

### SECTION 1: Identification

#### 1.1. Identification

Product form	: Substance
Substance name	: Manganese Sulfate Monohydrate
CAS-No.	: 10034-96-5
Formula	: $MnSO_4 \cdot H_2O$

#### 1.2. Recommended use and restrictions on use

Use of the substance/mixture	: Laboratory Reagent Nutrient; Dietary Supplement; Treatment of potable water for radium removal
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#### 1.3. Supplier

##### Manufacturer

Jost Chemical Co.  
8150 Lackland Rd.  
Saint Louis, Missouri 63114  
T 314-428-4300 - F 314-428-4366  
[sds@jostchemical.com](mailto:sds@jostchemical.com) - [www.jostchemical.com](http://www.jostchemical.com)

#### 1.4. Emergency telephone number

Emergency number	: For Hazardous Materials [or Dangerous Goods] Incident Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night United States and Canada: 1-800-424-9300 / +1 703-527-3887 Global: +1 703-741-5970
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### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture


##### GHS US classification

Acute toxicity (oral) Category 4	H302	Harmful if swallowed
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage

Full text of H statements : see section 16

#### 2.2. GHS Label elements, including precautionary statements

##### GHS US labeling

Hazard pictograms (GHS US)	: 
Signal word (GHS US)	: Danger
Hazard statements (GHS US)	: H302 - Harmful if swallowed H318 - Causes serious eye damage
Precautionary statements (GHS US)	: P264 - Wash hands, forearms and face thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P310 - Immediately call a poison center or doctor P330 - Rinse mouth. P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

#### 2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification	: None under normal conditions.
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### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS US classification
Manganese Sulfate Monohydrate (Main constituent)	(CAS-No.) 10034-96-5	100	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318

Full text of hazard classes and H-statements : see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

- First-aid measures general : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Get medical advice/attention if you feel unwell.
- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
- First-aid measures after skin contact : Rinse with water. Soap may be used. Take victim to a doctor if irritation persists. Wash skin with plenty of water.
- First-aid measures after eye contact : Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists. Rinse eyes with water as a precaution.
- First-aid measures after ingestion : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Call Poison Information Centre ([www.big.be/antigif.htm](http://www.big.be/antigif.htm)). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Call a poison center/doctor/physician if you feel unwell.

### 4.2. Most important symptoms and effects (acute and delayed)

- Potential Adverse human health effects and symptoms : Slightly harmful if swallowed. Slightly irritant to skin.
- Symptoms/effects after inhalation : AFTER INHALATION OF DUST: Coughing. ON HEATING: Metal fume fever.
- Symptoms/effects after skin contact : Slight irritation. Red skin.
- Symptoms/effects after eye contact : Redness of the eye tissue.
- Symptoms/effects after ingestion : AFTER INGESTION OF HIGH QUANTITIES: Irritation of the gastric/intestinal mucosa.
- Chronic symptoms : ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Coughing. Respiratory difficulties. Impairment of the nervous system. Brain affection. Feeling of weakness. Loss of appetite. Behavioural disturbances. Slurred speech. Movement disturbances. Myasthenia. Tremor. Impaired concentration. Emotional instability.

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Adapt extinguishing media to the environment for surrounding fires. Water spray. Dry powder. Foam.

### 5.2. Specific hazards arising from the chemical

- Fire hazard : DIRECT FIRE HAZARD: Non combustible.
- Explosion hazard : No data available on direct explosion hazard. No data available on indirect explosion hazard.
- Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

### 5.3. Special protective equipment and precautions for fire-fighters

- Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighborhood close doors and windows.

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|--------------------------------|---|
| Firefighting instructions      | : Dilute toxic gases with water spray. Take account of environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.                              |
| Protection during firefighting | : Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. |

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. For non-emergency personnel

- |                                  |  |
|----------------------------------|--|
| Protective equipment             | : Gloves. Protective clothing. Dust cloud production: compressed air/oxygen apparatus.   |
| Emergency procedures             | : Ventilate spillage area. Mark the danger area. Prevent dust cloud formation. No naked flames. Wash contaminated clothes. Do not breathe dust/fume/gas/mist/vapors/spray. |
| Measures in case of dust release | : In case of dust production: keep upwind. Dust production: have neighborhood close doors and windows.   |

##### 6.1.2. For emergency responders

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|----------------------|---|
| Protective equipment | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |
| Emergency procedures | : Avoid contact with skin and eyes.   |

#### 6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers.

#### 6.3. Methods and material for containment and cleaning up

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|-------------------------|---|
| For containment         | : Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray. Collect spillage.  |
| Methods for cleaning up | : Mechanically recover the product. Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. Take collected spill to manufacturer/competent authority. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling. |
| Other information       | : Dispose of materials or solid residues at an authorized site.   |

#### 6.4. Reference to other sections

For further information refer to section 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

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|-------------------------------|---|
| Precautions for safe handling | : Ensure good ventilation of the work station. Wear personal protective equipment. Avoid raising dust. Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not breathe dust/fume/gas/mist/vapors/spray. |
| Hygiene measures              | : Observe very strict hygiene - avoid contact. Keep container tightly closed. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.   |

#### 7.2. Conditions for safe storage, including any incompatibilities

- |                              |   |
|------------------------------|---|
| Technical measures           | : Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems. |
| Storage conditions           | : Store in a well-ventilated place. Keep cool.  |
| Incompatible materials       | : Strong oxidizers. Metals. Reactive metals (Al, K, Zn ...).  |
| Heat-ignition                | : KEEP SUBSTANCE AWAY FROM: heat sources.   |
| Information on mixed storage | : KEEP SUBSTANCE AWAY FROM: oxidizing agents. water/moisture.   |
| Storage area                 | : Store in a dry area. Unauthorized persons are not admitted. Meet the legal requirements.  |
| Special rules on packaging   | : SPECIAL REQUIREMENTS: closing. watertight. dry. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.       |
| Packaging materials          | : SUITABLE MATERIAL: cardboard. plastics. glass.  |

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### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

Manganese Sulfate Monohydrate (10034-96-5)		
DNEL	DNEL	0.2 mg/m <sup>3</sup> (Long-term - systemic effects, inhalation, workers)
PNEC	PNEC	0.0128 mg/l (aqua, freshwater)

#### 8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.  
Environmental exposure controls : Avoid release to the environment.

#### 8.3. Individual protection measures/Personal protective equipment

##### Personal protective equipment:

Dust/aerosol mask with filter type P2. Gloves. In case of dust production: protective goggles. Safety glasses.

##### Materials for protective clothing:

GIVE GOOD RESISTANCE: butyl rubber. PVC

##### Hand protection:

Gloves

##### Eye protection:

Safety glasses. In case of dust production: protective goggles. Safety glasses

##### Skin and body protection:

Protective clothing

##### Respiratory protection:

Dust production: dust mask with filter type P3

##### Personal protective equipment symbol(s):



### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state : Solid  
Appearance : Powder. Granular solid.  
Color : Rose  
Odor : Odorless  
Odor threshold : No data available  
pH : 3.0 - 3.5 (5 %)  
Melting point : 700 °C  
Freezing point : Not applicable  
Boiling point : Not applicable  
Flash point : Not applicable  
Relative evaporation rate (butyl acetate=1) : No data available  
Flammability (solid, gas) : Non flammable.  
Vapor pressure : No data available  
Relative vapor density at 20 °C : Not applicable  
Relative density : 3

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Specific gravity / density	: 2950 kg/m <sup>3</sup>
Molecular mass	: 169.01 g/mol
Solubility	: Soluble in water. Water: 100 g/100ml
Log Pow	: No data available
Auto-ignition temperature	: Not applicable
Decomposition temperature	: > 117 °C
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: Not applicable
Explosive properties	: No data available
Oxidizing properties	: No data available

### 9.2. Other information

VOC content	: 0 %
Other properties	: Hygroscopic. Acid reaction.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

### 10.2. Chemical stability

Hygroscopic.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

Oxidizing agent. Powdered metals.

### 10.6. Hazardous decomposition products

Sulphur oxides. Metallic oxides.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral)	: Oral: Harmful if swallowed. (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

Manganese Sulfate Monohydrate (10034-96-5)	
LD50 oral rat	2150 mg/kg (Published data)
LC50 inhalation rat (mg/l)	> 4.45 mg/l/4h
ATE US (oral)	500 mg/kg body weight

Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met) pH: 3.0 - 3.5 (5 %)
Serious eye damage/irritation	: Causes serious eye damage. pH: 3.0 - 3.5 (5 %)
Respiratory or skin sensitization	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
Specific target organ toxicity – single exposure	: Not classified (Based on available data, the classification criteria are not met)
Specific target organ toxicity – repeated exposure	: Not classified

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Aspiration hazard	: Not classified (Not applicable)
Viscosity, kinematic	: No data available
Likely routes of exposure	: Skin and eye contact.
Potential Adverse human health effects and symptoms	: Slightly harmful if swallowed. Slightly irritant to skin.
Symptoms/effects after inhalation	: AFTER INHALATION OF DUST: Coughing. ON HEATING: Metal fume fever.
Symptoms/effects after skin contact	: Slight irritation. Red skin.
Symptoms/effects after eye contact	: Redness of the eye tissue.
Symptoms/effects after ingestion	: AFTER INGESTION OF HIGH QUANTITIES: Irritation of the gastric/intestinal mucosa.
Chronic symptoms	: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Coughing. Respiratory difficulties. Impairment of the nervous system. Brain affection. Feeling of weakness. Loss of appetite. Behavioural disturbances. Slurred speech. Movement disturbances. Myasthenia. Tremor. Impaired concentration. Emotional instability.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general	: Dangerous for the environment. Toxic to aquatic life with long lasting effects. Toxic to aquatic life.
Ecology - air	: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water	: Toxic to crustacea. Harmful to fishes. Mild water pollutant (surface water). pH shift.

#### Manganese Sulfate Monohydrate (10034-96-5)

LC50 fish 1	33.8 mg/l (96 h, Pimephales promelas, Anhydrous form)
EC50 Daphnia 1	8.28 mg/l (48 h, Daphnia magna, Anhydrous form)
ErC50 (algae)	61 mg/l (72 hr; Desmodesmus subspicatus) (OECD 201)
NOEC (chronic)	1 mg/l (Desmodesmus Subspicatus) (OECD 201)

#### 12.2. Persistence and degradability

#### Manganese Sulfate Monohydrate (10034-96-5)

Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

#### 12.3. Bioaccumulative potential

No additional information available

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove to an authorized dump (Class I). Precipitate/make insoluble.
Additional information	: Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

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### SECTION 14: Transport information

#### Department of Transportation (DOT)

In accordance with DOT

Not regulated

#### Transportation of Dangerous Goods

Transport document description : 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Manganese Sulfate Monohydrate), 9, III  
UN-No. (TDG): : 3077  
Proper Shipping Name (Transportation of Dangerous Goods) : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
TDG Primary Hazard Classes : 9 - Class 9 - Miscellaneous Products, Substances or Organisms  
Packing group : III - Minor Danger

#### Transport by sea

Transport document description (IMDG) : UN 3077 environmentally hazardous substance, solid, n.o.s. (Manganese Sulfate Monohydrate), 9, III, MARINE POLLUTANT  
UN-No. (IMDG) : 3077  
Proper Shipping Name (IMDG) : environmentally hazardous substance, solid, n.o.s.  
Class (IMDG) : 9 - Miscellaneous dangerous substances and articles  
Packing group (IMDG) : III - substances presenting low danger  
Limited quantities (IMDG) : 5 kg  
EmS-No. (1) : F-A  
EmS-No. (2) : S-F

#### Air transport

Transport document description (IATA) : UN 3077 Environmentally hazardous substance, solid, n.o.s. (Manganese Sulfate Monohydrate), 9, III  
UN-No. (IATA) : 3077  
Proper Shipping Name (IATA) : Environmentally hazardous substance, solid, n.o.s.  
Class (IATA) : 9 - Miscellaneous Dangerous Goods  
Packing group (IATA) : III - Minor Danger

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

##### Manganese Sulfate Monohydrate (10034-96-5)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 15.2. International regulations

##### CANADA

##### Manganese Sulfate Monohydrate (10034-96-5)

Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)

#### EU-Regulations

No additional information available

#### National regulations

No additional information available

#### 15.3. US State regulations

No additional information available

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### SECTION 16: Other information

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Revision date : 07/09/2019

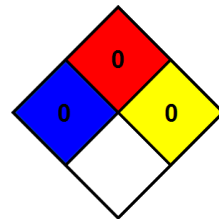
Full text of H-phrases:

H302	Harmful if swallowed
H318	Causes serious eye damage

NFPA health hazard : 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur  
\* - Chronic (long-term) health effects may result from repeated overexposure

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

SDS US (GHS HazCom 2012)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*