

TYPE 5 SAC305 LEAD FREE SOLDER PASTE

4900P5

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Type 5 SAC305 Lead Free Solder Paste**Other Means of Identification:** 4900P5**Related Part #** 4900P5-250G

Recommended Use and Restriction on Use

Use: Solder paste**Uses Advised Against:** Brazing (torch welding/soldering)

Details of Manufacturer or Importer

ManufacturerMG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADAMG Chemicals (Head Office)
9347-193 Street
Surrey, British Columbia V4N 4E7
CANADA**TEL** +1-800-340-0772**TEL** +1-905-331-1396**FAX** +1-800-340-0773**FAX** +1-905-331-2682**E-MAIL** support@mgchemicals.com**E-MAIL** info@mgchemicals.com**WEB** www.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 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

TYPE 5 SAC305 LEAD FREE SOLDER PASTE
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Section 2: Hazard(s) Identification
Classification of Hazardous Chemical
GHS Categories

| Criteria | Category | Signal Word | Pictograms |
|--|----------|-------------|-------------|
| Hazardous to the Aquatic Environment Chronic | 1 | Warning | Environment |

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 | WARNING |
| Pictograms | Hazard Statements |
|  | H410: Very toxic to aquatic life with long lasting effects |
| Prevention | Precautionary Statements |
| P273 | Avoid release to the environment. |
| Response | Precautionary Statements |
| 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 ingestion or inhalation of silver can lead to an irreversible blue-grey discoloration of the skin. | None | None |

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Section 3: Composition/Information on Ingredients

| CAS # | Chemical Name | %(weight) |
|------------|----------------------|-----------|
| 7440-31-5 | tin (powder) | 88% |
| 65997-13-9 | rosin, hydrogenated | 6% |
| 7440-22-4 | silver | 3% |
| 55934-93-5 | glycol ether solvent | 3% |
| 7440-50-8 | copper | 0.6% |

Section 4: First-Aid Measures

| <i>Exposure Condition</i> | <i>GHS Code/Symptoms/Precautionary Statements</i> |
|-----------------------------|--|
| IF IN EYES | P305 + P351 + P338 |
| Immediate Symptoms | <i>none known</i> |
| Response | Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| IF ON SKIN (or hair) | P302 + P364 |
| Immediate Symptoms | <i>none known</i> |
| Response | IF ON SKIN: Wash with plenty of water. |
| IF INHALED | P304 + P340 |
| Immediate Symptoms | <i>none known</i> |
| Response | Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing. |
| IF SWALLOWED | P301 + P330 + P331 |
| Immediate Symptoms | <i>none known</i> |
| Response | Rinse mouth. Do NOT induce vomiting. |

TYPE 5 SAC305 LEAD FREE SOLDER PASTE**4900P5****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. Inhalation of toxic smoke during fire may have delayed effects. Exposed person may need to be put under surveillance for 48 h. Toxic for aquatic environment: Prevent fire-fighting wash from entering waterway or sewer system. |
| Combustion Products | May produce carbon oxides (CO, CO ₂), tin oxides (SnO _x) and silver metal fumes. |
| Fire-Fighter | Wear self-contained breathing apparatus and full fire-fighting turn-out gear. |

Section 6: Accidental Release Measures

| | |
|----------------------------------|---|
| Personal Protection | See personal protection equipment in Section 8. |
| Precautions for Response | Avoid breathing the fumes. 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. |

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Section 7: Handling and Storage

| | |
|-------------------|--|
| Prevention | Avoid breathing fumes or dust. |
| Handling | Wear protective gloves/clothing/eye protection. Wash hands thoroughly after handling. Avoid release to the environment. Collect spillage. |
| Storage | Do not store near acids or other 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) |
|---|-----------------|---------------------------------|-----------------------------------|
| tin | ACGIH | 2 mg/m ³ | Not established |
| | U.S.A. OSHA PEL | 2 mg/m ³ | Not established |
| | Canada AB | 2 mg/m ³ | Not established |
| | Canada BC | 2 mg/m ³ | Not established |
| | Canada ON | 2 mg/m ³ | Not established |
| | Canada QC | 2 mg/m ³ | Not established |
| silver (metal dust, mist) (metal) (Ag and its compounds) (metal, dust, fumes) | ACGIH | 0.1 mg/m ³ | Not established |
| | U.S.A. OSHA PEL | 0.01 mg/m ³ | Not established |
| | Canada AB | 0.1 mg/m ³ | Not established |
| | Canada BC | 0.01 mg/m ³ | 0.03 mg/m ³ |
| | Canada ON | 0.1 mg/m ³ | Not established |
| | Canada QC | 0.1 mg/m ³ | Not established |
| copper (dust and mist) | ACGIH | 1.0 mg/m ³ | Not established |
| | U.S.A. OSHA PEL | 1.0 mg/m ³ | Not established |
| | Canada AB | 1.0 mg/m ³ | Not established |
| | Canada BC | 1.0 mg/m ³ | Not established |
| | Canada ON | 1 mg/m ³ | Not established |
| | Canada QC | 1 mg/m ³ | Not established |

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH¹, OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database² and data 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.

Section continued on the next page

TYPE 5 SAC305 LEAD FREE SOLDER PASTE**4900P5****Engineering Controls****Ventilation**

Keep airborne concentrations below exposure limits.

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.

Skin Protection

Use of protective gloves chemically resistant gloves if skin contact is likely.

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 your respirator has filter cartridges appropriate for the ingredients listed in section 3. Ensure that the respirator is fitted to the employee by a professional.

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

TYPE 5 SAC305 LEAD FREE SOLDER PASTE
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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 | Mild | Vapor Pressure @20 °C | Not available |
| Odor Threshold | Not available | Vapor Density | Not available |
| pH | Not available | Relative Density @25 °C | 8.4 |
| Freezing/Melting Point | Not available | Solubility in Water ^{b)} | Slightly soluble flux mixture |
| Initial Boiling Point ^{a)} | ≥260 °C [≥500 °F] | Partition Coefficient n-octanol/water | Not available |
| Flash Point ^{a)} | ≥140 °C [≥284 °F] | Auto-ignition Temperature ^{a)} | ≥305 °C [≥581 °F] |
| Evaporation Rate | Not available | Decomposition Temperature | Not available |
| Flammability | Not available | Viscosity @40 °C | >20.5 mm ² /s |

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 | May cause mild eye irritation. |
| Skin | May cause mild skin irritation. |
| Inhalation | May cause nose, throat and lung irritation. Overexposure to dust or metal fumes may lead to pneumoconiosis or Stannosis. |
| Ingestion | No known effect |
| Chronic | Prolonged or repeated exposure to silver or silver compounds by ingestion or inhalation can cause an irreversible blue-grey skin discoloration. |

Acute Toxicity (Lethal Exposure Concentrations)

| Chemical Name | LD50 oral | LD50 dermal | LC50 inhalation |
|----------------------|-----------------------|------------------------|-----------------------------------|
| 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 |
| silver | >2 000 mg/kg Rat | >2 000 mg/kg Rat | 5.16 mg/L 4 h Rat (dust) |
| glycol ether solvent | 2 800 mg/kg Rat | >2 000 mg/kg Rat | Not available |
| copper | >5 000 mg/kg Mouse | Not established | 5.11 mg/m ³ Rat |

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

Section continued on the next page

TYPE 5 SAC305 LEAD FREE SOLDER PASTE**4900P5****Other Toxicological Effects**

| | |
|--|--|
| Skin corrosion/irritation | Based on available data, the classification criteria are not met. |
| Serious eye damage/irritation | Based on available data, the classification criteria are not met. |
| Sensitization (allergic reactions) | No sensitization effects known |
| 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 and copper 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 and copper 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 and M = 1 for copper) of the EU.

Based on available data for tin, 2-(2-hexyloxyethoxy) ethanol, and hydrogenated rosin, the GHS aqueous toxicity classification criteria are not met.

Section continued on the next page

TYPE 5 SAC305 LEAD FREE SOLDER PASTE**4900P5****Acute Ecotoxicity**

Category 1

Very toxic to aquatic life

Chronic Ecotoxicity

Category 1

Very toxic to aquatic life with long lasting effect

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 | <i>FOR REFERENCE ONLY</i> UN number: UN3077 Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (silver particles <1 mm) |
| Sizes 5 kg and under 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. 4900P5-250G NOT REGULATED On the air waybill, write "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. 4900P5-250G

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.

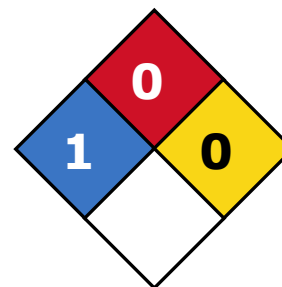
USA

Other Classifications

HMIS® RATING

| | | |
|-----------------------------|----------|----------|
| HEALTH: | * | 1 |
| FLAMMABILITY: | | 0 |
| 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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TYPE 5 SAC305 LEAD FREE SOLDER PASTE**4900P5****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 copper (CAS# 7440-22-4; reportable quantity = 5000 lb) and silver (CAS# 7440-22-4; reportable quantity = 1000 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

| | |
|----------------------------|---|
| SDS Prepared by | MG Chemical's Regulatory Department |
| Date of Revision | 06 March 2020 |
| Supersedes | 29 April 2016 |
| Reason for Changes: | Update to the emergency phone number information. |

Reference

- 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®)

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TYPE 5 SAC305 LEAD FREE SOLDER PASTE**4900P5****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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