

**MATERIAL SAFETY DATA SHEET**

MSDS Date: 02.11.10

MSDS Name: KappFree™ Lead-free Cadmium-free Tin-Copper-Silver Multipurpose Solder  
MSDS Number: 272**SECTION I: PRODUCT AND COMPANY INFORMATION**

Product Name: KappFree™ AC Lead-Free Cadmium-Free Tin-Copper-Silver Multipurpose Solder  
 CAS Number: Tin (Sn): 7440-31-5  
 Copper (Cu): 7440-50-8  
 Silver (Ag): 7440-22-4

Company Identification: Kapp Alloy and Wire  
 One Klein Street / PO Box 1188  
 Oil City, PA 16301

Contact: Operations Team Leader  
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**SECTION II: HAZARD INFORMATION****PRIMARY ROUTES OF ENTRY**

- Inhalation: fumes
- Ingestion: Solid metals – not edible; highly unlikely
- Skin Absorption: N/A

**SIGNS AND SYMPTOMS OF OVEREXPOSURE**

- Flu-like symptoms (nausea, constipation, headache, dizziness) - self-limiting, usually disappear within 24 hours

**SECTION III: COMPOSITION / INGREDIENTS**

\*(Hazardous components 1% or greater; Carcinogens 0.1% or greater)

Component	CAS Number	OSHA PEL	ACGIH TLV 8hrTWA	Density (lbs./in. <sup>3</sup> )	% (optional)
Tin (Sn)	7440-31-5	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	.264 & 7.30	95.5
Copper (Cu)	7440-50-8	0.1 mg/m <sup>3</sup> (fume) 1.0 mg/m <sup>3</sup> (dust)	0.1 mg/m <sup>3</sup> (fume) 1.0 mg/m <sup>3</sup> (dust)	.323 & 8.96	4.0
Silver (Ag)	7440-22-4	.01 mg/m <sup>3</sup> (Dust&Fume)	.01 mg/m <sup>3</sup> (Dust&Fume)	.3787 & 10.48	0.5

NA = Not Applicable    NE = Not Established    NAIF = No Applicable Information found

**SECTION IV: FIRST AID MEASURES**

Ingestion: Drink large quantities of water - induce vomiting.  
 Call a physician at once; advise of chemical composition (section III).  
 Skin: Wash thoroughly with water to remove any residue. If a rash develops, call a physician.  
 Inhalation: Terminate exposure and remove to fresh air. Call physician; advise of chemical composition (section III).  
 Eyes: Flush with water for at least 15 minutes to remove irritant. Consult a physician.

**SECTION V: FIRE FIGHTING MEASURES**

Flash point & Methods Used: N/A  
 Auto Ignition Temperature: N/A  
 Flammability Limits: (in air, % by volume)  
 ▪ LEL: N/A  
 ▪ UEL: N/A  
 Extinguisher Media: CO<sub>2</sub> or dry chemical extinguisher.

**DO NOT USE WATER ON MOLTEN METAL: LARGE FIRES MAY BE FLOODED WITH WATER FROM A DISTANCE**

Special Fire Fighting Procedures Use NIOSH/MSHA -approved self-contained breathing apparatus and full protective clothing if involved in fire.

Unusual Fire and Explosion Hazards Finely divided dust may form explosive mixture with air.

**NEVER DROP WATER OR LIQUIDS INTO MOLTEN SOLDER.**  
**\*Do not plunge damp or wet solder bars/pieces into molten solder**

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**SECTION VI: ACCIDENTAL RELEASE MEASURES**

Steps to be taken if material is spilled or released:

- Solder is solid / recyclable
- Vacuuming is recommended for accumulated metal dust from saw/grind operations.

**SECTION VII: HANDLING AND STORAGE**

Precautions to be taken in handling and storage:

- Dry storage; ambient temperature

Other Precaution / Special Handling:

- **Wet or moist ingot(s) WILL present an explosion hazard when submerged in molten solder.**

**\*AVOID FIRE RISKS. Always preheat ingot before charging into furnace.****SECTION VIII: EXPOSURE CONTROLS / PERSONAL PROTECTION**

Respiratory Protection: Use NIOSH-approved breathing apparatus to prevent exposure to dusts and fumes.

Eye Protection: Approved safety glasses or welding goggles, appropriate to your procedure, should be worn.

Ventilation: Local Exhaust: YES Mechanical: YES

Special: Conform to your regulatory statutes.

Other: Standard protective equipment used in soldering (/applicable) operations.

\*Protective gloves are recommended, *especially for high temperature applications to prevent burns.*

\*Conform to all local, state, federal regulations.

**SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES**

Boiling Point: Sn@ 4120° F / 2270° C / Cu@4703° F / 2595° C / Ag@ 4010° F / 2210° C

Melting Point: 440 - 500° F / 226 - 260° C

Vapor Pressure (mm Hg.): N/A

Vapor Density (AIR = 1): N/A

Specific Gravity: 7.38.<sup>3</sup>

Solubility in Water: 0 (solid)

Evaporation Rate (Butyl Acetate = 1): N/A

Appearance and Odor: Lustrous, silver metal; odorless / various shapes and sizes.

**SECTION X: STABILITY AND REACTIVITY**

Stability: Stable

Conditions to avoid: Avoid strong oxidizing materials, e.g. Chlorine trifluoride, hydrogen peroxide, sodium azide, ammonia, &amp; Acetylene.

Hazardous Decomposition Product: None – hazardous polymerization will not occur

**SECTION XI: TOXICOLOGY INFORMATION**

Tin (Sn): Elemental Tin is NOT generally considered to be toxic.

Silver (Ag): Argyria, a blue-gray discoloration of the skin, mucous membranes, and eyes may result from inhalation of silver. Note: this discoloration may be permanent. \

Copper (Cu): NAIF

IT IS UNLIKELY THAT NORMAL EXPOSURE (USING APPROPRIATE PROTECTIVE EQUIPMENT) WOULD RESULT IN ILLNESS.

\*0 = Insignificant

1 = Slight 2 = Moderate

3 = High

4 = Extreme

	Health	Flammability	Reactivity	Special
<b>NFPA Rating</b>	1	0	0	0
<b>HMIS Rating</b>	1	0	0	0

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**SECTION XII: ECOLOGY INFORMATION**

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This product will not biodegrade. It will oxidize if left out in the elements, but will not affect the surrounding ecology.

**SECTION XIII: DISPOSAL CONSIDERATION**

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Waste Disposal Method

- Dispose of according to federal, state, local, and OSHA regulations.

**SECTION XIV: TRANSPORT INFORMATION**

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DEPARTMENT OF TRANSPORTATION

Proper shipping name:	Solder wire - NOT REGULATED
Hazard Class:	NAIF
ID & Packing Group Number:	NAIF
ERG Guide Number:	NAIF

**SECTION XV: REGULATORY INFORMATION**

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SARA Title III Program:

- This product contains no toxic chemicals subject to the reporting requirements of the Emergency Planning and Community Right to Know Act (EPCRA) of 1986 and 40 CFR 372

**SECTION XVI: OTHER INFORMATION**

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This information must be included in all MSDS that are copied and distributed for this material.

**GOOD HOUSEKEEPING PROCEDURES SHOULD BE MAINTAINED.  
PERSONNEL SHOULD WASH THOROUGHLY BEFORE SMOKING OR EATING  
FOOD AND DRINK SHOULD NOT BE CONSUMED, TOBACCO PRODUCTS USED, OR  
COSMETICS APPLIED IN AREAS WHERE EXPOSURES EXIST.**

Please retain this sheet for your files. Kapp Alloy maintains a file of Material Safety Data Sheets (MSDS) for each alloy produced in compliance with Federal OSHA Hazard Communication Standard (29 CFR 1910.1200) & various right-to-know laws.

The information and recommendations contained within this publication have been compiled from sources believed to be reliable and to represent the best information available to Kapp Alloy and Wire, Inc. at the time of issue. It is our policy to include an MSDS with initial orders for each product. This submission is to become a matter of record and need not accompany subsequent shipments for the same product to the same customer. The information contained on this sheet is intended solely for employee health and safety education and not for contract specification purposes. No warranty, guarantee, or representation is made by Kapp Alloy and Wire, Inc., nor does Kapp Alloy and Wire, Inc. assume any responsibility in connection there within; nor can it be assumed that all acceptable safety measures or other safety measures may not be required under particular or exceptional conditions or circumstances. Should you need additional information, contact us.