Safety Data Sheet – T4 Lead-free resin based solder paste

Section 1
Identification of the substance/mixture and of the company/undertaking

Product identifier:	Lead-Free Antimony-Free Rosin-Based Solder Paste
Other means of identification:	Water Soluble Solder Paste, Solder Cream, Solder Paste
Recommended use of the chemical:	Circuit board prototyping
Restrictions on use:	None identified
Supplier:	Voltera Inc. 180 Northfield Dr W, Suite 2 Waterloo, ON N2L 0C7, Canada Email: support@voltera.io
Emergency phone number:	+1 613-996-6666 or **1-888-CAN-UTEC (226-8832)** International Emergency Number, CANUTEC This telephone number is available 24 hours per day, 7 days per week.

Section 2
Hazards identification

Classification of the substance or mixture

Eye irritation	Category 2
Hazardous to the aquatic environment, short-term, acute	Category 1
Hazardous to the aquatic environment, long-term, chronic	Category 1

Symbols

Signal word

Warning

Hazard statements

H319	Causes serious eye irritation.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long-lasting effects

Precautionary statements

P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response precautionary statements

P305 + P351 + P338 IF IN EYES:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical treatment if you feel unwell.
P337+313:	If eye irritation persists get medical advice/attention.
P391	Collect spillage.

Disposal precautionary statements

P501	Dispose of contents/container in accordance with local, state, federal, and provincial regulations.

Describe any hazards not otherwise classified:

Exposures to soldering fumes and vapours may be irritating to eyes, respiratory system, and skin.

Section 3
Composition/information on ingredients

Component	CAS number	Concentration %	Hazard descriptions
Tin	7440-31-5	42.0	
Silver	7440-22-4	0.4	Acute oral toxicity (Category 4) Acute hazard to the aquatic environment (Category 1) Chronic hazard to the aquatic environment (Category 1)
Bismuth	7440-69-9	57.4	
Hydrogenated rosin	65997-06-0	3.0 – 9.0	Eye irritation (Category 2)
Tridecyl alcohol	68526-86-3	0.0 – 7.0	Acute hazard to the aquatic environment (Category 1) Chronic hazard to the aquatic environment (Category 1)
Alpha terpineol	98-55-5	1.0 – 7.0	Eye irritation (Category 2)
Malonic acid	141-82-2	0.25-0.28	Acute oral toxicity (Category 4) Serious eye damage (Category 1)

Section 4
First-aid measures

Description of first-aid measures

Eye contact:
Immediately flush eyes with plenty of water for 15 to 20 minutes. Get medical attention, if irritation or symptoms of overexposure persists.

Skin contact:
Immediately wash skin with soap and plenty of water. Get medical attention if irritation develops or persists.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

Eye contact:
Immediately rinse the affected eyes with plenty of clean water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation occurs.

Ingestion:
If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Other first aid:
Exposures to soldering fumes and vapors may be irritating to eyes, respiratory system, and skin.

Indication of immediate medical attention and special treatment needed

Note to physicians:
Provide general supportive measures and treat symptomatically.

Section 5
Fire-fighting measures

Extinguishing media

Extinguishing media:
Use alcohol resistant foam, carbon dioxide, dry chemical, or water fog or spray when fighting fires involving this materials.

Special Hazards arising from the substance or mixture

Hazardous combustion byproducts:
Use alcohol resistant foam, carbon dioxide, dry chemical, or water fog or spray when fighting fires involving this materials.

Unusual fire hazards:
Flux in solder may burn if soldering is done with a flame.

Sensitivity to impact:
Do not use a solid water stream as it may scatter and spread fire.

Advice for firefighters

Protective equipment:
As in any fire, wear Self-Contained Breathing Apparatus (SCBA), MSHA.NIOSH (approved or equivalent) and full protective gear.

Section 6
Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Personnel precautions:
Evacuate area and keep unnecessary and unprotected personnel from entering the spill area. Avoid inhaling vapors, mists, or fumes. Avoid contact with skin, eyes, and clothing.

Environmental precautions

Environmental precautions:
Avoid runoff into storm sewers, ditchesm and waterways.

Methods and materials for containment and cleaning up

Methods for containment:
Melted solder will solidify on colling and can be scraped up.

Methods for cleanup:
Solidified solder can be scraped up upon cooling. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

Reference to other sections

Protective equipment:
Refer to Section 8 for information on personal protection equipment.

Section 7
Handling and storage

Precautions for safe handling

Handling:
Use with adequate ventilation. Avoid breathing vapour and fumes. Use only in accordance with directions.

Special handling:
Do not use in areas without adequate ventilation.

Hygiene practices:
Avoid inhaling vapors, mists, or fumes. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage:
Store between 4°C and 10°C (40°F and 50°F). Keep container closed. Do not store with foodstuffs.

Section 8
Exposure controls / personal protection

Control parameters

Exposure guidelines – ingredient based:

Tin:
OSHA: PEL-TWA: 2mg/m3

Silver:
OSHA: PEL-TWA: 0.01mg/m3

Exposure controls

Engineering controls:
Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection, and maintenance of the personal protective equipment.

Eye protection:
Safety glasses with side-shields.

Hand protection:
Wear appropriate protective gloves. Consult glove manufacturer's data for permeability data.

Respiratory protection:
When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator or selfcontained breathing apparatus should be worn.

Hygiene practices:
Avoid inhaling vapors, mists, or fumes. Wash thoroughly after handling.

Additional information about design of technical facilities:
No further data; see item 7.

Engineering Measures:
Maintain adequate local ventilation. Operators shouldbe protectedfrom soldering fumes.

Personal protective equipment:
- **Eyes:** Wear appropriate safety glasses
- **General protective and hygienic measures:** Wear appropriate protective clothing and impervious rubber gloves. Avoid skin contact. Wash hands before breaks and at the end of work.
- **Respiratory protection:** Use with adequate ventilation.
- **Hygiene:** Do not store with foodstuffs. Eating or drinking should not be permitted in areas where soldering is done.

Section 9
Physical and chemical properties

Information on basic physical and chemical properties

Colour	Grey
Odour	Mild
pH-value	Not determined
Melting temperature	> 100°C
Boiling temperature	124°C – 198°C (for flux)
Flash point	> 76°C (>169°F)
Lower flammability limit	Not determined
Upper flammability limit	Not determined
Ignition temperature	Not determined
Vapour pressure	Not determined
Vapour density	Not determined
Density	>4g/cm3 (@20°C (68°F))
Solubility	Insoluble

Evaporation rate	Not determined
Partition coefficient	Not determined
Percent volatile	Not determined
VOC content	Not determined
Expansion ratio	400-1000kcPs

Other information

Note from section 9	None

Section 10
Stability and reactivity

Reactivity:
Not applicable.

Chemical stability:
Stable under normal temperatures and pressures.

Possibility of hazardous reactions:
Not reported.

Conditions to avoid:
High temperatures, high humidity.

Incompatible materials:
May react with concentrated acids. Silver is incompatible with hydrogen peroxide and reacts with diluted nitric acid.

Bismuth

Ingestion toxicity:
Oral – Rat LD50 – Lethal dose, 50 percent kill: 5mg/kg [Details of toxic effects not reported].

Hydrogenated rosin

Ingestion toxicity:
Oral – Rat LD50 – Lethal dose, 50 percent kill: >32000 mg/kg [Details of toxic effects not reported other than lethal dose value] (RTECS).

Alpha-terpineol

Ingestion toxicity:
Oral – Rat LD50 – Lethal dose, 50 percent kill: 3.2g/kg [Details of toxic effects not reported other than lethal dose value] (RTECS).

Tridecyl alcohol

Ingestion toxicity:
Oral – Rat LD50 – Lethal dose, 50 percent kill: >2000 mg/kg [Behavioral – Sleep; Lungs, Thorax, or Respiration – Dyspnea; Gastrointestinal – Hypermotility, diarrhea] Oral – Rat LD50 – Lethal dose, 50 percent kill: >2000 mg/kg [Behavioral – Somonolence (general depressed activity); Lungs, Thorax, or Respiration – Dyspnea; Gastrointestinal – Hypermotility, diarrhea] (RTECS).

Potential health effects

Exposures to soldering fumes and vapours may be irritating to eyes, respiratory system, and skin.

Route of exposure

Eyes, skin, inhalation, ingestion.

Section 12
Ecological information

Ecotoxicity

Ecotoxicity:
Toxic to aquatic life with long lasting effects.

Effect of material on plant/animal:
In high concentrations, this product may be dangerous to plants and animals.

Persistance and degradability

Biodegradation:
Flux is biodegradable.

Bioaccumulative potential

Bioaccumulation:
Not determined.

Mobility in soil

Mobility in environmental media:
Not determined.

Section 13
Disposal considerations

Waste treatment methods

Waste disposal:
Consult with the US EPA Guidelines listed in 40 CFR Part 261.3 for the classifications of hazardous waste prior to disposal. Furthermore, consult with your state and local waste requirements or guidelines, if applicable, to ensure compliance. Arrange disposal in accordance to the EPA and/or state and local guidelines.

Section 14
Transport information

DOT shipping name	Not regulated	IATA shipping name	Not regulated
DOT UN number	Not regulated	IATA UN number	Not regulated
IMDG shipping name	Not regulated	RID/ADR shipping name	Not regulated
IMDG UN number	Not regulated	RID/ADR UN number	Not regulated

Section 15
Regulatory information

Safety, health and environment regulations / legislation specific for the substance or mixture

Regulatory – Ingredient based:

Bismuth:
Canada DSL: Listed

Hydrogenated rosin:
Canada DSL: Listed
TSCA inventory status: Listed

Alpha terpineol:
Canada DSL: Listed
TSCA inventory status: Listed

Tridecyl alcohol:
Canada DSL: Listed
TSCA inventory status: Listed
Canada WHMIS: Controlled – Class: D2B toxic
Canada reg. status: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

Tin:
Canada DSL: Listed
TSCA inventory status: Listed

Silver:
Canada DSL: Listed
TSCA inventory status: Listed
Section 313: EPCRA – 40 CFR Part 372 – (SARA Title III) Section 313 Listed Chemical.

Section 16
Other information

Revision date:
March 27, 2026

Disclaimer notice:
The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Additionally, Voltera Inc. assumes no responsibility for injury to the end user proximately caused by the material even if reasonable safety procedures are followed. The end user assumes the risk in their use of this material.

HMIS:

Health	2
Flammability	1
Reactivity	0
PPE	X