

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**
**Product Identifier**

Perihalan Produk: **MANGAN(II) NITRAT TETRAHIDRAT, UNTUK ANALISIS**  
 Product Description: **Manganese(II) nitrate tetrahydrate**  
 Cat No. : 193460000; 193460010; 193462500  
 CAS No 20694-39-7  
 Molecular Formula Mn N2 O6 . 4 H2 O

**Relevant identified uses of the substance or mixture and uses advised against**

Recommended Use Laboratory chemicals.  
 Uses advised against No Information available

**Details of the supplier of the safety data sheet**
**Company**

Fisher Scientific (M) Sdn Bhd No. 3, Jalan Sepadu 25/123,  
 Taman Perindustrian Axis, Seksyen 25,  
 40400 Shah Alam, Selangor Darul Ehsan, Malaysia.  
 Tel: +03-5525 7888  
 Fax: +603 51257978.

E-mail address Enquiry.my@thermofisher.com

**Emergency Telephone Number**

Tel: +03-5525 7888  
 CHEMTREC Malaysia **1-800-815-308** (Malay)  
 CHEMTREC Malaysia (Kuala Lumpur) **+(60)-327884561** (Malay)

**SECTION 2: HAZARDS IDENTIFICATION**
**Classification of the substance or mixture**

	Oxidizing solids
Category 2 (H272)	
Acute oral toxicity	Category 4 (H302)
Skin Corrosion/Irritation	Category 1 C (H314)
Serious Eye Damage/Eye Irritation	Category 1 (H318)
Specific target organ toxicity - (repeated exposure)	Category 2 (H373)
Chronic aquatic toxicity	Category 3 (H412)

**Label Elements**


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## Signal Word

**Danger**

## Hazard Statements

- H272 - May intensify fire; oxidizer
- H302 - Harmful if swallowed
- H314 - Causes severe skin burns and eye damage
- H373 - May cause damage to organs through prolonged or repeated exposure if inhaled
- H412 - Harmful to aquatic life with long lasting effects

## Precautionary Statements

- P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower
- 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/physician

## Other Hazards

- EUH071 - Corrosive to the respiratory tract
- Corrosive to the respiratory tract
- This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight %
Nitric acid, manganese(2+) salt, tetrahydrate	20694-39-7	100
Manganese nitrate	10377-66-9	-

## SECTION 4: FIRST AID MEASURES

### Description of first aid measures

#### General Advice

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

#### Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Keep eye wide open while rinsing.

#### Skin Contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.

#### Ingestion

Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person.

#### Inhalation

Remove to fresh air. If not breathing, give artificial respiration. Call a physician or poison control center immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

#### Self-Protection of the First Aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

### Most important symptoms and effects, both acute and delayed

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Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

## Indication of any immediate medical attention and special treatment needed

### **Notes to Physician**

Treat symptomatically.

## SECTION 5: FIREFIGHTING MEASURES

### Extinguishing media

#### **Suitable Extinguishing Media**

CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam.

#### **Extinguishing media which must not be used for safety reasons**

No information available.

### Special hazards arising from the substance or mixture

The product causes burns of eyes, skin and mucous membranes. Oxidizer: Contact with combustible/organic material may cause fire. May ignite combustibles (wood paper, oil, clothing, etc.).

#### **Hazardous Combustion Products**

Nitrogen oxides (NO<sub>x</sub>), Manganese oxides.

### Advice for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment and Emergency Procedures

Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing.

### Environmental precautions

Should not be released into the environment. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

### Methods and Material for Containment and Cleaning Up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

### Reference to Other Sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### Precautions for Safe Handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe dust. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from clothing and other combustible materials.

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## Conditions for Safe Storage, Including any Incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Corrosives area. To maintain product quality: Keep refrigerated.

## Specific End Uses

Use in laboratories.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

Component	Malaysia	ACGIH TLV	OSHA PEL
Nitric acid, manganese(2+) salt, tetrahydrate		TWA: 0.02 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	(Vacated) Ceiling: 5 mg/m <sup>3</sup> Ceiling: 5 mg/m <sup>3</sup>
Manganese nitrate		TWA: 0.02 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	(Vacated) Ceiling: 5 mg/m <sup>3</sup> Ceiling: 5 mg/m <sup>3</sup>

Component	European Union	The United Kingdom	Germany
Nitric acid, manganese(2+) salt, tetrahydrate	TWA: 0.05 mg/m <sup>3</sup> (15min)	STEL: 0.6 mg/m <sup>3</sup> 15 min STEL: 0.15 mg/m <sup>3</sup> 15 min TWA: 0.2 mg/m <sup>3</sup> 8 hr TWA: 0.05 mg/m <sup>3</sup> 8 hr	TWA: 0.2 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 8 TWA: 0.02 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 8 TWA: 0.2 mg/m <sup>3</sup> (8 Stunden). MAK TWA: 0.02 mg/m <sup>3</sup> (8 Stunden). MAK Höhepunkt: 1.6 mg/m <sup>3</sup> Höhepunkt: 0.16 mg/m <sup>3</sup>
Manganese nitrate	TWA: 0.05 mg/m <sup>3</sup> (15min)	STEL: 0.6 mg/m <sup>3</sup> 15 min STEL: 0.15 mg/m <sup>3</sup> 15 min TWA: 0.2 mg/m <sup>3</sup> 8 hr TWA: 0.05 mg/m <sup>3</sup> 8 hr	TWA: 0.2 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 8 TWA: 0.02 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 8 TWA: 0.2 mg/m <sup>3</sup> (8 Stunden). MAK TWA: 0.02 mg/m <sup>3</sup> (8 Stunden). MAK Höhepunkt: 1.6 mg/m <sup>3</sup> Höhepunkt: 0.16 mg/m <sup>3</sup>

### Exposure Controls

#### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

#### Eye Protection

Goggles

#### Hand Protection

Protective gloves

#### Skin and body protection

Long sleeved clothing

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

#### Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

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**Recommended Filter type:** Particulates filter conforming to EN 143  
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly  
When RPE is used a face piece Fit Test should be conducted

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice

**Environmental exposure controls** Prevent product from entering drains

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Appearance</b>	Light red	
<b>Physical State</b>	Solid	
<b>Odor</b>	Strong	
<b>Odor Threshold</b>	No data available	
<b>pH</b>	No information available	
<b>Melting Point/Range</b>	37 °C / 98.6 °F	
<b>Softening Point</b>	No data available	
<b>Boiling Point/Range</b>	No information available	
<b>Flash Point</b>	No information available	<b>Method -</b> No information available
<b>Evaporation Rate</b>	Not applicable	Solid
<b>Flammability (solid,gas)</b>	No information available	
<b>Explosion Limits</b>	No data available	
<b>Vapor Pressure</b>	No data available	
<b>Vapor Density</b>	Not applicable	Solid
<b>Specific Gravity / Density</b>	No data available	
<b>Bulk Density</b>	No data available	
<b>Water Solubility</b>	3800 g/L (20°)	
<b>Solubility in other solvents</b>	No information available	
<b>Partition Coefficient (n-octanol/water)</b>		
<b>Autoignition Temperature</b>	No data available	
<b>Decomposition Temperature</b>	> 140°C	
<b>Viscosity</b>	Not applicable	Solid
<b>Explosive Properties</b>	No information available	
<b>Oxidizing Properties</b>	Oxidizer	
<b>Molecular Formula</b>	Mn N2 O6 . 4 H2 O	
<b>Molecular Weight</b>	251.01	

## SECTION 10: STABILITY AND REACTIVITY

### Reactivity

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Yes.

## Chemical Stability

Hygroscopic. Oxidizer: Contact with combustible/organic material may cause fire.

## Possibility of Hazardous Reactions

### **Hazardous Polymerization**

No information available.

### **Hazardous Reactions**

None under normal processing.

## Conditions to Avoid

Avoid dust formation. Incompatible products. Excess heat. Exposure to moist air or water. Combustible material.

## Incompatible Materials

Strong reducing agents. Combustible material.

## Hazardous Decomposition Products

Nitrogen oxides (NOx). Manganese oxides.

## SECTION 11: TOXICOLOGICAL INFORMATION

### Information on Toxicological Effects

#### **Product Information**

#### **(a) acute toxicity;**

Oral

Category 4

Dermal

No data available

Inhalation

No data available

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Manganese nitrate	>300 mg/kg	-	-

#### **(b) skin corrosion/irritation;**

Category 1 C

#### **(c) serious eye damage/irritation;**

Category 1

#### **(d) respiratory or skin sensitization;**

Respiratory

No data available

Skin

No data available

#### **(e) germ cell mutagenicity;**

No data available

#### **(f) carcinogenicity;**

No data available

The table below indicates whether each agency has listed any ingredient as a carcinogen

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(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; Category 2

Route of exposure Inhalation  
Target Organs Brain.

(j) aspiration hazard; Not applicable  
Solid

Other Adverse Effects The toxicological properties have not been fully investigated.

Symptoms / effects, both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

Endocrine Disrupting Properties Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity effects Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not empty into drains.

Persistence and degradability  
Persistence Soluble in water, Persistence is unlikely, based on information available.  
Degradability Not relevant for inorganic substances.  
Degradation in sewage treatment plant Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Bioaccumulative potential Bioaccumulation is unlikely

Mobility in soil The product is water soluble, and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils.

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

Other adverse effects No information available

## SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods  
Waste from Residues/Unused Products Waste is classified as hazardous Dispose of in accordance with the European Directives on waste and hazardous waste Dispose of in accordance with local regulations

Contaminated Packaging Dispose of this container to hazardous or special waste collection point.

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## Other Information

Waste codes should be assigned by the user based on the application for which the product was used Do not empty into drains Do not flush to sewer Large amounts will affect pH and harm aquatic organisms Do not let this chemical enter the environment

## SECTION 14: TRANSPORT INFORMATION

### IMDG/IMO

UN-No UN2724  
Hazard Class 5.1  
Packing Group III  
Proper Shipping Name MANGANESE NITRATE

### Road and Rail Transport

UN-No UN2724  
Hazard Class 5.1  
Packing Group III  
Proper Shipping Name MANGANESE NITRATE

### IATA

UN-No UN2724  
Hazard Class 5.1  
Packing Group III  
Proper Shipping Name MANGANESE NITRATE

Special Precautions for User No special precautions required

## SECTION 15: REGULATORY INFORMATION

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

International Inventories X = listed

Component	EINECS	TSCA	DSL	PICCS	ENCS	ISHL	IECSC	AICS	KECL
Nitric acid, manganese(2+) salt, tetrahydrate	-	-	-	X	-		X	-	-
Manganese nitrate	233-828-8	X	X	X	X	X	X	X	KE-23016

### National Regulations

Persistent Organic Pollutant This product does not contain any known or suspected substance  
Ozone Depletion Potential This product does not contain any known or suspected substance

## SECTION 16: OTHER INFORMATION

### Legend

CAS - Chemical Abstracts Service

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical



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Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**IECSC** - Chinese Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances  
**AICS** - Australian Inventory of Chemical Substances  
**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**POW** - Partition coefficient Octanol:Water

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

## Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Revision Date 25-Aug-2023  
Revision Summary Not applicable.

**In accordance with local and national regulations: Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013**

## Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**