

BAB 9

MATERIAL SAFETY DATA SHEET (MSDS)

Kompetensi Dasar:

1. Menjelaskan definisi MSDS
2. Menjelaskan isi dan cara membuat MSDS
3. Menjelaskan kegunaan MSDS

A. DEFINISI MSDS

Material Safety Data Sheet (MSDS) adalah sebuah data informasi tentang bahan-bahan kimia yang memuat sifat-sifat zat kimia, hal-hal yang perlu diperhatikan dalam penggunaan zat kimia, pertolongan apabila terjadi kecelakaan, penanganan zat yang berbahaya. MSDS sangat penting dalam penyimpanan, pemakaian dan pembuangan zat kimia dan merupakan protokol standar keamanan dan keselamatan kerja bahan kimia. MSDS digunakan secara luas di dalam laboratorium, industri, serta pihak-pihak yang bekerja dengan bahan kimia

B. ISI DAN CARA MEMBUAT MSDS

MSDS berisi sifat fisik dan kimia dari suatu zat mulai dari penyimpanan, penanganan, pemakaian, pembuangan zat kimia, dampak bagi lingkungan, dll. Hal penting yang harus ada dalam sebuah MSDS adalah:

1. Identifikasi

Nama bahan :

Nama dagang :

Nama pabrik pembuat :

Alamat pabrik :

Telepon :

2. Informasi senyawa/zat dan komposisinya

Nama bahan :
Rumus kimia :
CAS No. :
Resiko bahaya :

3. Bahaya

Deskripsi bahaya, misalnya:

- Sangat toksik dengan inhalasi, kontak kulit dan mata
- Kontak dengan asam menghasilkan gas toksik bahaya terhadap kesehatan manusia dan lingkungan

4. Tindakan Pertolongan Pertama

Informasi umum :
Bila terinhalasi :
Bila kontak dengan kulit :
Bila kontak dengan mata :
Instruksi kepada dokter :

5. Tindakan Bila Terjadi Kebakaran

- Bahan pemadam yang bisa dan yang tidak bisa digunakan.
- Peralatan khusus yang dipakai.

6. Tindak Penanganan Tumpahan/Bocoran

- Hal-hal yang harus dilakukan dalam menangani tumpahan/bocoran bahan supaya aman.
- Bahan berbahaya yang beresiko terhadap kesehatan dan lingkungan harus ditangani secara khusus, terutama penggunaan alat pelindung bagi pekerja yang langsung dengan bahan tersebut
- Bahan yang harus diperlukan secara khusus dalam penyimpanannya

7. Alat Pelindung Dan Kontrol Paparan

- NAB di tempat kerja
- Alat-alat pelindung

8. Sifat Fisika Kimia

Uraian, keterangan, informasi atau data mengenai sifat fisika kimia

9. Stabilitas Dan Reaktivitas**10. Informasi Toksikologi**

- Toksisitas Akut
- Toksisitas Terhadap Manusia

11. Data Ekologi

12. Informasi Cara Pembuangan

13. Informasi Transportasi

14. Penandaan

15. Informasi Tentang Antidotum

Informasi tentang bahan yang digunakan sebagai penawar (antidot) apabila terjadi keracunan

16. Informasi Lain

Hal-hal yang perlu diperhatikan dalam membuat MSDS adalah tanggal pembuatan, nama pembuat dan sumber pustaka apabila melakukan kutipan.

C. KEGUNAAN MSDS

- Mengetahui potensi bahan kimia
- Menerapkan teknologi pengendalian dalam melindungi pekerja
- Merencanakan pelatihan (ini perlu karena bagaimana pun yg kontak dengan B3 adalah pekerja)
- Mengembangkan rencana pengelolaan bahan kimia di tempat kerja



Health	3
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet Cadmium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Cadmium	Contact Information:
Catalog Codes: SLC3484, SLC5272, SLC2482	Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396
CAS#: 7440-43-9	US Sales: 1-800-901-7247 International Sales: 1-281-441-4400
RTECS: EU9800000	Order Online: ScienceLab.com
TSCA: TSCA 8(b) inventory: Cadmium	CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300
Cl#: Not applicable.	International CHEMTREC, call: 1-703-527-3887
Synonym:	For non-emergency assistance, call: 1-281-441-4400
Chemical Name: Cadmium	
Chemical Formula: Cd	

Section 2: Composition and Information on Ingredients

Composition:		
Name	CAS #	% by Weight
Cadmium	7440-43-9	100
Toxicological Data on Ingredients: Cadmium: ORAL (LD50): Acute: 2330 mg/kg [Rat.], 890 mg/kg [Mouse]. DUST (LC50): Acute: 50 ppm 4 hour(s) [Rat].		

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant). Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
The substance is toxic to kidneys, lungs, liver.
Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact: No known effect on eye contact, rinse with water for a few minutes.

Skin Contact:

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate 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. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 570°C (1058°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:

Non-flammable in presence of open flames and sparks, of heat, of oxidizing materials, of reducing materials, of combustible materials, of moisture.

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:

SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:

Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:

Use a shovel to put the material into a convenient waste disposal container. 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 locked up. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

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:

TWA: 0.01 (ppm)

Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 112.4 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: 765°C (1409°F)

Melting Point: 320.9°C (609.6°F)

Critical Temperature: Not available.

Specific Gravity: 8.64 (Water = 1)
Vapor Pressure: Not applicable.
Vapor Density: Not available.
Volatility: Not available.
Odor Threshold: Not available.
Water/Oil Dist. Coeff.: Not available.
Ionicity (in Water): Not available.
Dispersion Properties: Not available.
Solubility: Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.
Instability Temperature: Not available.
Conditions of Instability: Not available.
Incompatibility with various substances: Reactive with oxidizing agents.
Corrosivity: Not considered to be corrosive for metals and glass.
Special Remarks on Reactivity: Reacts violently with potassium.
Special Remarks on Corrosivity: Not available.
Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
Acute oral toxicity (LD50): 890 mg/kg [Mouse].
Acute toxicity of the dust (LC50): 229.9 mg/m³ 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP.
The substance is toxic to kidneys, lungs, liver.

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

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: An allergen. 0047 Animal: embryotoxic, passes through the placental barrier.

Special Remarks on other Toxic Effects on Humans: May cause allergic reactions, exzema and/or dehydration of the skin.

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 products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification:

Identification:

Special Provisions for Transport:

Section 15: Other Regulatory Information

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute:

Cadmium

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: Cadmium

Pennsylvania RTK: Cadmium

Massachusetts RTK: Cadmium

TSCA 8(b) inventory: Cadmium

SARA 313 toxic chemical notification and release reporting: Cadmium

CERCLA: Hazardous substances.: Cadmium

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).

CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):

R26- Very toxic by inhalation.

R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

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

Health: 3

Flammability: 1

Reactivity: 0

Specific hazard:

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

References:

- Hawley, G.G. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.
- Liste des produits purs tératogènes, mutagènes, cancérigènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec.
- Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec.
- SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984.
- The Sigma-Aldrich Library of Chemical Safety Data, Edition II.
- Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986.

Other Special Considerations: Not available.

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