



Infosafe No™	1CH49	Issue Date : February 2016	RE-ISSUED by CHEMSUPP
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Product Name : **MANGANESE DIOXIDE**

Classified as hazardous

**1. Identification**

<b>GHS Product Identifier</b>	MANGANESE DIOXIDE	
<b>Company Name</b>	CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)	
<b>Address</b>	38 - 50 Bedford Street GILLMAN SA 5013 Australia	
<b>Telephone/Fax Number</b>	Tel: (08) 8440-2000 Fax: (08) 8440-2001	
<b>Recommended use of the chemical and restrictions on use</b>	Oxidising agent, depolarizer in dry cell batteries (African and synthetic types only), pyrotechnics, matches, catalyst, scavenger and decolourizer, in building materials, manufacture of glass, painting (in porcelain industry), manufacture of dyes (in the textile industry), pigment, source of metallic manganese (as pyrolusite) and laboratory reagent.	
<b>Other Names</b>	<b>Name</b>	<b>Product Code</b>
	MANGANESE DIOXIDE TG Manganese peroxide, Manganese (IV) oxide, Manganese binoxide, Manganese superoxide, Pyrolusite	MT017
<b>Other Information</b>	EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday.	

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

**2. Hazard Identification**

<b>GHS classification of the substance/mixture</b>	Acute Toxicity - Inhalation: Category 4 Acute Toxicity - Oral: Category 4 Specific target organ toxicity - Repeated Exposure Category 2 (Respiratory tract) Carcinogenicity: Category 1
<b>Signal Word (s)</b>	DANGER
<b>Hazard Statement (s)</b>	H302 Harmful if swallowed. H332 Harmful if inhaled. H373 May cause damage to organs (respiratory tract) through prolonged or repeated exposure. H350 May cause cancer.
<b>Pictogram (s)</b>	Health hazard, Exclamation mark



<b>Precautionary statement – Prevention</b>	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P281 Use personal protective equipment as required.
<b>Precautionary statement – Response</b>	Swallowed P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330 Rinse mouth. Inhaled P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.



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**Precautionary statement – Storage**  
**Precautionary statement – Disposal**

P314 Get medical advice/attention if you feel unwell.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P405 Store locked up.  
P501 Dispose of contents/container to an approved waste disposal plant.

**3. Composition/information on ingredients**

**Chemical Characterization**  
**Information on Composition**  
**Ingredients**

Solid

Contains upto 4% respirable free crystalline silica in the form of quartz.

<u>Name</u>	<u>CAS</u>	<u>Proportion</u>	<u>Hazard Symbol</u>	<u>Risk Phrase</u>
Manganese dioxide	1313-13-9	>74 %	Xn	R20/22
Cryptomelane		0-15 %		
Geothite		0-7 %		
Quartz (crystalline silica)	14808-60-7	0-4 %		

**4. First-aid measures**

**Inhalation** If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

**Ingestion** Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. Give water to drink. DO NOT INDUCE VOMITING. Seek medical advice.

**Skin** Wash affected areas with copious quantities of water. If irritation occurs seek medical advice.

**Eye contact** Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. If rapid recovery does not occur, obtain medical attention

**First Aid Facilities** Maintain eyewash fountain and drench facilities in work area.

**Advice to Doctor** Treat symptomatically based on judgement of doctor and individual reactions of the patient.

**Other Information** For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

**5. Fire-fighting measures**

**Hazards from Combustion Products** May liberate toxic fumes in fire such as oxides of manganese.

**Specific Methods** Use extinguishing media most appropriate for the surrounding fire. No limitations to the type of extinguishing media.

**Decomposition Temp.** ~535 °C

**Precautions in connection with Fire** Wear SCBA and chemical splash suit. Structural firefighter's uniform will provide limited protection.

**6. Accidental release measures**

**Personal Precautions** Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

**Personal Protection** Wear protective clothing specified for normal operations (see Section 8)

**Clean-up Methods - Small Spillages** Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations.

**7. Handling and storage**

**Precautions for Safe Handling** Only use in well-ventilated areas. Avoid generation or accumulation of dusts. Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure. Avoid exposure - obtain special instructions before use

**Conditions for safe storage, including any incompatibilities** Store away from combustible materials. Keep containers securely sealed and protected against physical damage. Keep container dry Store at room temperature (15 - 25 °C).



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**8. Exposure controls/personal protection**

Occupational exposure limit values	Name	STEL		TWA		Footnote
		mg/m3	ppm	mg/m3	ppm	
	Quartz (crystalline silica)			0.1		
<b>Other Exposure Information</b>	A time weighted average (TWA) has been established for manganese, dust and compounds (as Mn) (Safe Work Australia) of 1 mg/m <sup>3</sup> and for Quartz [Silica Crystalline] [14808-60-7] (Safe Work Australia) of 0.1 mg/m <sup>3</sup> . The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.					
<b>Appropriate engineering controls</b>	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.					
<b>Respiratory Protection</b>	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.					
<b>Eye Protection</b>	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.					
<b>Hand Protection</b>	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Nitrile rubber gloves					
<b>Personal Protective Equipment</b>	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.					
<b>Footwear</b>	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.					
<b>Body Protection</b>	Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.					
<b>Hygiene Measures</b>	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.					

**9. Physical and chemical properties**

<b>Form</b>	Solid
<b>Appearance</b>	Brown-black crystals or powder.
<b>Odour</b>	Odourless.
<b>Decomposition Temperature</b>	~535 °C
<b>Melting Point</b>	Decomposes. Loses O <sub>2</sub> @ 535 °C yielding Mn <sub>3</sub> O <sub>4</sub> + O <sub>2</sub> .
<b>Solubility in Water</b>	Insoluble.
<b>Specific Gravity</b>	4.40
<b>pH</b>	7.9 (20% slurry)
<b>Molecular Weight</b>	86.94
<b>Other Information</b>	Insoluble in nitric and cold sulfuric acids. Slowly dissolves in cold hydrochloric acid with evolution of chlorine. In presence of hydrogen peroxide or oxalic acid, it dissolves in dilute sulfuric and nitric acids.

**10. Stability and reactivity**

<b>Chemical Stability</b>	Stable under normal use conditons.
<b>Conditions to Avoid</b>	Strong heating.
<b>Incompatible Materials</b>	Reducing agents, strong acids, aluminium, chlorine, oxidizing agents, phosphides, sulfur, sulfides and organic matter; risk of explosion with: azides, chlorates, oxidizable substances, hydrogen peroxide, combustible substances.
<b>Hazardous Decomposition Products</b>	Oxides of manganese.



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<b>Possibility of hazardous reactions</b>	Exothermic reaction with: aluminium, oxidizing agents, strong acids, reducing agents and phosphides.
<b>Hazardous Polymerization</b>	Will not occur.
<b>Other Information</b>	Risk of ignition or formation of inflammable gases or vapours with: hydrogen sulfide, halogen-halogen compounds.

**11. Toxicological Information**

<b>Toxicology Information</b>	No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. If mishandled or overexposed to this product the following symptom or effects may occur.
<b>Acute Toxicity - Oral</b>	LD50 (rat): >3478 mg/kg.
<b>Acute Toxicity - Inhalation</b>	Acute aspiration may cause drying and irritation of the respiratory tract, cough, dyspnea, sneezing, vomiting, cyanosis and pulmonary edema which may be delayed by up to several hours.
<b>Ingestion</b>	Harmful if swallowed. May cause irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract, nausea, vomiting, diarrhea and abdominal pain.
<b>Inhalation</b>	Harmful by inhalation. May cause tissue damage and pneumonia. Inhalation may cause delayed lung disease.
<b>Skin</b>	Contact with skin may result in irritation.
<b>Eye</b>	May cause soreness. May cause slight irritations.
<b>Carcinogenicity</b>	The product contains a small proportion of respirable crystalline silica as quartz (4%). Crystalline silica has been classified by International Agency for Research on Cancer (IARC) as carcinogenic to humans by inhalation (Group 1). Furthermore, crystalline silica can cause silicosis or other lung diseases on prolonged exposure.
<b>Reproductive Toxicity</b>	Reproductive hazard.
<b>Health Hazard</b>	Manganese compounds are generally only very slightly absorbable via the gastrointestinal tract.
<b>Chronic Effects</b>	Harmful, danger of serious damage to health by prolonged exposure through inhalation. The product contains respirable free crystalline silica. Repeated, prolonged or concentrated inhalation of respirable crystalline silica dust may lead to silicosis, a serious lung disease. The onset of silicosis is usually slow and lung damage may occur even when no symptoms or signs of ill-health have occurred. Silicosis can develop to a more serious degree even after exposure has ceased, and may also lead to other diseases including heart disease and scleroderma. Chronic exposure to manganese dioxide can lead to manganese poisoning, called manganism. It is characterized by CNS effects including languor, sleepiness, weakness, a mask-like appearance of the face, emotional instability, spastic gait, and anemia. Repeated inhalation of manganese dioxide dust can cause manganese pneumonitis and increase susceptibility to pneumonia.
<b>Mutagenicity</b>	No evidence of mutagenic effects.

**12. Ecological information**

<b>Ecotoxicity</b>	Quantitative data on the ecological effect of this product are not available.
<b>Persistence and degradability</b>	Methods for the determination of biodegradability are not applicable to inorganic substances.
<b>Short Summary of Assessment of Environmental Impact</b>	Due to the poor solubility of the product, no harmful effects on aquatic organisms are to be expected when handled and used with due care and attention.

**13. Disposal considerations**

<b>Disposal Considerations</b>	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.
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**14. Transport information**

<b>Transport Information</b>	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.
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**15. Regulatory information**

<b>Poisons Schedule</b>	Not Scheduled
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**16. Other Information****Literature  
References**

'Standard for the Uniform Scheduling of Medicines and Poisons No. 15', Commonwealth of Australia, November 2016.  
 Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.  
 National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.  
 Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011.  
 Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.  
 Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.  
 Safe Work Australia, 'Hazardous Substances Information System, 2005'.  
 Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.

**Contact  
Person/Point**

Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.  
 Paul McCarthy Ph. (08) 8440 2000 **DISCLAIMER STATEMENT:**  
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**Empirical Formula &  
Structural Formula**

MnO<sub>2</sub>  
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