	<b>MATERIAL SAFETY DATA SHEET</b> <i>according to EC 1272/2008 [CLP]</i>	<b>VERSION NO:</b> 4
	<b>LEAD-FREE RESIN-BASED SOLDER PASTE</b>	<b>REVISION:</b> 2017-11-13

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## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

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### 1.1 Product Identifier

**Product name:** Lead-Free Antimony-Free Rosin-Based Solder Paste  
**Synonyms:** Water Soluble Solder Paste, Solder Cream, Solder Paste

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Intended use:** Circuit board prototyping

### 1.3 Supplier's Details

**Supplier Name:** Voltera Inc.  
**Supplier Address 1:** 100-113 Breithaupt St.  
**City:** Kitchener  
**Province:** Ontario  
**Postal Code:** N2H5G9  
**Country:** Canada  
**Business Phone:** 1-888-381-3332

### 1.4 Emergency Phone Number

**Emergency Phone:** CANUTEC 1+ 613-996-6666

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## SECTION 2: HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

#### 2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]

**GHS Class Phrases:** Eye Irritation Category 2  
Hazardous to the aquatic environment, short-term, acute Category 1  
Hazardous to the aquatic environment, long-term, chronic Category 1

### 2.2 Label Elements



**Signal Words:** WARNING.  
**Hazard Statements:** Causes serious eye irritation.  
Very toxic to aquatic life.  
Very toxic to aquatic life with long-lasting effects.  
**Precautionary Statements:** Wash hands thoroughly after handling.  
Avoid release to the environment.  
Wear protective gloves/protective clothing/eye protection/face protection.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/attention.  
Collect spillage.  
Dispose of contents/container in accordance with Local, State, Federal and Provincial regulations.

### 2.3 Other Hazards

**Other Potential Health Effects:** Exposures to soldering fumes and vapours may be irritating to eyes, respiratory system, and skin.

**MATERIAL SAFETY DATA SHEET***according to EC 1272/2008 [CLP]***VERSION NO:****4****LEAD-FREE RESIN-BASED SOLDER PASTE****REVISION:****2017-11-13****SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS****3.2 Mixtures**

Component	CAS	% by Weight	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****4.1 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.
- Ingestion:** If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

**4.2 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.

**4.3 Indication of immediate medical attention and special treatment needed**

- Note to Physicians:** Provide general supportive measures and treat symptomatically.

**SECTION 5: FIRE-FIGHTING MEASURES****5.1 Extinguishing media**


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

**5.2 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.

**5.3 Advice for firefighters**

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

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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### 6.1 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.

### 6.2 Environmental precautions

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

### 6.3 Methods and materials for containment and cleaning up

**Methods for Containment:** Melted solder will solidify on cooling 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.

### 6.4 Reference to other sections

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

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## SECTION 7: HANDLING AND STORAGE

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### 7.1 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.

### 7.2 Conditions for safe storage, including any incompatibilities

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

### 7.3 Specific end use(s)

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 8.1 Control parameters

#### Exposure Guidelines – Ingredient Based:

**Tin:**

**OSHA:** PEL-TWA: 2mg/m<sup>3</sup>

**Silver:**

**OSHA:** PEL-TWA: 0.01mg/m<sup>3</sup>

### 8.2 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 self-contained 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 should be protected from 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.

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**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

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**9.1 Information on basic physical and chemical properties**

<b>Color</b>	Grey
<b>Odour:</b>	Mild
<b>pH-value:</b>	Not determined
<b>Melting Temperature:</b>	> 100°C
<b>Boiling Temperature:</b>	124 – 198°C (for flux)
<b>Flash point:</b>	> 76°C (> 169°F)
<b>Lower Flammability Limit:</b>	Not determined
<b>Upper Flammability Limit:</b>	Not determined
<b>Ignition temperature:</b>	Not determined
<b>Vapour Pressure:</b>	Not determined
<b>Vapour Density:</b>	Not determined
<b>Density:</b>	>4g/cm <sup>3</sup> (@20°C (68°F))
<b>Solubility:</b>	Insoluble
<b>Evaporation rate:</b>	Not determined
<b>Partition Coefficient:</b>	Not determined.
<b>Percent Volatile:</b>	Not determined.
<b>VOC content:</b>	Not determined.
<b>Expansion Ratio:</b>	400-1000kcPs

**9.2 Other information**

**Note from Section 9:** None.

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**SECTION 10: STABILITY AND REACTIVITY**

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**10.1 Reactivity**

**Reactivity:** Not applicable.

**10.2 Chemical Stability**

**Chemical stability:** Stable under normal temperatures and pressures.

**10.3 Possibility of hazardous reactions**

**Hazardous polymerization:** Not reported.

**10.4 Conditions to avoid**

**Conditions to avoid:** High temperatures, high humidity.

**10.5 Incompatible materials**

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

**SECTION 11: TOXICOLOGICAL INFORMATION****11.1 Information on toxicological effects****Bismuth:**

**Ingestion Toxicity:** Oral – Rat LD50 – Lethal dose, 50 percent kill: 5mg/kg [Details of toxic effects not reported other than lethal dose value] (RTECS)

**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 – Somnolence (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****12.1 Ecotoxicity**

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

**Effect of Material on Plant/Animal:**

In high concentrations, this product may be dangerous to plants and animals

**12.2 Persistence and degradability**

**Effect of Material on** Exposures to soldering fumes and vapours may be irritating to eyes, respiratory system, and skin.

**12.3 Bioaccumulative potential**

**Potential Health Effects:** Exposures to soldering fumes and vapours may be irritating to eyes, respiratory system, and skin.

**12.4 Mobility in soil**


**Potential Health Effects:** Exposures to soldering fumes and vapours may be irritating to eyes, respiratory system, and skin.

**SECTION 13: DISPOSAL CONSIDERATIONS****13.1 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. Urthermore, 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  
**DOT UN Number:** Not regulated  
**IMDG Shipping Name:** Not regulated  
**IMDG UN Number:** Not regulated  
**IATA Shipping Name:** Not regulated  
**IATA UN Number:** Not regulated  
**RID/ADR Shipping Name:** Not regulated  
**RID/ADR UN Number:** Not regulated

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**SECTION 15: REGULATORY INFORMATION**

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**15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture**

Regulatory – Ingredient Based:

**Bismuth:**

Canada DSL: Listed

TSCA Inventory Status: 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.

**15.2 Chemical Safety Assessment**

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**SECTION 16: Additional Information**

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Disclaimer: 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**

<b>Health</b>	<b>2</b>
<b>Flammability</b>	<b>1</b>
<b>Reactivity</b>	<b>0</b>
<b>PPE</b>	<b>X</b>