SAFETY DATA SHEET



SOLDER PASTE Rosin Lead-Free without Antimony

Section 1. Identification

Product identifier : SOLDER PASTE Rosin Lead-Free without Antimony

Product code : Not available.

Chemical name : Solder Paste Rosin Lead-free without Antimony (Sb)

Other means of : Solder Paste, Solder Cream, SolderPlus, PrintPlus - R, RMA, RA, NC, NCLR, 1xx,

identification 2xx, 3xx, 5xx

Product type : Solid.

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

Identified uses

soldering

Supplier's details : Nordson EFD LLC

40 Catamore Blvd

East Providence, RI, 02914 USA

efdproductcompliance@nordsonefd.com

+1-401-431-7000

Emergency telephone number (with hours of

operation)

: ChemTel Contract# MIS1138399

United States, Canada, Puerto Rico, and the U.S. Virgin Islands free phone number:

1-800-255-3924

ChemTel: Outside of the US, Canada, Puerto Rico and the U.S. Virgin Islands:

+01-813-248-0585

24/7

Section 2. Hazard identification

Classification of the : AQUATIC HAZARD (ACUTE) - Category 1
substance or mixture : AQUATIC HAZARD (LONG-TERM) - Category 1

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention: Avoid release to the environment.

Response : Collect spillage.
Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national

and international regulations.

Supplemental label

elements

: Percentage of the mixture consisting of ingredient(s) of unknown hazards to the

aquatic environment: 89%

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Section 3. Composition/information on ingredients

Substance/mixture

: Mixture

Chemical name Other means of identification

Solder Paste Rosin Lead-free without Antimony (Sb)

: Solder Paste, Solder Cream, SolderPlus, PrintPlus - R, RMA, RA, NC, NCLR, 1xx, 2xx, 3xx, 5xx

Ingredient name	% (w/w)	CAS number
alpha-Terpineol	3 - 7	98-55-5
silver	1 - 5	7440-22-4
Copper	0.1 - 1	7440-50-8

Ranges if listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact

: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact

: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

: Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards. Inhalation : No known significant effects or critical hazards. Skin contact No known significant effects or critical hazards. : No known significant effects or critical hazards. Ingestion

Over-exposure signs/symptoms

: No specific data. Eye contact Inhalation : No specific data. Skin contact : No specific data. Ingestion : No specific data.

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Section 4. First-aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician

: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments

: No specific treatment.

Protection of first-aiders

: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media

None known.

Specific hazards arising from the chemical

: This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products

 Decomposition products may include the following materials: carbon dioxide

carbon monoxide metal oxide/oxides

Special protective actions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters

 Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders

: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill

: Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill

: Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

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Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

including any incompatibilities

Conditions for safe storage, : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
silver	CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 0.1 mg/m³ 8 hours. CA British Columbia Provincial (Canada, 10/2019). TWA: 0.01 mg/m³, (as Ag) 8 hours. STEL: 0.03 mg/m³, (as Ag) 15 minutes. CA Quebec Provincial (Canada, 7/2019). TWAEV: 0.1 mg/m³ 8 hours. CA Ontario Provincial (Canada, 6/2019). TWA: 0.1 mg/m³ 8 hours. Form: dust and fume CA Saskatchewan Provincial (Canada, 7/2013). STEL: 0.3 mg/m³ 15 minutes. TWA: 0.1 mg/m³ 8 hours.
Copper	CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 1 mg/m³, (as Cu) 8 hours. Form: Dusts and Mists 8 hrs OEL: 0.2 mg/m³ 8 hours. Form: Fume CA British Columbia Provincial (Canada, 10/2019). TWA: 1 mg/m³, (as Cu) 8 hours. Form: Dusts and mists TWA: 0.2 mg/m³, (as Cu) 8 hours. Form: Fume CA Ontario Provincial (Canada, 6/2019). TWA: 0.2 mg/m³ 8 hours. Form: Fume TWA: 1 mg/m³ 8 hours. Form: dust and mists CA Saskatchewan Provincial (Canada, 7/2013). STEL: 0.6 mg/m³, (measured as Cu) 15 minutes. Form: Fume TWA: 0.2 mg/m³, (measured as Cu) 8 hours. Form: Fume

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Section 8. Exposure controls/personal protection

STEL: 3 mg/m³, (measured as Cu) 15 minutes. Form: dust and mist

TWA: 1 mg/m³, (measured as Cu) 8 hours.

Form: dust and mist

CA Quebec Provincial (Canada, 7/2019). TWAEV: 1 mg/m³, (as Cu) 8 hours. Form:

dusts & mists

TWAEV: 0.2 mg/m³, (as Cu) 8 hours. Form:

fume

Appropriate engineering controls

Environmental exposure controls

: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Solid. [Paste.]
Color : Gray. [Dark]
Odor : Not available.
Odor threshold : Not available.
pH : Not available.
Melting point : Not available.

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Section 9. Physical and chemical properties

Boiling point : Not available.

Flash point : Open cup: 79°C (174.2°F) [Cleveland.] [Product does not sustain combustion.]

Evaporation rate : Not available.
Flammability (solid, gas) : Not available.
Lower and upper explosive : Not available.

Lower and upper explosive (flammable) limits

Vapor pressure: Not available.Vapor density: Not available.Relative density: Not available.

Solubility : Insoluble in the following materials: cold water.

Solubility in water : Not available.

Partition coefficient: n- : Not available.

octanol/water

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Flow time (ISO 2431) : Not available.

Section 10. Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous

reactions

: Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
alpha-Terpineol	LD50 Oral	Rat	3.2 g/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
alpha-Terpineol	Skin - Severe irritant Skin - Mild irritant	Mouse Rabbit	-	50 % 4 hours 100	-
				%	

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

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Section 11. Toxicological information

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely

routes of exposure

: Not available.

Potential acute health effects

Eye contact
 Inhalation
 No known significant effects or critical hazards.
 Skin contact
 No known significant effects or critical hazards.
 Ingestion
 No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate : Not available.

effects

Potential delayed effects : Not available.

Long term exposure

Potential immediate : Not available.

effects

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.
 Carcinogenicity : No known significant effects or critical hazards.
 Mutagenicity : No known significant effects or critical hazards.
 Reproductive toxicity : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

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Section 11. Toxicological information

Product/ingredient name	Oral (mg/ kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Solder Paste Rosin Lead-free without Antimony (Sb)	5719.4	N/A	N/A	N/A	N/A
alpha-Terpineol	3200	N/A	N/A	N/A	N/A
Copper	500	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
alpha-Terpineol	Acute LC50 6.3 mg/l Fresh water	Fish - Oncorhynchus kisutch - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
silver	Acute EC50 1.4 μg/l Marine water Acute EC50 0.24 μg/l Fresh water Acute LC50 11 μg/l Fresh water	Algae - Chroomonas sp. Daphnia - Daphnia magna Crustaceans - Ceriodaphnia reticulata	4 days 48 hours 48 hours
Copper	Acute LC50 2.13 μg/l Fresh water Chronic NOEC 5 mg/l Marine water Acute EC50 1100 μg/l Fresh water	Fish - Pimephales promelas Algae - Glenodinium halli Aquatic plants - Lemna minor	96 hours 72 hours 4 days
Соррог	Acute EC50 2.1 µg/l Fresh water	Daphnia - Daphnia longispina - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute IC50 13 μg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Acute IC50 5.4 mg/l Marine water	Aquatic plants - Plantae - Exponential growth phase	72 hours
	Acute LC50 0.072 μg/l Marine water	Crustaceans - Amphipoda - Adult	48 hours
	Acute LC50 7.56 μg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic NOEC 2.5 µg/l Marine water	Algae - Nitzschia closterium - Exponential growth phase	72 hours
	Chronic NOEC 7 mg/l Fresh water	Aquatic plants - Ceratophyllum demersum	3 days
	Chronic NOEC 0.02 mg/l Fresh water	Crustaceans - Cambarus bartonii - Mature	21 days
	Chronic NOEC 2 μg/l Fresh water Chronic NOEC 0.8 μg/l Fresh water	Daphnia - Daphnia magna Fish - Oreochromis niloticus - Juvenile (Fledgling, Hatchling, Weanling)	21 days 6 weeks

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
alpha-Terpineol silver	2.98	70	low low

Mobility in soil

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Section 12. Ecological information

Soil/water partition coefficient (K_{oc})

: Not available.

Other adverse effects

: No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	DOT Classification	IMDG	IATA
UN number	UN3077	UN3077	UN3077	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (p-menth-1-en- 8-ol, silver)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (silver)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (p-menth-1-en- 8-ol, silver)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (p-menth-1-en- 8-ol, silver)
Transport hazard class(es)	9	9	9	9
Packing group	III	III	III	III
Environmental hazards	Yes.	No.	Yes.	Yes.

Additional information

TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark). Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.

DOT Classification

Reportable quantity 44444.4 lbs / 20177.8 kg. The classification of the product is due solely to the presence of one or more US DOT-listed 'Hazardous substances' that are subject to reportable quantity requirements and only applies to shipments of packages greater than, or equal to, the product reportable quantity. Package sizes less than the product reportable quantity are not regulated as hazardous materials.

IMDG

: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, 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.

IATA

: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

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Section 14. Transport information

Special precautions for user : Transport within user's premises: always transport in closed containers that are

upright and secure. Ensure that persons transporting the product know what to do in

the event of an accident or spillage.

Transport in bulk according: Not available.

to IMO instruments

Section 15. Regulatory information

Canadian lists

: The following components are listed: silver (and its compounds) **Canadian NPRI**

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia Not determined. Canada Not determined. China : Not determined. : Not determined. **Europe**

Japan : Japan inventory (ENCS): Not determined.

Japan inventory (ISHL): Not determined.

New Zealand : Not determined. **Philippines** : Not determined. Republic of Korea : Not determined. **Taiwan** : Not determined. **Thailand** : Not determined. **Turkey** : Not determined. **United States** : Not determined. **Viet Nam** : Not determined.

Section 16. Other information

History

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Section 16. Other information

Key to abbreviations

: ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

HPR = Hazardous Products Regulations IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL = International Convention for the Prevention of Pollution From Ships,

1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)

N/A = Not available SGG = Segregation Group UN = United Nations

Procedure used to derive the classification

Classification	Justification
AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1	Calculation method Calculation method

References : Not available.

✓ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the abovenamed supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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