

Material Safety Data Sheet

Devarda's Alloy



Section 1. Product and Company Identification

Product name	: Devarda's Alloy
Product code	: DX0125
Synonym	: None.
Material uses	: Other non-specified industry: Analytical reagent.
Manufacturer	: EMD Chemicals Inc. P.O. Box 70 480 Democrat Road Gibbstown, NJ 08027 856-423-6300 Technical Service Monday - Friday: 8:00 - 5:00 PM
Validation date	: 3/9/2007.
Print date	:
In case of emergency	: 800-424-9300 CHEMTREC (USA) 613-996-6666 CANUTEC (Canada) 24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state	: Solid.
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview	: WARNING! CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA. MAY BE HARMFUL IF SWALLOWED. MAY BE HARMFUL IF INHALED. Do not ingest. Avoid contact with skin and clothing. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of entry	: Inhalation. Ingestion.
Potential acute health effects	
Eyes	: Irritating to eyes.
Skin	: Irritating to skin.
Inhalation	: Irritating to respiratory system.
Ingestion	: Harmful if swallowed.
Carcinogenic effects	: No known significant effects or critical hazards.
Mutagenic effects	: No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity	: No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure	: Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated or prolonged exposure to the substance can produce target organs damage.
See toxicological information (section 11)	

Section 3. Composition/Information on Ingredients

United States

Name	CAS number	% by Weight
Copper	7440-50-8	50
Aluminum	7429-90-5	45
Zinc	7440-66-6	5

Section 4. First Aid Measures

- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. 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. 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.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. 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. 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.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
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Section 5. Fire Fighting Measures

- Flammability of the product** : No specific hazard.
- Products of combustion** : Some metallic oxides.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Not available.
- 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.
- Special remarks on fire hazards** : This material is flammable in powder form only. (Aluminum)
- Special remarks on explosion hazards** : Fine powder forms flammable and explosive mixtures in air. (Aluminum)
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Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable, vacuum or carefully scoop up spilled material and place in an appropriate container for disposal by incineration. Avoid creating dusty conditions and prevent wind dispersal.

Section 7. Handling and Storage

Handling : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Product name

Exposure limits

United States

Copper

ACGIH TLV (United States, 1/2006). Notes: Adopted Values enclosed are those for which changes are proposed. Consult the Notice of Intended Changes for current proposal. See Notice of Intended changes.

TWA: 1 mg/m³ 8 hour/hours. Form: All forms

ACGIH TLV (United States, 1/2006). Notes: Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Adopted Values enclosed are those for which changes are proposed. Consult the Notice of Intended Changes for current proposal. See Notice of Intended changes.

TWA: 0.2 mg/m³ 8 hour/hours. Form: Fume

NIOSH REL (United States, 12/2001). Notes: Note: The REL and PEL also apply to other copper compounds (as Cu) except Copper fumes.

TWA: 1 mg/m³ 10 hour/hours. Form: Dusts and Mists

OSHA PEL (United States, 8/1997).

TWA: 1 mg/m³ 8 hour/hours. Form: Dusts and Mists

TWA: 0.1 mg/m³ 8 hour/hours. Form: Fume

OSHA PEL 1989 (United States, 3/1989).

TWA: 1 mg/m³ 8 hour/hours. Form: Dusts and Mists

TWA: 0.1 mg/m³ 8 hour/hours. Form: Fume

Aluminum

ACGIH TLV (United States, 1/2006). Notes: as Al

TWA: 5 mg/m³ 8 hour/hours.

TWA: 5 mg/m³ 8 hour/hours. Form: Fume

OSHA PEL (United States, 8/1997). Notes: as Al

TWA: 5 mg/m³ 8 hour/hours. Form: Respirable fraction

TWA: 15 mg/m³ 8 hour/hours. Form: Total dust

OSHA PEL 1989 (United States, 3/1989). Notes: as Al

TWA: 15 mg/m³ 8 hour/hours. Form: Dust

TWA: 5 mg/m³ 8 hour/hours. Form: Pyrophoric

TWA: 5 mg/m³ 8 hour/hours. Form: Respirable fraction

ACGIH TLV (United States, 1/2006).

TWA: 10 mg/m³ 8 hour/hours. Form: Dust

NIOSH REL (United States, 12/2001).

TWA: 5 mg/m³ 10 hour/hours. Form: Respirable fraction

TWA: 10 mg/m³ 10 hour/hours. Form: Total

OSHA PEL 1989 (United States, 3/1989). Notes: as Al

As determined from breathing-zone air samples

TWA: 5 mg/m³ 8 hour/hours. Form: Welding fume

Consult local authorities for acceptable exposure limits.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : 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.
Recommended: safety glasses with side-shields

- Skin** : 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.
Body: Recommended: lab coat
- Respiratory** : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : 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. Recommended: nitrile rubber
- 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.

Section 9. Physical and Chemical Properties

- Physical state** : Solid.
- Flash point** : The lowest known value is Closed cup: 644.85°C (1192.7°F). (Aluminum)
- Color** : Gray.
- Melting/freezing point** : 1082.85°C (1981.1°F) based on data for: Copper . Weighted average: 859.41°C (1578.9°F)
- Relative density** : Weighted average: 4.36 (Water = 1)

Section 10. Stability and Reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Reactive or incompatible with the following materials: oxidizing materials, acids, alkalis and moisture.
- Hazardous polymerization** : Will not occur.
- Conditions of reactivity** : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Slightly explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Section 11. Toxicological Information

Toxicity data

United States

Product/ingredient name	Test	Result	Route	Species
Zinc	LDLo	388 mg/kg	Oral	duck

Chronic effects on humans : Contains material which causes damage to the following organs: kidneys, liver, upper respiratory tract, skin, eye, lens or cornea.

Other toxic effects on humans : Very hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant).
Hazardous in case of ingestion, .

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : No known significant effects or critical hazards.

Inhalation : Irritating to respiratory system.

Eyes : Irritating to eyes.

Skin : Irritating to skin.

Section 12. Ecological Information

Ecotoxicity data

United States

Product/ingredient name	Species	Period	Result
Copper	Daphnia magna (EC50)	48 hour/hours	0.0318 mg/l
	Daphnia magna (EC50)	48 hour/hours	0.036 mg/l
	Daphnia magna (EC50)	48 hour/hours	0.055 mg/l
	Pimephales promelas (LC50)	96 hour/hours	0.0094 mg/l
	Pimephales promelas (LC50)	96 hour/hours	0.0103 mg/l
Aluminum	Pimephales promelas (LC50)	96 hour/hours	0.0278 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.12 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.16 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.31 mg/l
Zinc	Daphnia magna (EC50)	48 hour/hours	2.8 mg/l
	Pimephales promelas (LC50)	96 hour/hours	0.238 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.24 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.41 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.56 mg/l
	Daphnia magna (LC50)	96 hour/hours	0.57 mg/l

Environmental precautions : Very toxic to aquatic organisms.

Products of degradation : Some metallic oxides.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	-	CHEMICALS, N.O.S.	-	-	-	Not available.

PG* : Packing group

Section 15. Regulatory Information

United States

HCS Classification : Toxic material
Irritating material
Target organ effects

U.S. Federal regulations : TSCA 8(b) inventory: Listed

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Aluminum ; Copper ; Zinc
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Aluminum : Fire hazard, reactive; Copper : Immediate (acute) health hazard; Zinc :
Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Copper ; Zinc
 Clean Water Act (CWA) 311: No products were found.
 Clean Air Act (CAA) 112 accidental release prevention: No products were found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

Product name	CAS number	Concentration	
			Form R - Reporting requirements :
Copper	7440-50-8	50	
Aluminum	7429-90-5	45	
Zinc	7440-66-6	5	
			Supplier notification :
Copper	7440-50-8	50	
Aluminum	7429-90-5	45	
Zinc	7440-66-6	5	

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Pennsylvania RTK: Aluminum : (special hazard, environmental hazard, generic environmental hazard); Copper : (special hazard, environmental hazard, generic environmental hazard); Zinc : (environmental hazard, generic environmental hazard)
 Massachusetts RTK: Aluminum ; Copper ; Zinc
 New Jersey: Aluminum ; Copper ; Zinc

Canada

WHMIS (Canada) : Class D-2B: Material causing other toxic effects (Toxic).
CEPA DSL/CEPA NDSL : CEPA DSL: Aluminum ; Copper ; Zinc

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Hazard symbol/symbols :



Risk phrases : R50- Very toxic to aquatic organisms.
Safety phrases : S29- Do not empty into drains.
 S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

International regulations

International lists : Australia (NICNAS): Aluminum ; Copper ; Zinc
 China: Aluminum ; Copper ; Zinc
 Germany water class: Aluminum ; Copper ; Zinc
 Korea (TCCL): Aluminum ; Copper ; Zinc
 Philippines (RA6969): Aluminum ; Copper ; Zinc

Section 16. Other Information

Label requirements : WARNING!
 CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
 CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.
 MAY BE HARMFUL IF SWALLOWED.
 MAY BE HARMFUL IF INHALED.

National Fire : 1 Flammability
Protection Health 1 0 Instability
Association (U.S.A.) Special

Notice to reader

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