

# Safety Data Sheet

Material Name: ELECTROLYTIC MANGANESE METAL FLAKE

SDS ID: 00228003

## \*\*\* Section 1 - PRODUCT AND COMPANY IDENTIFICATION \*\*\*

**Material Name:** ELECTROLYTIC MANGANESE METAL FLAKE

### Manufacturer Information

CMC Cometals  
CONTACT:  
2050 Center Avenue, Suite 250  
Ft. Lee, NJ 07024  
Mfg Contact: CMC Cometals

EMERGENCY

### Chemical Family

metal

### Synonyms

DEPT. 3-ELECTROLYTIC MANGANESE METAL FLAKE; MANGANESE; COLLOIDAL MANGANESE;  
MANGANESE ELEMENT; CUTAVAL; MANGANESE METAL; Mn; RTECS: OO9275000

## \*\*\* Section 2 - HAZARDS IDENTIFICATION \*\*\*

### EMERGENCY OVERVIEW

**Color:** gray

**Physical Form:** flakes

**Health Hazards:** nerve damage

**Physical Hazards:** Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.  
Contact with water or moist air may generate flammable and/or toxic gases.

### POTENTIAL HEALTH EFFECTS

#### Inhalation

**Short Term:** irritation, metal fume fever

**Long Term:** headache, weakness, sleep disturbances, difficulty speaking, loss of coordination, hearing loss, visual disturbances, impotence, liver damage, kidney damage, nerve damage

#### Skin

**Short Term:** mild irritation

**Long Term:** no information on significant adverse effects

#### Eye

**Short Term:** irritation

**Long Term:** irritation

#### Ingestion

**Short Term:** gastrointestinal irritation, digestive disorders

**Long Term:** drowsiness

## \*\*\* Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS \*\*\*

CAS	Component	Percent	Symbol(s)	Risk Phrase(s)
7439-96-5	ELECTROLYTIC MANGANESE METAL FLAKE	100	---	---
	231-105-1			

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## Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Manganese compounds, n.o.s., Manganese compounds, inorganic.

### \*\*\* Section 4 - FIRST AID MEASURES \*\*\*

#### Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

#### Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

#### Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

#### Ingestion

If a large amount is swallowed, get medical attention.

#### Antidote

calcium disodium edetate/dextrose, intravenous; calcium disodium edetate/procaine, intramuscular.

### \*\*\* Section 5 - FIRE FIGHTING MEASURES \*\*\*

See Section 9 for Flammability Properties

**NFPA Ratings: Health: 1 Fire: 0 Reactivity: 1**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

#### Flammable Properties

Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

#### Extinguishing Media

dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride

#### Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

### \*\*\* Section 6 - ACCIDENTAL RELEASE MEASURES \*\*\*

#### Occupational spill/release

Collect spilled material in appropriate container for disposal.

### \*\*\* Section 7 - HANDLING AND STORAGE \*\*\*

#### Handling Procedures

Use methods to minimize dust.

#### Storage Procedures

Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Keep separated from incompatible substances.

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## \*\*\* Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION \*\*\*

### Component Exposure Limits

#### ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)

**ACGIH:** 0.2 mg/m<sup>3</sup> TWA

**NIOSH:** 1 mg/m<sup>3</sup> TWA (fume)

3 mg/m<sup>3</sup> STEL

500 mg/m<sup>3</sup> IDLH

**OSHA (US):** 5 mg/m<sup>3</sup> Ceiling (fume)

**Mexico:** 0.2 mg/m<sup>3</sup> TWA; 1 mg/m<sup>3</sup> TWA (as Mn, fume)

3 mg/m<sup>3</sup> STEL (as Mn, fume)

### IDLH

500 mg/m<sup>3</sup>

### Ventilation

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

### PERSONAL PROTECTIVE EQUIPMENT

#### Eyes/Face

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

#### Protective Clothing

Wear appropriate chemical resistant clothing.

#### Glove Recommendations

Wear appropriate chemical resistant gloves.

#### Respiratory Protection

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

Measurement Element:

Manganese (Mn)

10 mg/m<sup>3</sup>

Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any supplied-air respirator.

25 mg/m<sup>3</sup>

Any supplied-air respirator operated in a continuous-flow mode.

Any powered, air-purifying respirator with a high-efficiency particulate filter.

50 mg/m<sup>3</sup>

Any air-purifying, full-facepiece respirator equipped with an N100, R100, or P100 filter.

Any supplied-air respirator with a tight-fitting facepiece that is operated in a continuous-flow mode.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

500 mg/m<sup>3</sup>

Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

Emergency or planned entry into unknown concentrations or IDLH conditions -

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Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape -

Any air-purifying, full-facepiece respirator equipped with an N100, R100, or P100 filter.

Any appropriate escape-type, self-contained breathing apparatus.

## \*\*\* Section 9 - PHYSICAL AND CHEMICAL PROPERTIES \*\*\*

<b>Physical State:</b>	Solid	<b>Appearance:</b>	Not available
<b>Color:</b>	gray	<b>Physical Form:</b>	flakes
<b>Odor:</b>	Not Available	<b>Odor Threshold:</b>	Not available
<b>Melting Point:</b>	1241 - 1247 °C	<b>Boiling Point:</b>	1900 - 1962 °C
<b>Vapor Pressure:</b>	1 mmHg @ 1292 °C	<b>Vapor Density (air = 1):</b>	Not applicable
<b>Density:</b>	Not available	<b>Specific Gravity (water = 1):</b>	7.20
<b>Water Solubility:</b>	decomposes	<b>Coeff. Water/Oil Dist:</b>	Not available
<b>Molecular Weight:</b>	54.9380	<b>Molecular Formula:</b>	Mn

### Solvent Solubility

**Soluble:** dilute mineral acids

## \*\*\* Section 10 - STABILITY AND REACTIVITY \*\*\*

### Chemical Stability

Contact with water or moist air may form flammable and/or toxic gases or vapors.

### Conditions to Avoid

None reported.

### Materials to Avoid

metals, oxidizing materials, halogens, peroxides, combustible materials

MANGANESE:

ALUMINUM (DUST): Forms explosive mixtures with air.

AMMONIUM NITRATE (FUSED): Violent or explosive reaction.

BROMINE PENTAFLUORIDE: Violent reaction and possible ignition.

CARBON DIOXIDE: Ignites.

CHLORINE: Ignites.

FLUORINE: Incandescent reaction.

HYDROGEN PEROXIDE: Violent decomposition and/or ignition.

NITRIC ACID: Incandescent reaction and feeble explosion.

NITROGEN DIOXIDE: Ignition.

OXIDIZERS (STRONG): Fire and explosion hazard.

PHOSPHORUS: Incandescent reaction when heated.

SULFUR DIOXIDE: Burns brilliantly on warming.

### Decomposition Products

oxides of manganese

Thermal decomposition products: oxides of manganese.

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## Possibility of Hazardous Reactions

Will not polymerize.

### \*\*\* Section 11 - TOXICOLOGICAL INFORMATION \*\*\*

#### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

Oral LD50 Rat: 9 g/kg

#### RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

Oral: 9 gm/kg oral rat LD50

#### Acute Toxicity Level

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

Slightly Toxic: ingestion.

#### Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA.

#### RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

500 mg/24 hour(s) eyes rabbit mild; 500 mg/24 hour(s) skin rabbit mild

#### Target Organs

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

nervous system.

#### Medical Conditions Aggravated by Exposure

history of alcoholism, blood system disorders, liver disorders, nervous system disorders, respiratory disorders

#### RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

400 mg/kg intramuscular rat TDLo (1 year(s))

#### RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

dominant lethal test rat intraperitoneal 25 mg/kg

#### RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

322.5 mg/kg oral mouse TDLo (male 43 day(s)); 1290 mg/kg oral mouse TDLo (male 43 day(s)); 0.71 mg/m<sup>3</sup>

inhalation rat TCLo (pregnant female 15-16 day(s), continuous); 0.71 mg/m<sup>3</sup> inhalation rat TCLo

(multigenerations); 50 mg/kg oral rat TDLo (post pregnancy 20 day(s), continuous); 90 mg/kg oral rat TDLo (post pregnancy 18 day(s), continuous)

Symptoms may depend on a combination of contributing factors including genetic predisposition, age, nutrition, anemia or alcohol.

## HEALTH EFFECTS

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## Inhalation - Acute Exposure

MANGANESE: Dust or fumes may be irritating to the mucous membranes. Occupational exposure to dust or fumes has been reported to cause upper respiratory tract problems, black mucous membrane discharge from the nose, and neurological damage. Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. Tolerance to fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours.

## Inhalation - Chronic Exposure

MANGANESE: If sufficient quantities of manganese dust or fumes are inhaled and absorbed, systemic poisoning known as "manganism", a Parkinsonian-like syndrome may occur. It is characterized initially by anorexia, asthenia, headache, insomnia or somnolence, irritability, restlessness, and spasm or pain in the muscles. Manganese psychosis may follow with uncontrollable behavior, unaccountable laughing or crying, visual hallucinations, confusion and euphoria. Sexual excitement followed by impotence may occur. These symptoms may disappear with the onset of true neurological manifestations of slow, slurred and irregular speech, monotonous tone, double vision, impaired hearing, difficulty with fine motor movements, and disturbances in gait and balance with frequent propulsion or retropulsion. Mask-like face, decreased movement of the eyelids and eyes and tremors of the upper extremities and head may also occur. Other signs and symptoms may include urinary bladder disturbances, excessive salivation and sweating, hematological changes, vasomotor disorders, decreased pulmonary function, kidney and possibly liver damage. Removal from exposure shortly after onset of symptoms usually results in improvement, although there may be residual disturbances in gait and speech. Once manganism is well established it becomes irreversible and progressive, but not fatal. An increased incidence of bronchitis and pneumonitis has been reported in studies of workers exposed to manganese dust and fume, and although these effects have been confirmed by animal experiments, they may represent an aggravation of a pre-existing condition. Allergic diseases of the respiratory tract have also been reported in one study.

## Skin Contact - Acute Exposure

MANGANESE: 500 mg applied to the skin of rabbits caused mild irritation.

## Skin Contact - Chronic Exposure

MANGANESE: Sensitization has been reported in guinea pigs.

## Eye Contact - Acute Exposure

MANGANESE: Dust or fumes may be irritating to the eyes. 500 mg applied to the eyes of rabbits caused mild irritation.

## Eye Contact - Chronic Exposure

MANGANESE: Fumes may cause conjunctivitis.

## Ingestion - Acute Exposure

MANGANESE: Extremely large doses may cause gastrointestinal irritation and possibly systemic toxicity.

## Ingestion - Chronic Exposure

MANGANESE: Manganese poisoning has been reported in persons drinking manganese-contaminated well water. Prolonged ingestion of manganese in water has produced lethargy, edema, and decreased movement of the eyes and eyelids.

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## \*\*\* Section 12 - ECOLOGICAL INFORMATION \*\*\*

### Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

## \*\*\* Section 13 - DISPOSAL CONSIDERATIONS \*\*\*

### Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262.  
Hazardous Waste Number(s): D003.

### Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

## \*\*\* Section 14 - TRANSPORT INFORMATION \*\*\*

### US DOT Information

No Classification assigned.

### TDG Information

No Classification assigned.

### ADR Information

No Classification assigned.

### RID Information

No Classification assigned.

### IATA Information

No Classification assigned.

### ICAO Information

No Classification assigned.

### IMDG Information

No Classification assigned.

## \*\*\* Section 15 - REGULATORY INFORMATION \*\*\*

### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

#### ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)

SARA 313: 1.0 % de minimis concentration

#### SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes Chronic Health: Yes Fire: No Pressure: No Reactive: Yes

### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
ELECTROLYTIC MANGANESE METAL FLAKE	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

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## Canada

### Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

1 %

## Germany Water Classification

**ELECTROLYTIC MANGANESE METAL FLAKE (7439-96-5)**

Number 1443, not considered hazardous to water

## Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
ELECTROLYTIC MANGANESE METAL FLAKE	7439-96-5	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes

## \* \* \* Section 16 - OTHER INFORMATION \* \* \*

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

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## Other Information

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