

MANGANESE METAL COMPANY



Manganese Metal Company (Pty) Ltd
 Registration No. 1971/006609/07

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 Republic of South Africa
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MATERIAL SAFETY DATA SHEET Manganous Oxide

1.	IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY				
1.1	Identification of the substance or preparation :				
1.1.1	Product Name : Manganous Oxide				
1.1.2	Chemical Name : Manganese monoxide, MnO.				
1.2	Manufacturer : MANGANESE METAL COMPANY (PTY) LTD P O Box 323 NELSPRUIT. 1200 REPUBLIC OF SOUTH AFRICA Phone : (27) 013 7594600				
1.3	Emergency Telephone No. : ++27 013 7594600				
2.	COMPOSITION / INFORMATION ON INGREDIENTS :				
2.1	Components :	CAS No.	Weight %	Danger symbol	R and S-phrases
	Manganese	7439-96-5	50 - 54	Xn: Harmful	R : 10, 15, 15.1, 20, 22, 48. S : 3, 8, 9, 14.2, 14.5, 14.6, 15, 16, 17, 20, 21, 22, 26. S : 20, 22, 26.
	Iron	1309-37-1	10 - 16		None

THE FIRST CHOICE IN PURE MANGANESE

Directors: P D Beaven (Chairman), L J Arthur (Managing Director),
 P C Hechter, C Jacobs, B M Katempa, B R Wright, T G Atkinson (USA)



3.	HAZARDS IDENTIFICATION
3.1	Inhalation : May cause irritation to the respiratory organs.
3.2	Ingestion : Swallowing or absorption through the skin can cause acute or chronic damage to health. All contact with the human body must be avoided.
3.3	Chronic exposure to high concentrations of manganese may lead to Manganism, a disease of the central nervous system.
3.4	Possibility of skin irritation by sensitive persons.
3.5	May cause eye irritation.
4.	FIRST AID MEASURES
4.1	Inhalation : If inhaled, remove to fresh air. Gargle with water and clean nasal cavity. If difficulty with breathing is experienced, give oxygen and seek medical attention.
4.2	Eyes : Immediately irrigate eyes with 0.9% w/w sterile solution of sodium chloride or clean water. If foreign body cannot be removed by flushing or if irritation persists, seek medical attention.
4.3	Skin : Flush skin with water and wash thoroughly with soap or mild detergent and water, consult physician if irritation persists.
4.4	Ingestion : If swallowed, give large quantities of water or milk. Call physician. Chelation with calcium sodium ethylenediamine tetraacetic acid has been shown to reduce some of the neurological effects of manganism (Cook, Fahn, Brait, 1974).
5.	FIRE FIGHTING MEASURES
5.1	Fire and Explosion Characteristics : Dust explosion if mixed with fine organic material and exposed to naked flame.
5.2	Extinguishing Media : DO NOT USE WATER, FOAM, HALOGENATED GAS OR CARBON DIOXIDE. Burning manganese should be extinguished by smothering with dry agents such as Class D dry powder extinguisher, melting flux, sand or Talc (Magnesium Trisilicate). Pressurised extinguishers, with a slow discharge rate should be used to avoid scattering burning material and spreading the fire. When applying the extinguishing medium by hand do so carefully to avoid scattering the burning material. Keep containers cool and beware of re-ignition.
5.3	Fire Prevention : Keep Manganese particulate away from flames, sparks and sources of heat. Avoid suspension of Manganese dust or powder in the air as this may create an explosive mixture. Avoid accumulation of manganese dust by good housekeeping. Smoking should be prohibited.

6.	ACCIDENTAL RELEASE MEASURES
	<p>Spilled MnO may be collected and re-used. Spilled Manganese particulate should be promptly collected, using a natural fiber brush and non-sparking dustpan. Contaminated material should be disposed off as described in section 13.</p>
7.	HANDLING AND STORAGE
7.1	<p>Storage : Keep in closed, dry container. Store in dry area, away from moisture.</p>
7.2	<p>Handling : Soluble in concentrated mineral acids and in dilute acids in the presence of reducing agents. Use in well-ventilated area to keep dust below exposure limits. Do not allow dust or powder to accumulate on equipment or building surfaces.</p>
8.	EXPOSURE CONTROLS / PERSONAL PROTECTION
8.1	<p>Exposure Controls : Manganese OES 8 hr TLV-TWA = 0.2 mg/m³. Where it is possible that the Occupational Exposure Standard may be exceeded local exhaust ventilation must be provided.</p> <div data-bbox="373 1070 1184 1227" style="border: 1px solid black; padding: 10px; margin: 20px auto; width: fit-content;"> <p>*ACGIH 1998 TLVs and BEIs Threshold Limit Values for Chemical Substances and Physical Agents.</p> </div> <p>8.2 Respiratory Protection : Any dust and mist respirator except single-use and quarter-mask respirators for concentrations up to 10 mg/m³. Any supplied-air respirator for concentrations up to 25 mg/ m³. Any air-purifying, full-facepiece respirator with high-efficiency particulate filter for concentrations up to 50 mg/ m³. Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure demand or other positive-pressure mode for concentration up to 500 mg/m³.</p> <p>8.3 Hand Protection : Gloves suitable for the application.</p> <p>8.4 Eye Protection : Use safety spectacles to BS2091. During foundry operations goggles or Face Shield to BS2091 1 M should be used.</p> <p>8.5 Skin Protection : Wear flame and fire proof cotton drill overalls without external pockets or flaps in which powder or dust may collect.</p>

9.	PHYSICAL AND CHEMICAL PROPERTIES	
9.1	PHYSICAL STATE	: Solid powder (fine).
9.2	ODOUR AND APPEARANCE	: No odour. Gray-Green in colour.
9.3	ODOUR THRESHOLD	: Not listed.
9.4	DENSITY	: 5
9.5	CO-EFFICIENT OF WATER/OIL DISTRIBUTION	: Not listed.
9.6	VAPOUR PRESSURE (mm Hg)	: Not listed.
9.7	FLAMMABILITY	: Flammable if mixed with organic material and exposed to a naked flame.
9.8	AUTO-FLAMMABILITY	: Not listed.
9.9	BOILING POINT	: Not listed.
9.10	MELTING POINT	: Not listed.
9.11	pH	: Not listed.
9.12	VAPOUR DENSITY (Air = 1)	: Not listed.
9.13	EVAPORATION RATE (BuAc = 1)	: Not listed.
9.14	VOLATILES, %	: Not listed.
9.15	SOLUBILITY IN WATER	: Insoluble.
10.	STABILITY AND REACTIVITY	
10.1	Stability : Stable under normal conditions. Will slowly oxidise in air if heated at > 100 °C for prolonged periods.	
10.2	Incompatible materials : Not applicable.	
10.3	Conditions of reactivity : Soluble in mineral acids. Dust explosion if mixed with fine organic material and exposed to a naked flame. Violent reaction with H ₂ O ₂ , CaOH and F ₂ .	
10.4	Hazardous decomposition products : Will not occur.	
10.5	Hazardous polymerization : Will not occur.	

11.	TOXICITY INFORMATION :
11.1	Exposure limit : TLV-TWA of dust and compounds is 0,2 mg/m ³ .
11.2	Irritancy of Product : Exposure via inhalation, ingestion and contamination of the skin and eyes may cause irritation of the respective organs.
11.3	Inhalation : Inhalation of fumes or dust causes chills, fever, nausea, vomiting, coughing, weakness, muscular pain and headaches.
11.4	Skin : Exposure causes skin irritation.
11.5	Ingestion : Harmful if swallowed. Oral Rat LD50 = 9g/kg Chronic exposure to high concentrations of manganese may lead to manganism, a disease of the central nervous system.
11.6	Chronic effects : Massive dose or long-term exposure to dust - Poisoning via blood leading to mental deficiency and nervous disorder.
11.7	Carcinogenicity : Not listed by IARC and ACGIH as carcinogen.
11.8	Reproductive effects, Teratogenicity, Mutagenicity : An experimental tumorigen and mutagen.
11.9	Sensitisation to Product : Not available.
11.10	Name of Toxicologically SYNERGISTIC Products : Not available.
11.11	Restrictive Medical Conditions : Eye, skin, respiratory kidney or liver diseases or disorders would be aggravated by repeated or prolonged exposure to this chemical. Persons with history of alcoholism, psychiatric, neurological or liver dysfunction would be expected to be at increased risk from exposure.
12.	ECOLOGICAL INFORMATION :
	Chemically stable. Fine silt may be ingested by bottom feeding aquatic animals and plants. WGK = 1.
13.	DISPOSAL CONSIDERATIONS :
13.1	Residues containing valuable recoverable metals and should be forwarded for recycling. The waste container should be labeled H. Alternatively the waste should be disposed of in a permitted chemical waste facility in accordance with the requirements of federal, provincial and local government.

14.	TRANSPORT INFORMATION :
	UN No: Not listed. EINECS: 2311051. RID/ADR : IATA/ICO:
15.	REGULATORY INFORMATION :
	Classification : Not classified in the C.P.L. Approved List Risk Phrases : 10/15/15.1/20/ 22/ 48. Safety Phrases : 3/8/9/14.2/14.5/14.6/15/16/17/20/21/22/26.
16.	OTHER INFORMATION :
	Prepared by : Manganese Metal Company (Pty) Ltd. Telephone : +27 013 7594600 Preparation date : August 2003.
17	REFERENCES :
17.1	Cook DG, Fahn S, Brait KA: Chronic manganese intoxication, <i>Arch Neurol</i> 30: 59-64,1974.
17.2	ACGIH, 1998 TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents.
17.3	NIOSH Pocket Guide to Chemical Hazards 1994.
17.4	Luxon SG, Hazards in the Chemical Laboratory, 5 th Edition.
17.5	Weiss G, Hazardous Chemicals Data Book, 2 nd Edition.
17.6	Hamilton & Hardy. Industrial Toxicology, 5 th Edition.
17.7	MERCK Reagents, Chemicals and Diagnostics, 1996.
17.8	MERCK INDEX 12: 5762.

Notice to the Reader

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