighter</b>	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

**Section 6: Accidental Release Measures**

<b>Personal Protection</b>	See personal protection equipment in Section 8.
<b>Precautions for Response</b>	Avoid breathing the fumes or vapors. Remove or keep away all sources of extreme heat.
<b>Environmental Precautions</b>	Avoid release to the environment. Prevent spill from entering drains and waterways. Do not flush to sewer.
<b>Containment Methods</b>	None required—this product is not readily flowable.
<b>Cleaning Methods</b>	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.
<b>Disposal</b>	Dispose of spill waste according to Section 13.

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**Section 7: Handling and Storage**

- Prevention**                      Avoid breathing fumes or 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.

**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	2 mg/m <sup>3</sup>	Not established	
	U.S.A. OSHA PEL	2 mg/m <sup>3</sup>	Not established	
	Canada AB	2 mg/m <sup>3</sup>	Not established	
	Canada BC	2 mg/m <sup>3</sup>	Not established	
	Canada ON	2 mg/m <sup>3</sup>	Not established	
	Canada QC	2 mg/m <sup>3</sup>	Not established	
rosin colophony (solder thermal decomposition)	ACGIH	Keep low	Not established	L, S, asthma
	U.S.A. OSHA PEL	Not established	Not established	
	Canada AB	Not established	Not established	L, S L
	Canada BC	Keep low	Not established	
	Canada ON	Keep low	Not established	
	Canada QC	0.1 mg/m <sup>3</sup>	Not established	

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Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)	Notation
silver	ACGIH U.S.A. OSHA PEL <sup>a)</sup> Canada AB <sup>b)</sup> Canada BC <sup>c)</sup> Canada ON <sup>d)</sup> Canada QC	0.1 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> 0.1 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> 0.1 mg/m <sup>3</sup> 0.1 mg/m <sup>3</sup>	Not established Not established Not established 0.03 mg/m <sup>3</sup> Not established Not established	

*Note:* The ACGIH<sup>1</sup>, OSHA, and Canadian provinces exposure limits were consulted. Limits from the 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

**Engineering Controls**

**Ventilation**

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.

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**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/m<sup>3</sup>, 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**

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

a) Lowest literature value for organic solvent component

b) Metal components are sparingly soluble

**Section 10: Stability and Reactivity**

<b>Reactivity</b>	Not available.
<b>Chemical Stability</b>	Chemically stable at normal temperatures and pressures
<b>Conditions to Avoid</b>	Avoid extreme temperatures above 450 °C, such as those due to welding.
<b>Incompatibilities</b>	oxidizing agents, strong acids
<b>Polymerization</b>	Will not occur
<b>Decomposition</b>	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**

<b>Eyes</b>	Low toxicity: redness
<b>Skin</b>	May cause redness, irritation and/or allergic contact dermatitis.
<b>Inhalation</b>	May cause nose, throat and lung irritation.  Overexposure to dust or metal fumes may lead to pneumoconiosis or stansosis.
<b>Ingestion</b>	Low toxicity: no symptoms known or expected
<b>Chronic</b>	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)**

<b>Chemical Name</b>	<b>LD50 oral</b>	<b>LD50 dermal</b>	<b>LC50 inhalation</b>
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 <sup>3</sup> 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 ECHA databases were consulted. The data from supplier SDS were also consulted.



**ISO 9001:2015 Quality Management  
System**

SAI Global File #004008  
Burlington, Ontario, Canada

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<b>Skin corrosion/irritation</b>	Based on available data, the classification criteria are not met.
<b>Serious eye damage/irritation</b>	May cause eye irritation and lesions. Contains mechanically abrasive particles.
<b>Sensitization</b> (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.
<b>Carcinogenicity</b> (risk of cancer)	Not classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.
<b>Mutagenicity</b> (risk of heritable genetic effects)	Based on available data, the classification criteria are not met.
<b>Reproductive Toxicity</b> (risk to sex functions)	Based on available data, the classification criteria are not met.
<b>Teratogenicity</b> (risk of fetus malformation)	Based on available data, the classification criteria are not met.
<b>STOT-single exposure</b>	Based on available data, the classification criteria are not met.
<b>STOT-repeated exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration hazard</b>	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.



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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.

**Acute Ecotoxicity**

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

**NOT REGULATED** in TDG per Special Provisions 99

Sizes 5 kg and under: 4902P-15G, 4902P-25G

**NOT REGULATED** in 49 CFR per exception 171.4 (c)(2)

*FOR REFERENCE ONLY*

**UN number:** UN3077

**Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (silver particles <1 mm)

**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.

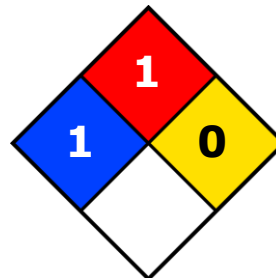
**USA**

**Other Classifications**

**HMIS® RATING**

<b>HEALTH:</b>	<b>*</b>	<b>1</b>
<b>FLAMMABILITY:</b>		<b>1</b>
<b>PHYSICAL HAZARD:</b>		<b>0</b>
<b>PERSONAL PROTECTION:</b>		

**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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**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, 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**

<b>SDS Prepared by</b>	MG Chemical's Regulatory Department
<b>Date of Issue</b>	04 April 2023
<b>Supersedes</b>	06 March 2020
<b>Reason for Changes:</b>	Update to product identifier and RTEC information.

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**Reference**

1) *ACGIH 2022 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 (2022).

**SN42BI57Ag1 LOW TEMPERATURE SOLDER PASTE****4902P****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](http://www.mgchemicals.com).

Email: [support@mgchemicals.com](mailto:support@mgchemicals.com)

**Mailing Addresses** *Manufacturing & Support*  
1210 Corporate Drive  
Burlington, Ontario, Canada  
L7L 5R6

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