



Material Safety Data Sheet

<p>NFPA</p> 	<p>HMIS</p> <table border="1" style="margin: auto;"> <tr> <td style="background-color: #00FFFF;">Health Hazard</td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 30px;">1</td> </tr> <tr> <td style="background-color: #FFC0CB;">Fire Hazard</td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 30px;">3</td> </tr> <tr> <td style="background-color: #FFFF00;">Reactivity</td> <td style="text-align: center; border: 1px solid black; border-radius: 50%; width: 30px;">0</td> </tr> </table>	Health Hazard	1	Fire Hazard	3	Reactivity	0	<p>Personal Protective Equipment</p>  <p style="text-align: center;">See Section 15.</p>
Health Hazard	1							
Fire Hazard	3							
Reactivity	0							

Section 1. Chemical Product and Company Identification		<i>Page Number: 1</i>
Common Name/Trade Name	Devarda's alloy	
	Catalog Number(s).	D3782, D1005
	CAS#	8049-11-4
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	
	RTECS	Not applicable.
	TSCA	TSCA 8(b) inventory: No products were found.
Commercial Name(s)	Not available.	
	CI#	Not applicable.
Synonym	Not available.	
Chemical Name	Copper alloy, base, Cu, Al, Zn (Devarda's alloy)	
Chemical Family	Alloy (Inert material.)	
Chemical Formula	Not applicable.	
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	
<p><u>IN CASE OF EMERGENCY</u> <u>CHEMTREC (24hr) 800-424-9300</u> CALL (310) 516-8000</p>		

Section 2. Composition and Information on Ingredients					
Name	CAS #	<i>Exposure Limits</i>			% by Weight
		TWA (mg/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	
1) Copper	7440-50-8	1			49-51
2) Aluminum	7429-90-5	10			44-46
3) Zinc, Metal Powder or Dust	7440-66-6				4-6
Toxicological Data on Ingredients	Aluminum LD50: Not available. LC50: Not available.				

Section 3. Hazards Identification	
Potential Acute Health Effects	Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.
Potential Chronic Health Effects	Slightly hazardous in case of ingestion, of inhalation. CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
Skin Contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.
Serious Skin Contact	Not available.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Serious Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	Flammable.
Auto-Ignition Temperature	The lowest known value is 460°C (860°F) (Zinc, Metal Powder or Dust).
Flash Points	Not available.
Flammable Limits	Not available.
Products of Combustion	Some metallic oxides.
Fire Hazards in Presence of Various Substances	Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials, of acids. Non-flammable in presence of shocks, of reducing materials, of combustible materials, of organic materials, of metals, of alkalis.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
Special Remarks on Fire Hazards	Material in powder form, capable of creating a dust explosion.
Special Remarks on Explosion Hazards	A combination of finely divided copper with finely bromates (also chlorates or iodates) of barium, calcium, magnesium, potassium, sodium or zinc will explode with heat, percussion and sometimes light friction. (Copper)

Section 6. Accidental Release Measures

Small Spill	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill	Flammable solid that, in contact with water, emits flammable gases. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Cover with dry earth, sand or other non-combustible material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7. Handling and Storage

Precautions	Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents, acids, alkalis.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area. Keep from any possible contact with water. Do not allow water to get into container because of violent reaction.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	<p>Copper TWA: 1 (mg/m³) from OSHA (PEL) [United States] TWA: 1 (mg/m³) from ACGIH (TLV) [United States] TWA: 0.2 (mg/m³) from ACGIH (TLV) [United States]</p> <p>Aluminum TWA: 5 (mg/m³) from ACGIH (TLV) [United States] Inhalation TWA: 10 (mg/m³) from ACGIH (TLV) [United States] Inhalation</p> <p>Consult local authorities for acceptable exposure limits.</p>

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Solid metallic powder.)	Odor	Not available.
Molecular Weight	Not applicable.	Taste	Not available.
pH (1% soln/water)	Not applicable.	Color	Grey.
Boiling Point	1700°C (3092°F)		
Melting Point	1083°C (1981.4°F) based on data for: Copper. Weighted average: 859.45°C (1579°F)		
Critical Temperature	Not available.		
Specific Gravity	5.8 (Water = 1)		
Vapor Pressure	Not applicable.		
Vapor Density	Not available.		
Volatility	Not available.		
Odor Threshold	Not available.		
Water/Oil Dist. Coeff.	The product is insoluble in water and oil.		
Ionicity (in Water)	Not available.		
Dispersion Properties	Is not dispersed in cold water, hot water.		
Solubility	Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.		

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Incompatible materials, exposure to moist air or water. (Aluminum)
Incompatibility with various substances	Reactive with oxidizing agents, acids, alkalis. The product reacts violently with water to emit flammable but non toxic gases.

Continued on Next Page

Corrosivity Non-corrosive in presence of glass.

Special Remarks on Reactivity Reacts violently with oxidizers.

Special Remarks on Corrosivity Not available.

Polymerization Will not occur.

Section 11. Toxicological Information

Routes of Entry Inhalation. Ingestion.

Toxicity to Animals LD50: Not available.
LC50: Not available.

Chronic Effects on Humans Not available.

Other Toxic Effects on Humans Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals Lowest Published Lethal Dose:
LDL [Duck] - Route: Oral; Dose: 388 mg/kg (Zinc, Metal Powder or Dust)

Special Remarks on Chronic Effects on Humans May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data.
May cause cancer based on animal test data.

Special Remarks on other Toxic Effects on Humans Acute Potential Health Effects:
Skin: May cause skin irritation. This product contains Zinc. Dermal exposure to zinc may produce leg pains, fatigue, anorexia, and weight loss.
Eyes: May cause eye irritation.
Inhalation: Inhalation of dust can cause respiratory tract and mucous membrane irritation. Furthermore, inhalation of dust or fumes may cause metal fume fever, a flu-like condition. Symptoms of metal fume fever include upper respiratory tract irritation, difficulty breathing, headache, dry throat, extreme thirst, fever, metallic taste, chills, sweats, tightness of chest, muscle aches and pains, cough, and general malaise. Inhalation of dust may also cause discoloration of tongue and teeth.
Ingestion: Ingestion may cause digestive/gastrointestinal irritation with nausea, vomiting, diarrhea, malaise, loss of appetite, abdominal pain, fever, and chills. May affect behavior/central nervous system and autonomic nervous system with ataxia, lethargy, staggering gait, mild derangement in cerebellar function, lightheadness, dizziness, irritability, muscular stiffness, and pain. May also affect blood.
Chronic Potential Health Effects:
Skin: Prolonged skin contact may cause contact allergic dermatitis. This product contains Copper. Prolonged or repeated contact with copper may cause thickening of skin and a greenish discoloration of skin and hair.
Ingestion: This product contains Copper. Chronic copper poisoning can result in liver damage. It may also affect the kidneys and heart.
Inhalation: This product contains Copper. It is not known how much copper is absorbed with inhalation of copper dust. However, people working in atmospheres heavily polluted with copper dust had increased copper serum levels. Chronic inhalation of copper dust may cause pulmonary alveolar proteinosis. It may also cause a greenish discoloration of tongue and teeth.
The product contains Aluminum. Chronic exposure to aluminum dust may cause dyspnea, cough, asthma, chronic obstructive lung disease, pulmonary fibrosis, pneumothorax, pneumoconiosis, encephalopathy, weakness, incoordination and epileptiform seizures and other neurological symptoms similar to that described for chronic ingestion. Hepatic necrosis is also a reported effect of exposure to airborne particulates carrying aluminum.
Ingestion: Chronic ingestion of aluminum may cause Aluminum Related Bone Disease or aluminum-induced Osteomalacia with fracturing Osteodystrophy, microcytic anemia, weakness, fatigue, visual and auditory hallucinations, memory loss, speech and language impairment (dysarthria, stuttering, stammering, anomia, hypofluency, aphasia and eventually, mutism), epileptic seizures (focal or grand mal), motor disturbance (tremors, myoclonic jerks, ataxia, convulsions, asterixis, motor apraxia, muscle fatigue), and dementia (personality changes, altered mood, depression, diminished alertness, lethargy, 'clouding of the sensorium', intellectual deterioration, obtundation, coma), and altered EEG.
Repeated exposure to fine metal dust may cause metal fume fever.


Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The product itself and its products of degradation are not toxic.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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Section 14. Transport Information

DOT Classification	CLASS 4.1: Flammable solid.
Identification	UNNA: 3089 : Metal powder, flammable, n.o.s. PG: III
Special Provisions for Transport	Marine Pollutant (Copper)
DOT (Pictograms)	

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations	Connecticut hazardous material survey.: Copper; Aluminum; Zinc, Metal Powder or Dust Illinois toxic substances disclosure to employee act: Copper; Aluminum; Zinc, Metal Powder or Dust Illinois chemical safety act: Copper; Zinc, Metal Powder or Dust New York release reporting list: Copper; Zinc, Metal Powder or Dust Rhode Island RTK hazardous substances: Copper; Aluminum; Zinc, Metal Powder or Dust Pennsylvania RTK: Copper; Aluminum; Zinc, Metal Powder or Dust Florida: Zinc, Metal Powder or Dust Minnesota: Aluminum Michigan critical material: Copper; Zinc, Metal Powder or Dust Massachusetts RTK: Copper; Aluminum; Zinc, Metal Powder or Dust Massachusetts spill list: Copper New Jersey: Copper; Aluminum; Zinc, Metal Powder or Dust New Jersey spill list: Copper; Aluminum; Zinc, Metal Powder or Dust Louisiana spill reporting: Copper; Zinc, Metal Powder or Dust
California Proposition 65 Warnings	California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found. California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.
Other Regulations	OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
Other Classifications	WHMIS (Canada) CLASS B-4: Flammable solid.
	DSCL (EEC) Not available Not available

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	3
Reactivity	0
Personal Protection	E

National Fire Protection Association (U.S.A.)

Health



Flammability

Reactivity

Specific hazard

WHMIS (Canada)
(Pictograms)



DSCL (Europe)
(Pictograms)



TDG (Canada)
(Pictograms)



ADR (Europe)
(Pictograms)



Protective Equipment



Gloves.



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Safety glasses.

Section 16. Other Information

MSDS Code D3060

References Not available.

Other Special Considerations Not available.

Validated by Sonia Owen on 8/14/2009.

Verified by Sonia Owen.

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CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.