

**MATERIAL SAFETY DATA SHEET**

MSDS Date: 02.09.2010

MSDS Name: KappRad™ Tin-Zinc-Cadmium Multipurpose Solders for Aluminum Alloys

MSDS Number: 226-229

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**SECTION I: PRODUCT AND COMPANY INFORMATION**

Product Name: KappRad™ Tin-Zinc-Cadmium Multipurpose Solders for Aluminum Alloys  
 CAS Number: Tin (Sn): 7440-31-5 and Zinc (Zn): 7440-66-6 and Cadmium (Cd): 7440-43-9

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

Contact: Operations Team Leader, Telephone: 814.676.0613, Fax: 814.676.5565, Email: [info@kappalloy.com](mailto:info@kappalloy.com)

**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	Density	
				lbs/in <sup>3</sup> & g/cm <sup>3</sup>	% (optional)
Tin (Sn)	7440-31-5	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	.264 & 7.307	40-49
Zinc (Zn)	7440-66-6	5mg/m <sup>3</sup>	5mg/m <sup>3</sup>	.257 & 7.114	27-32
Cadmium (Cd)	7440-43-9	.2 dust / .1 fume	.05 mg/m <sup>3</sup> (Dust&Fume)	.312 & 8.636	19-33

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 and 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**

**NOTE: When overheated, Cadmium fumes are toxic. Never exceed 500°C / 932°F**

## 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/EXPLOSION 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:	NAIF
Melting Point:	350 - 550 °F / 177 - 288 °C
Vapor Pressure (mm Hg.):	NAIF
Vapor Density (AIR = 1):	N/A
Density:	.2709 - .2780lb/in <sup>3</sup> = 7.4979 – 7.6936 g/ml
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:	None
Incompatibility (materials to avoid):	Strong Acids, Strong Alkalis
Hazardous Decomposition Products:	None; Hazardous Polymerization will not occur

## SECTION XI: TOXICOLOGY INFORMATION

Tin (Sn):	Elemental Tin is NOT generally considered to be toxic.
Zinc (Zn):	Excessive inhalation of zinc oxide fumes may produce symptoms known as “zinc shakes” which are flu-like and usually cease when the individual is removed from the source.
Cadmium (Cd):	Fume produces metal fume fever which may result in severe tracheobronchitis, pneumonitis, and / or pulmonary edema. Suspected acute inhalation exposure to Cadmium must be treated for pulmonary edema (throat dryness, cough, headache, vomiting, chest pains, and chills) by a physician. Delay until onset of pulmonary involvement may result in death. Cadmium is transported via blood and stored in liver and kidneys. Can cause kidney damage. Chronic overexposure to Cadmium has been reported to cause increased incidence of cancer of the prostate in men.

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

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	*0 = Insignificant	1 = Slight	2 = Moderate	3 = High	4 = Extreme
	<b>Health</b>	<b>Flammability</b>	<b>Reactivity</b>	<b>Special</b>	
<b>NFPA Rating</b>	1	0	0	0	
<b>HMIS Rating</b>	1	0	0	0	

**SECTION XII: ECOLOGY INFORMATION**

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**

Waste Disposal Method

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

**SECTION XIV: TRANSPORT INFORMATION**

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**

SARA Title III Program:

- This product contains the following toxic chemicals subject to the reporting requirements of EPCRA of 1986 and 40 CFR 372.

CHEMICAL NAME	CAS NO.	% / WEIGHT
Zinc (Zn) – Fume & Dust	7440-66-6	27 – 32%
Cadmium (Cd)	7440-43-9	19 – 33%

**SECTION XVI: OTHER INFORMATION**

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.