

SECTION 1: Identification

1.1 Identification

Product form: Manganese compounds
 Product name: Manganese Sulfide (MnS)

1.2 Recommended use and restrictions on use

Use of the substance/mixture Additive in powdered metallurgical product

1.3 Supplier

Hoeganaes Ridgway T: (814) 776-2116
 PO box 372 F: (814) 776-4000
 224 River Road
 Ridgway, Pa 15853

1.4 Emergency telephone number

Emergency number INFOTRAC Emergency Response Center
 200 North Palmetto St, Leesburg, Florida 34748
 T: (800)-535-5053 / (352) 323-3500
 F: (352) 326-3902

SECTION 2: Hazard(s) Identification

EU/EEC According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 2015/830]

2.1 Classification of the substance or mixture

GHS-CLP classification Eye irritation 2 – H319
 Specific Target Organ Toxicity Repeated Exposure 1 - H372 H

2.2 GHS Label elements, including precautionary statements

CLP labeling

Hazard pictograms (CLP)



Single word (CLP)

Danger

Hazard statements (CLP)

H319 – Causes serious eye irritation
 H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements (CLP)

P260 - Do not breathe dust.
 P264 - Wash hands thoroughly after handling.
 P270 - Do not eat, drink or smoke when using this product.
 P280 - Wear eye protection, face protection, protective clothing, protective gloves.

Response (CLP)

P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337+P313 – If eye irritation persists: Get medical advice/attention.
 P314 – Get medical advice/attention if you feel unwell.

Storage/Disposal (CLP)

P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other Hazards (CLP)

Other Hazards (CLP)

Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HC 2012 Eye Irritation 2
 Specific Target Organ Toxicity Repeated Exposure 1
 Hazard Not Otherwise Classifies - Health Hazards - Metal Fume Fever

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2.2 GHS Label elements, including precautionary statements

OSHA HC 2012

Hazard pictograms



Single word

Danger

Hazard statements

Causes serious eye irritation
Causes damage to organs through prolonged or repeated exposure

Precautionary statements

Do not breathe dust.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear eye protection, face protection, protective clothing, protective gloves.

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Get medical advice/attention if you feel unwell.

Storage/Disposal

Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other Hazards

Other Hazards

Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Under United States Regulations (29 CFR 1910.1200 – Hazard communication Standard), this product is considered hazardous.

Canada

According to: WHMIS 2015

2.1 Classification of the substance or mixture

WHMIS 2015

Eye Irritation 2
Specific Target Organ Toxicity Repeated Exposure 1
Hazard Not Otherwise Classifies 1

2.2 GHS Label elements, including precautionary statements

WHMIS 2015

Hazard pictograms



Single word

Danger

Hazard statements

Causes serious eye irritation
Causes damage to organs through prolonged or repeated exposure
Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation.
The symptoms are shivering, fever, malaise and muscular pain.

Precautionary statements

Do not breathe dust.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear eye protection, face protection, protective clothing, protective gloves.

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Get medical advice/attention if you feel unwell.

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Storage/Disposal Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other Hazards

Other Hazards In Canada, the product mentioned above is considered hazardous under the workplace Hazardous Materials Information System (WHMIS)

SECTION 3: Composition/ Information on ingredients

3.1 Substances

Material does not meet the criteria of a substance.

3.2 Mixtures

Name	Product Identifier	LC50/LD50	Classification According to Regulation/Directive	%
Manganese Sulfide	(CAS-No.) 18820-29-6 (EC Number) 242-599-3	NDA	EU CLP: Eye Irrit. 2, H319; STOT RE 1, H372 (CNS, Lungs / Inhale)	92%-100%
			OSHA HCS 2012: Eye Irrit. 2; STOT RE 1 (CNS, Lungs; Inhale); Hazard Not Otherwise Classified - Health Hazard - Metal fume fever	
			WHMIS 2015: Eye Irrit. 2; STOT RE 1 (CNS, Lungs/Inhale)	
Iron	(CAS-No.) 7439-89-6 (EC Number) 231-096-4	NDA	EU CLP: Acute Tox. 4, H302; Aquatic Chronic 4, H413	0%-8%
			OSHA HCS 2012: Acute Tox. 4 (orl)	
			WHMIS 2015: Acute Tox. 4 (orl)	

*See Section 16 for full H-statements

SECTION 4: First-aid measures

4.1 Description of first aid measures

First-aid measures after inhalation	Move person to fresh air. Give artificial respiration if person is not breathing. Administer oxygen if breathing is difficult. If signs/symptoms continue, get medical attention.
First-aid measures after skin contact	In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If irritation develops and persists, get medical attention.
First-aid measures after eye contact	In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.
Ingestion	Rinse mouth. Do not give anything by mouth to an unconscious person. Obtain medical attention immediately if ingested.

4.2 Most important symptoms and effects (acute and delayed)

Refer to Section 11 - Toxicological Information

4.3 Immediate medical attention and special treatment, if necessary

Notes to physician All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

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SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable Extinguishing Media LARGE FIRES: Water spray, fog or regular foam.
SMALL FIRES: Dry chemical, CO₂, water spray or regular foam

Unsuitable extinguishing media No data available

5.2 Specific hazards arising from the chemical

Fire hazard Some may burn, but none ignite readily.

Explosion Hazard No data available.

5.3 Special protective equipment and precautions for fire-fighters

Protection during firefighting Wear positive pressure self-contained breathing apparatus (SCBA)
Structural firefighters' protective clothing will only provide limited protection

SECTION 6: Accidental release measures

6.1 Person precautions, protective equipment and emergency procedures

Personal Precautions Ventilate enclosed areas. Do not walk through spilled material. Wear appropriate personal protective equipment avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing

Emergency Procedures As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. Keep unauthorized personnel away.

6.2 Environmental precautions

Prevent entry to sewers and waterways

6.3 Methods and material for containment and cleaning up

For containment Avoid dust generation.

Methods for cleaning up Carefully shovel or sweep up spilled material and place in suitable container. Cover powder spill with plastic sheet or tarp to minimize spreading.

6.4 Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection" and Section 13 - "Disposal Considerations."

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling Use only with adequate ventilation. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust. Avoid contact with skin, eyes, and clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions Keep container tightly closed in a cool, well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Exposure limits/guidelines No applicable limits available for product or components.

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8.2 Appropriate engineering controls

Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is not leakage from the equipment).
Environmental exposure controls	Follow best practice for site management and disposal of waste.

8.3 Individual protection measures/Personal protective equipment

Eye protection	Safety glasses or goggles are recommended when using product.
Skin and body protection	Wear appropriate gloves. Wear long sleeves and/or protective coveralls
Respiratory protection	For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134. Use a NIOSH/MSHA approved respirator if exposure limits are exceeded or symptoms are experienced.
Other information	Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Handle in accordance with good industrial hygiene and safety procedures.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Powder
Appearance	Powder
Color	Green
Odor	Little
Odor threshold	No data available
pH	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	No data available
Flash point	No data available
Relative evaporation rate (butyl acetate=1)	No data available
Flammability (solid, gas)	No data available
Vapor pressure	No data available
Relative vapor density at 20 °C	No data available
Relative density	No data available
Specific gravity / density	Bulk density – 3.99 g/cm ³
Solubility	Negligible < 0.1%
Partition coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available
Explosion limits	No data available
Explosive properties	No data available

9.2 Other information

No additional physical and chemical parameters noted

SECTION 10: Stability and reactivity

10.1 Reactivity

Metal products themselves are not reactive, however, caution must be taken when welding due to fumes and gasses

10.2 Chemical stability

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Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur

10.4 Conditions to avoid

Avoid dust formation.

10.5 Incompatible materials

None

10.6 Hazardous decomposition products

None

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Iron (7439-89-6) (0% to 8%)

Acute Toxicity: Ingestion/Oral-Rat LD50 • 750 mg/kg; Blood: **Changes in serum composition (e.g., TP, bilirubin cholesterol)**; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: **Transaminases**; Ingestion/Oral-Child TDLo • 77 mg/kg; Behavioral: **Irritability**; Gastrointestinal: **Nausea or vomiting**; Blood: Normocytic anemia;

Multi-dose Toxicity: Ingestion/Oral-Rat TDLo • 105 mg/kg 5 Week(s)-Continuous; Liver: **Tumors**; Tumorigenic: **Active as anti-cancer agent**; Tumorigenic: **Protects against induction of experimental tumors**

GHS Properties	Classification
Acute toxicity	EU/CLP: No data available OSHA HCS 2012: No data available WHMIS 2015: No data available
Skin corrosion/Irritation	EU/CLP: No data available OSHA HCS 2012: No data available WHMIS 2015: No data available
Serious eye damage/Irritation	EU/CLP: Serious Eye Damage 2 OSHA HCS 2012: Serious Eye Damage 2 WHMIS 2015: Serious Eye Damage 2
Skin sensitization	EU/CLP: No data available EU/CLP: No data available WHMIS 2015: No data available
Respiratory sensitization	EU/CLP: No data available EU/CLP: No data available WHMIS 2015: No data available
Aspiration Hazard	EU/CLP: No data available EU/CLP: No data available WHMIS 2015: No data available
Carcinogenicity	EU/CLP: No data available OSHA HCS 2012: No data available WHMIS 2015: No data available
Germ Cell Mutagenicity	EU/CLP: No data available OSHA HCS 2012: No data available WHMIS 2015: No data available
Toxicity for Reproduction	EU/CLP: No data available OSHA HCS 2012: No data available WHMIS 2015: No data available
STOT-SE	EU/CLP: No data available OSHA HCS 2012: No data available WHMIS 2015: No data available

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GHS Properties	Classification
STOT-RE	EU/CLP: Specific Target Organ Toxicity Repeated Exposure 1 OSHA HCS 2012: Specific Target Organ Toxicity Repeated Exposure 1 WHMIS 2015: Specific Target Organ Toxicity Repeated Exposure 1

11.2 Potential Health Effects

Symptoms/effects after inhalation

Acute (Immediate)

Exposure to dust may cause irritation. Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed)

Manganese intoxication can result in a syndrome of parkinsonism and dystonia. Repeated or prolonged exposure to dust may cause wheezing, chest tightness, productive cough nasal irritation and symptoms of chronic respiratory disease.

Symptoms/effects after skin contact

Acute (Immediate)

Exposure to dust may cause mechanical irritation.

Chronic (Delayed)

No data available

Symptoms/effects after eye contact

Acute (Immediate)

Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)

No data available

Symptoms/effects after ingestion

Acute (Immediate)

Excessive concentration of nuisance dust in the workplace may cause irreversible damage to mucous membranes.

Chronic (Delayed)

No data available

Other information

Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.

SECTION 12: Ecological information

12.1 Toxicity

Material data lacking.

12.2 Persistence and degradability

Material data lacking.

12.3 Bioaccumulate potential

Material data lacking.

12.4 Mobility in Soil

Material data lacking.

12.5 Results of PBT and vPvB assessment

No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

No studies have been found.

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SECTION 13: Disposal considerations

13.1 Disposal methods

Product/Packaging disposal recommendations Dispose of contents/container in accordance with local, regional, and/or national regulations

SECTION 14: Transport information

	14.1. UN number	14.2. UN proper shipping name	14.3. Transport hazard classes	14.4. Packing group	14.5. Environmental hazards
DOT	Not applicable	Not Regulated	Not applicable	Not applicable	NDA
TDG	Not applicable	Not Regulated	Not applicable	Not applicable	NDA
IMO/IMDG	Not applicable	Not Regulated	Not applicable	Not applicable	NDA
ADN	Not applicable	Not Regulated	Not applicable	Not applicable	NDA
ADR/RID	Not applicable	Not Regulated	Not applicable	Not applicable	NDA
IATA/ICAO	Not applicable	Not Regulated	Not applicable	Not applicable	NDA

14.6 Special precautions for user

None specified

14.7 Transport in bulk according to Annex II of Marol and the IBC Code

Material data lacking

14.8 Other information

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications Acute, Chronic

Component	Inventory					
	CAS	Canada DSL	Canada NDSL	EU EINECS	EU ELNICS	TSCA
Manganese Sulfide (MnS) as Manganese compounds	NDA	No	No	No	No	No
Iron	7439-89-6	Yes	No	Yes	No	Yes
Manganese Sulfide	18820-29-6	Yes	No	Yes	No	Yes

15.2 International regulations

Canada

Labor

Canada – WHMIS 1988 – Classifications of substances

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Uncontrolled product according to WHMIS classification criteria
Manganese Sulfide	18820-29-6	Not Listed

Canada – WHMIS 1988 – Ingredient disclosure List

Manganese Sulfide (MnS) as Manganese compound		1%
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

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Environment

Canada – CEPA – Priority Substances List

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfite	18820-29-6	Not listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

Manganese Sulfide (MnS) as Manganese compounds		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfite	18820-29-6	Not Listed

Environment

U.S. – CAA (Clean Air Act) – 1990 Hazardous Air Pollutants

Manganese Sulfide (MnS) as Manganese compound		(including any unique chemical substance that contains Manganese as part of tis infrastructure
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

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U.S. - California - Proposition 65 - Developmental Toxicity

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)- California - Proposition 65 - No Significant Risk Levels (NSRL)

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

Manganese Sulfide (MnS) as Manganese compound		Not Listed
Iron	7439-89-6	Not Listed
Manganese Sulfide	18820-29-6	Not Listed

15.2. Chemical Safety Assessment

No Chemical Safety Assessment has been carried out

15.3. Other Information

No Chemical Safety Assessment has been carried out

SECTION 16: Other information

Relevant Phrases (code & full text)

H302 - Harmful if swallowed
H413 - May cause long lasting harmful effects to aquatic life

Date of issue

4/4/2003

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7/29/2019

Version

4.0 New format, updated

Other information

Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

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