

SAFETY DATA SHEET



Revision date: 31-Aug-2020

Revision Number 1

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name MANGANESE DIOXIDE

Product Code(s) 000000026354

Other means of identification

Recommended use of the chemical and restrictions on use

Recommended use Pigment.

Uses advised against No information available.

Supplier

Ixom Operations Pty Ltd
ABN: 51 600 546 512
Level 8, 1 Nicholson Street
Melbourne 3000
Australia

Telephone Number: +61 3 9906 3000

Emergency telephone number

Emergency telephone number **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

GHS Classification

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

SIGNAL WORD

Danger

Label elements

Health hazard
Exclamation mark

**Hazard statements**

H302 - Harmful if swallowed

H332 - Harmful if inhaled

H350 - May cause cancer if inhaled

H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

Precautionary Statements - Prevention

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Do not breathe dusts or mists

Wash hands and face thoroughly after handling

Do not eat, drink or smoke when using this product

Use personal protective equipment as required

Use only outdoors or in a well-ventilated area

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Get medical advice/attention if you feel unwell

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Call a POISON CENTER or doctor/physician if you feel unwell

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

Rinse mouth

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other hazards which do not result in classification**General Hazards**

Poisons Schedule (SUSMP) None allocated

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Not applicable

Mixture

Chemical name	CAS No.	Weight-%
Manganese dioxide	1313-13-9	>=70
Crystalline silica (Quartz)	14808-60-7	<=8
Non hazardous component(s)	-	to 100

4. FIRST AID MEASURES**Description of first aid measures**

Emergency telephone number Poisons Information Center, Australia: 13 11 26
Poisons Information Center, New Zealand: 0800 764 766

Inhalation	Do not breathe dust. Remove to fresh air. If breathing is difficult, (trained personnel should) give oxygen. If breathing has stopped, give artificial respiration. Get medical attention immediately.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if symptoms occur.
Skin contact	Wash skin with soap and water. Get medical attention if symptoms occur.
Ingestion	Clean mouth with water. Do NOT induce vomiting. Call a physician immediately.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE FIGHTING MEASURES**Suitable Extinguishing Media**

Suitable Extinguishing Media Use extinguishing agent suitable for type of surrounding fire.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Specific hazards arising from the chemical Non-combustible.

Hazardous combustion products Metal oxides.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Personal precautions Do not breathe dust. Avoid contact with skin, eyes, and clothing. Do not touch or walk through spilled material. Ensure adequate ventilation. Evacuate personnel to safe areas. Use personal protective equipment as required.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Use appropriate personal protective equipment (PPE). Carefully shovel or sweep up spilled material and place in suitable container. Avoid generating dust. After cleaning, flush away traces with water and detergent.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Avoid generation of dust. Do not breathe dust. Do not eat, drink or smoke when using this product. Do not ingest. If swallowed then seek immediate medical assistance. Use only with adequate ventilation. Use personal protection equipment.
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Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from direct sunlight. Store locked up. Keep away from water or moist air. Keep container closed when not in use.
Incompatible materials	None known based on information supplied.
Poisons Schedule (SUSMP)	None allocated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits	No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for constituent(s):
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Manganese, dust & compounds (as Mn): 8hr TWA = 1 mg/m³
Manganese, fume (as Mn): 8hr TWA = 1 mg/m³, 15 min STEL = 3 mg/m³
Silica Crystalline - Quartz (respirable dust): 8hr TWA = 0.1 mg/m³

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

STEL (Short Term Exposure Limit) - the airborne concentration of a particular substance calculated as a time-weighted average over 15 minutes, which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls

Engineering controls	Apply technical measures to comply with the occupational exposure limits. If in the handling and application of this material, safe exposure levels could be exceeded,
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the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, DUST MASK.



Eye/face protection	Glasses.
Skin and body protection	Overalls. Boots.
Hand protection	Impervious gloves.
Respiratory protection	If determined by a risk assessment an inhalation risk exists, wear a dust mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
Environmental exposure controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Powder or Lumps
Color	Grey to Black
Odor	Odourless
Odor threshold	No information available.

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	7.9 (20% slurry)	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	4.4-5.0	None known
Water solubility	Insoluble in water	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known

Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information**10. STABILITY AND REACTIVITY**Reactivity

Reactivity No information available.

Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid

Conditions to avoid Dust formation. Moisture.

Incompatible materials

Incompatible materials None known based on information supplied.

Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

11. TOXICOLOGICAL INFORMATIONAcute toxicityInformation on likely routes of exposure

Product Information No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

Inhalation May cause irritation.

Eye contact Dust contact with the eyes can lead to mechanical irritation.

Skin contact Contact with dust can cause mechanical irritation or drying of the skin.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Symptoms No information available.

Numerical measures of toxicity - Product Information

No information available.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Manganese dioxide	= 9000 mg/kg (Rat)	-	> 1500 mg/m ³ (Rat) 4 h

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation No information available.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity May cause cancer. The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as carcinogenic.

Chemical name	Australia
Crystalline silica (Quartz) - 14808-60-7	Carc. 1A

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure if inhaled.

Aspiration hazard No information available.

Chronic effects: Manganese dioxide is not considered to represent a hazard under conditions of good occupational work practice. The main hazards result from chronic exposure. Symptoms usually do not appear earlier than after 6 months to 2 years. Studies have shown manganese dioxide to cause CNS and lung effects. Nervous system effects include headaches, lethargy, sleeping difficulties, weakness or cramps in the legs, difficulty in walking, speaking difficulties, muscle twitching and rigidity, irritability and unstable emotions. Lung effects include a predisposition to respiratory diseases and fibrotic changes in the lungs. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis may occur further disability if excessive concentrations are inhaled. Chronic exposure has been associated with two major effects; bronchitis/pneumonitis following inhalation of manganese dusts and "manganism", a neuropsychiatric disorder that may also arise from inhalation exposures. Chronic exposure to low levels may result in the accumulation of toxic concentrations in critical organs. The brain in particular appears to sustain cellular damage to the ganglion. Symptoms appear before any pathology is evident and may include a mask-like facial expression, spastic gait, tremors, slurred speech, sometimes dystonia (disordered muscle tone), fatigue, anorexia, asthenia (loss of strength and energy), apathy and the inability to concentrate. Insomnia may be an early finding. Rat studies indicate the gradual accumulation of brain manganese to produce lesions mimicking those found in Parkinsonism.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity Keep out of waterways.

Persistence and degradability**Persistence and degradability** No information available.**Bioaccumulative potential****Bioaccumulation** No information available.**Component Information**

Chemical name	Partition coefficient
Manganese dioxide	<0

Mobility**Mobility in soil** No information available.**Other adverse effects****13. DISPOSAL CONSIDERATIONS****Waste treatment methods****Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.**14. TRANSPORT INFORMATION****ADG**

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

IATA

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

IMDG

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

15. REGULATORY INFORMATION**Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****Australia**

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

See section 8 for national exposure control parameters

Poisons Schedule (SUSMP) None allocated

National pollutant inventory

Subject to reporting requirement

Chemical name	National pollutant inventory
Manganese dioxide - 1313-13-9	10 tonne/yr Threshold category 1

International Inventories

AICS

All the constituents of this material are listed on the Australian Inventory of Chemical Substances.

Legend:

AICS - Australian Inventory of Chemical Substances

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

Supplier Safety Data Sheet 02/ 2016

Reason(s) For Issue: First Issue Primary SDS

Issuing Date: 31-Aug-2020

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

Revision Note:

The symbol (*) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS

EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)

National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

End of Safety Data Sheet