

Safety Data Sheet

1. Supplier and Manufacturer

Aufhauser Corporation
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 CHEMTREC 24-hour Emergency Response: 800-424-9300 or 703-527-3887
 SDS Number: Solder Tin no Lead 201606
 Product Codes: **Lead-free solder: TinAntimony (95/5), TinNickel (95/5), TinSilver (94/6, 95/5), TinZinc (85/15) (Aluminum Solder), Grade 2 Babbitt, TinBismuth**
 Product Use(s): Solder Alloys



SCAN CODE FOR PDF
 OF THIS DOCUMENT

2. Hazards identification

Classification(s)

Health Hazard: Respiratory Sensitivity 1B - may cause allergy or asthma symptoms or breathing difficulties if inhaled.
 Skin Sensitivity: May cause an allergic skin reaction.



Label Symbol(s): Health Hazard, Exclamation Point

Label Signal Word(s): Warning, Danger

Label Hazard Statement(s)

May be harmful if swallowed (H303). May cause an allergic skin reaction (H317). Causes serious eye irritation (H319). May cause allergy or asthma symptoms or breathing difficulties if inhaled (H334).

Label Precautionary Statement(s)

Keep container tightly closed (P233). Avoid breathing dust/fume/gas/mist/vapors/spray (P261). Do not eat, drink, or smoke when using this product (P270). Avoid release to the environment (P273). Wear protective gloves/protective clothing/eye protection/face protection (P280). Take off contaminated clothing and wash before reuse (P362).

IF SWALLOWED: Get medical advice/attention if you feel unwell (P301+P314).

IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing (P304+341).

IF ON SKIN: Wash with plenty of soap and water (P302+P352).

IF IN EYES: Rinse continuously with water for several (15) minutes (P305+351).

Dispose of contents/container in accordance with local/regional/national/international regulations (P501).

3. Composition/information on ingredients

| <i>Ingredient</i> | <i>CAS Number</i> | <i>%wt.</i> | <i>Impurities</i> |
|-------------------|-------------------|-------------|-------------------|
| Tin | 7440-31-5 | 35 - 97 | None known |
| Antimony | 7440-36-0 | 0 - 10 | None known |
| Nickel | 7440-02-0 | 0 - 1 | None known |
| Copper | 7440-50-8 | 0 - 10 | None known |

| | | | |
|---------|-----------|--------|------------|
| Silver | 7440-22-4 | 0 - 6 | None known |
| Zinc | 7440-66-6 | 0 - 15 | None known |
| Bismuth | 7440-69-9 | 0 - 58 | None known |

This solder product does not contain any Substance of Very High Concern (SVHC) on the European Chemicals Agency(ECHA) candidate list.

Other product components which may be present:

| CHEMICAL NAME | CAS # | EXPOSURE LIMITS IN AIR | | | | | |
|---|-----------|---|---------------------------|--------------------------|---------------------------|---------------------------------|---|
| | | ACGIH – TLV | | OSHA – PEL | | NIOSH IDLH MG/M ³ | OTHER MG/M ³ |
| | | TWA MG/M ³ | STEL MG/M ³ | TWA MG/M ³ | STEL MG/M ³ | | |
| WW Rosin The following exposure limits are for "Rosin Core" Solder decomposition products, as resin acidscolophony" | 8050-09-7 | Sensitizer, reduce exposure as low as possible. | NE | NE | NE | NE | DFG MAK: Danger of sensitization of the skin |

4. First aid measures

Eyes: Rinse opened eye for 15 minutes under running water.

Skin: Immediately wash with water and soap and rinse thoroughly. If irritation persists obtain medical attention. Wash contaminated clothing before reuse.

Ingestion: Seek immediate medical advice. Do not induce vomiting unless conscious and directed by medical personnel. Rinse mouth with water if person is conscious.

Inhalation: Supply fresh air; consult doctor in case of complaints.

Note to Physician: Treat symptoms and eliminate over-exposure.

5. Firefighting measures

Fire and Explosion Hazards: In case of fire, the following can be released: Carbon monoxide (CO), Nitrogen oxides (NOx), Carbon dioxide (CO2), tin, zinc, copper compounds and a variety of metal oxides. Rosin core may be degraded to produce aliphatic aldehydes, acids and terpenes. Molten material can present significant thermal hazard to fire fighters.

Extinguishing Media: Suitable extinguishing agents: CO2, dry chemical, foam, Halon. Use extinguishers appropriate for surrounding fire conditions.

Fire Fighting Instructions: If fighting a fire in which this product is present, wear a self-contained breathing apparatus with full face piece operated in pressure-demand or other positive pressure mode.

6. Accidental release measures

Methods and Materials: Melted solder will solidify upon cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces. For paste, use spatula to scoop up and place in a plastic or glass jar; cap tightly. Remove trace paste residue using cloth rags or paper towels moistened with ethyl or isopropyl alcohol. Dispose contaminated rags or towels according to all Federal, State, and Local regulations.

Personal Precautions: Ensure adequate ventilation.

Environmental Precautions: Prevent spills from entering sewers or contaminating soil.

7. Handling and storage

Handling Precautions: Keep containers tightly closed when not in use. Use only in well ventilated areas. Wear appropriate personal protective equipment when working or handling product.

Work and Hygiene Practices: To prevent ingestion following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing or protective equipment before entering eating/drinking areas.

Storage Precautions: Store in a cool location away from incompatible materials (see Section #10). Refer to product label for specific storage temperature requirements.

8. Exposure controls/personal protection.
Ingredients – Exposure Limits

| CHEMICAL NAME | CAS # | EXPOSURE LIMITS IN AIR | | | | | |
|---|-----------|--|---------------------------|---|-----------------------------------|------------------------------------|--|
| | | ACGIH – TLV | | OSHA – PEL | | NIOSH IDLH MG/M ³ | OTHER MG/M ³ |
| | | TWA MG/M ³ | STEL MG/M ³ | TWA MG/M ³ | STEL MG/M ³ | | |
| ANTIMONY & EXPOSURE COMPOUNDS, SUCH AS SB | 7440-36-0 | 0.5 | NE | 0.5 | NE | 50 | NIOSH REL: TWA = 0.5 DFG MAKs: TWA = 0.5 (ANTIMONY, ELEMENTAL – MEASURED AS THE INHALABLE FRACTION OF THE AEROSOL) PEAK = 10•MAK, 30 MIN., AVERAGE VALUE |
| COPPER (EXPOSURE LIMITS ARE FOR COPPER FUME, AS COPPER) | 7440-50-8 | 0.2 | NE | 0.1 | NE | 100 | NIOSH RELS: TWA = 1 (DUST); 0.1 (FUME) DFG MAKs: TWA = 0.1 (FUME; RESPIRABLE FRACTION); 1 (DUSTS & MISTS INHALABLE FRACTION) PEAK = 2•MAK, 30 MIN., AVERAGE VALUE CARCINOGEN: EPA-D (DUSTS AND MISTS) |
| NICKEL, ELEMENTAL METAL | 7440-02-0 | 1.5, A5 (INHALABLE FRACTION – NOT SUSPECTED AS A HUMAN CARCINOGEN) | NE | 1 | NE | 10 | NIOSH REL: TWA = 0.015 CARCINOGEN: IARC-2B, MAK-1, NIOSH-X, NTP- R, TLV-A5 |
| SILVER (THE FOLLOWING EXPOSURE LIMITS ARE FOR SILVER, METAL) | 7440-22-4 | 0.1 | NE | 0.01 | NE | 10 | NIOSH REL: TWA = 0.01 (DUST) DFG MAKs: TWA = 0.01 (INHALABLE FRACTION) PEAK = 2•MAK, 5 MIN., MOMENTARY VALUE (INHALABLE FRACTION) CARCINOGEN: EPA-D |
| TIN (THE FOLLOWING EXPOSURE LIMITS ARE FOR TIN, METAL) | 7440-31-5 | 2 | NE | 2 | NE | 100 | NIOSH REL: TWA = 2 |
| ZINC (EXPOSURE LIMITS ARE FOR ZINC OXIDE, FUME & DUST) | 7440-66-6 | 5 (FUME) 10 (DUST) | 10 (FUME) | 5 (FUME) 5 (TOTAL DUST) 15 (DUST, RESPIRABLE DUST) 5 (DUST, RESPIRABLE DUST – 1989 VACATED PEL) | 10 (FUME, VACATED 1989 PEL) | 500 | NIOSH RELS: TWA = 5 (FUME & DUSTS) STEL = 10 (FUME), 15 (CEILING, 15 MINS, DUST) DFG MAKs: TWA = 1.5 (RESPIRABLE FRACTION, FUME) CARCINOGEN: EPA-D |
| BISMUTH | 7440-69-9 | NE | NE | NE | NE | | |

General protective and hygienic measures: The usual precautionary measures for handling chemicals should be followed. Wash hands before breaks and at the end of work.

Exposure Controls: Use appropriate engineering control such as process enclosures, local exhaust ventilation to control airborne levels below recommended exposure limits.

When ventilation is not sufficient to remove airborne levels from the breathing zone, a NIOSH safety approved respirator or self-contained breathing apparatus should be worn. Consult with local procedures for selection, training, inspection and

maintenance of the personal protective equipment.

Protection of hands: Compatible chemical resistant gloves. Material of gloves: Nitrile rubber, NBR; Natural rubber, NR. Latex gloves not recommended for handling paste.

Penetration time of glove material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection: Safety glasses; Face shield with Safety glasses when refilling.

9. Physical and chemical properties

| | |
|--|---|
| Appearance: solid metal preform; wire or bar; wire with plastic core; grey colored paste | Color: silver grey |
| Odor: none to mild | pH-value: not applicable (n/a) |
| Melting point/range: n/a | Flash point: n/a |
| Flammability (solid, gaseous): not determined | Auto ignition: not self-igniting |
| Danger of explosion: does not present an explosion hazard | Vapor pressure: n/a |
| Density at 20C(68F): n/a | Vapor density: n/a |
| Solubility in/Miscibility with water: insoluble | Specific gravity @ 20C (water = 1): n/a |

10. Stability and reactivity

Stability: Normally stable.

Reactivity: Chemical stability - thermal decomposition/ conditions to be avoided: No decomposition if used according to specifications.

Possibility of hazardous reactions: No dangerous reactions known

Conditions to avoid: No further relevant information available.

Incompatible Materials: Strong acids, strong oxidizers, strong bases, sulfur.

Potential Hazardous Decomposition Products: Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.

11. Toxicological information

Acute toxicity:

Skin: Irritant to skin and mucous membranes.

Eye: Irritating effect.

Ingestion: Antimony (component) very hazardous.

| | |
|----------|---|
| Tin | LD50 (oral, rat): 2207 mg /kg |
| Antimony | LD50 (oral, rat): 7000 mg/kg LC50 (inhale, rat): 720 mg/m3 |
| Nickel | LD50 (oral, rat): 400 mg/kg LC50 (inhale, mouse): 9.2 mg/m3 |
| Copper | LD50 (oral, rat): 1000 mg/kg LC50 (inhale, mammal) > 2000 mg/m3 TDLo (oral, human) = 120 g/kg; gastrointestinal tract effects |
| Silver | LD50 (oral, mouse): 100 mg/kg TCLo (inhalation, human) = 1 mg/m3. |
| Zinc | LD50/LC50 (animal) – n/a |
| Bismuth | LD50/LC50 (animal) – n/a |

Sensitization to product: Rosin (a possible component) is an allergen and may cause respiratory and skin reactions.

Mutagenicity: Products not reported to produce mutagenic effects in humans. Nickel (component) may affect mutagenicity in animals.

Embryotoxicity: Products not reported to produce embryotoxic effects in humans.

Teratogenicity: Products not reported to cause teratogenic effects in humans. Copper and Nickel (components) may cause teratogenic effects in animals.

Reproductive Toxicity: Products not reported to cause reproductive effects in humans. Copper (component) may cause adverse reproductive effects in animals.

Carcinogenic categories:

Nickel: IARC Group 2B (Possibly carcinogenic to humans), US NTP: R (Reasonably anticipated to be a human carcinogen), US EPA Group A (Human carcinogen). ACGIH Category A5 (Not suspected as a human carcinogen).

Copper: US EPA Group D (Not classifiable as to human carcinogenicity).

Silver: US EPA Group D (Not classifiable as to human carcinogenicity).

Zinc: US EPA Group D (Not classifiable as to human carcinogenicity).

Biological Exposure Indices: Not determined or not available.

12. Ecological information

Aquatic toxicity: May cause local heavy metal contamination. Copper (component) may concentrate to toxic level in food chain. Silver (component) 0.1 ppm is toxic to bacteria and aquatic life. Zinc (component) poisoning causes inflamed gills in fish.

Environmental stability: Antimony insoluble in water, tends to hydrolyze and precipitate out as an oxide. Copper may concentrate to toxic level in food chain. Silver insoluble in water. Tin insoluble in water. Zinc insoluble in water.

13. Disposal considerations

Waste treatment methods: Disposal must be made according to official regulations. Do not allow product to reach sewage system, soil or ground water.

Uncleaned packagings: Disposal must be made according to official regulations.

EPA waste number: Silver: D011, regulated level: 5.0 mg/L.

14. Transport information

UN-Number

ADR: Not regulated

UN proper shipping name

IMDG, IATA: Not regulated

Transport hazard class(es)

DOT, ADR, IMDG, IATA

Class: Not regulated.

Marine pollutant: No

Special precautions for user: Not applicable.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

15. Regulatory information

USA The following information relates to product regulation specific to the USA.

SARA (Superfund Amendments and Reauthorization Act)

Section 355 (extremely hazardous substances):

None of the ingredient is listed.

Section 313 (Specific toxic chemical listings):

Silver, Zinc (fume), Nickel, Antimony, Copper.

TSCA (Toxic Substances Control Act): Certified that all components listed below for the subject finished product are on the TSCA Inventory of Chemical Substances and are not subject to any chemical specific regulation under TSCA Section 12(b) export notification requirements delineated at 40 CFR part 707, subpart D. TSCA 8(b): Bismuth

All ingredients are listed or exempt from listing.

WARNING: This product may contain chemicals, and when used for welding or brazing may produce fumes or gases containing chemicals known to the state of California to cause cancer, and/or birth defects (or other reproductive harm).

Proposition 65 (California):

- Chemicals known to cause cancer: nickel, antimony (as oxide, trioxide)
- Chemicals known to cause reproductive toxicity for females: none
- Chemicals known to cause reproductive toxicity for males: none
- Chemicals known to cause developmental toxicity: none

State Regulatory Information

Some components are listed in some US states.

Carcinogenic categories

Nickel (7440-02-0): IARC Group 2B (Possibly carcinogenic to humans), US NTP: R (Reasonably anticipated to be a human carcinogen), US EPA Group A (Human carcinogen). ACGIH Category A5 (Not suspected as a human carcinogen).

CANADA:

Workplace Hazardous Materials Identification (WHMIS):

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR) and the Safety Data Sheet (SDS) contains all of the information required by the CPR.

WHMIS Symbols: D2B (for plastic core) – irritant.

16. Other information including information on preparation and revision of the SDS

| <u>NFPA Ratings for Product</u> | <u>HMS Ratings for Product (Legend)</u> |
|---------------------------------|---|
| Health - 1 | Health - 1 |
| Flammability - 0 | Flammability – 0 |
| Reactivity - 0 | Reactivity – 0 |

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Disclaimer

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Aufhauser Corporation