SECTION 1: Chemical Product and Company Identification

1.1 Product identifier:

Product name	**: Manganous Oxide**
Chemical formula	: MnO
Chemical family	: Transition metal oxides
Synonyms	: Manganese (II) Oxide, Manganese Monoxide.
Molar mass	: 70.94 g/mol
CAS number	: 1344-43-0
EC number	: 215-695-8

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Animal feeds, fertilizers, food additive and dietary supplement.

1.3 Details of the supplier of the safety data sheet:

Kimleigh Chemicals SA (Pty) Ltd
11 Jasper van der Westhuizen Street, Potchindustria, Potchefstroom, North West Province, 2531, South Africa
Tel no: +27 (18) 293-1028 Fax no: +27 (18) 294-4079
Web : www.kimleigh.com E-mail : sheq@kimleigh.co.za

1.4 Emergency telephone number:

Kimleigh Chemicals SA (Pty) Ltd: Tel: +27 (18) 293-1028

SECTION 2: Hazards Identification

2.1. Classification of the substance:

Classification according to the Global Harmonized System (GHS):	Code:	Pictogram:	Signal word:
Health hazards: Toxic in contact with skin. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.	H311 H315 H319 H335	 GHS06	Danger

Environmental hazards: Not classified as hazardous		 GHS07	Warning

Precautionary statements:

P261 : Avoid breathing mist.
P280 : Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P388: : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 : Call a POISON CENTER or doctor/physician if you feel unwell.

2.2 Potential health effects:

Routes of entry: Eye contact, inhalation, ingestion, absorbed through skin.

Eyes: May cause eye irritation.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Inhalation: May be harmdul if inhaled. May causerespiratory tract irritation.

Ingestion: May be harmful if swallowed.

SECTION 3: Composition/Information on Ingredients

3.1 Substance:

Substance name: **Manganous Oxide**
Appearance: Green powder
Active ingredients: Manganese (Mn): 76 % minimum

SECTION 4: First Aid Measures

4.1 Description of first aid measures

General information

Remove patient from area of exposure.

Following inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Following skin contact

In case of contact, immediately flush skin with soap and plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation persists.

Following eye contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Following ingestion

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Rinse mouth with water. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

SECTION 5: Firefighting Measures

5.1 Products of combustion:

Manganese oxide fumes may be released.

Explosion hazards in presence of various substances:

Risk of explosion of the product in the presence of static discharge: **NO**.

Risk of explosion of the product in presence of mechanical impact: **NO**.

5.2 Firefighting media and instructions:

Use alcohol-resistant foam, water spray, dry chemical or carbon dioxide.

Protective clothing (Fire):

Wear NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.

Special remarks on fire hazards:

Prevent fire-fighting water from entering surface water or groundwater.

Special remarks on explosion hazards:

Not available.

SECTION 6: Accidental Release Measures

6.1 Personal Protection: Hands: Nitrile rubber gloves.
Eyes: Splash goggles.
Body: Protective work clothing.
Feet: Safety boots.

Wear appropiate respiratory and personal protection equipment. Isolate spill area and provide ventilation. Avoid dust formation. Avoid breathing vapours, mist or gas. Scoop or vacuum up spill using a vacuum system equipped with a high efficiency particulate air (HEPA) filtration system and place in a properly labeled closed container for further handling and disposal.

Environmental Precautions:
Do not allow to enter drains or to be released to the environment.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Protective measures

Advice on safe handling

Handle in a well-ventilated area in an enclosed, controlled process. Avoid creating dust. Ensure adequate ventilation if dusts are created. Do not breathe dust or fumes. Wash thoroughly before eating or smoking. See section 8 for information on personal protection equipment.

Advice on safe storage

Store in a cool, dry area. Store material tightly sealed in properly labeled containers. Protect from moisture. Store away from oxidizers. See section 10 for more information on incompatible materials.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

Engineering controls:
Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Personal Protection:
Protective clothing should be selected specifically for the working place, depending on concentration and quantity of substance handled.

Respiratory Protection: Use MSHA/NIOSH respirator when dust or fumes are present.
Eye Protection: Safety glasses
Skin Protection: Impermeable gloves, protective work clothing as necessary.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance:

Physical state:	Powder.
Colour:	Green Powder.
Odour:	Odourless.

9.2 *Other information*:

Boiling point:	Not available.
Melting point:	1650˚C (will oxidise to Mn_3O_4 if heated in air above 250˚C).
Vapour density:	Not available.
Flammability/explosive limits:	Not available.
Density (20˚C):	5.45 g/m3
Bulk density (20˚C):	1.281 kg/ℓ
Solubility:	Insoluble in water.

SECTION 10: Stability and Reactivity

10.1 Reactivity and stability

The product is stable under recommended conditions of storage and use.

10.2 Conditions of instability

No data available.

10.3 Hazardous decomposition products

Manganese oxide fumes.

10.4 Incompatibility with various substances

Avoid contact with strong oxidizing agents such as H_2O_2, F_2, $Ca(OCl)_2$ and organic peroxides.

10.5 Hazardous polymerization

No data available.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects:

	Effect dose / concentration	Value(s)	Species
Acute oral toxicity	LD50	3478 mg/kg	Rat

11.2 Other information:

Carcinogenicity:
No component of this product presented at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Toxicity to reproductive system:
Not available.

Acute effects on humans:
Manganese Compounds: Chronic exposure to high levels of manganese may result in a syndrome called manganism which typically begins with feelings of weakness and lethargy and progresses to other symptoms such as gait disturbances, clumsiness, tremors, speech disturbances, a mask-like facial expression and psychological disturbances. Divalent manganese(2+) is more toxic than is trivalent manganese(3+) compounds. Inhalation of manganese compounds in aerosols or fine dusts produces "metal fume fever"

SECTION 12: Ecological Information

12.1 Ecotoxicity:
Daphnia: *Daphnia magna* (EC50): 0.15mg/ℓ/48 h (Lit.)
Algae: *Scenedesmus quadrcauda* (IC50): 0.52mg/ℓ/5d.

12.2 Phytotoxicity:
No data available.

12.3 Mobility:
Do not allow to enter water or soil.

SECTION 13: Disposal Considerations

13.1 Treatment:

Consultation with a permitted waste disposal site (TSD) should be accomplished. Always contact a permitted waste disposal site (TDS) to assure compliance with all current, local, national, and governmental regulations.

SECTION 14: Transport Information

	Land transport (ADR/RID)	Inland waterway transport (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN No.	**3077**	**3077**	**3077**	**3077**
14.2 UN Proper shipping name	Environmentally hazardous substance, solid, N.O.S (Manganous oxide).	Environmentally hazardous substance, solid, N.O.S (Manganous oxide).	Environmentally hazardous substance, solid, N.O.S (Manganous oxide).	Environmentally hazardous substance, solid, N.O.S (Manganous oxide).
14.3 Transport hazard class(es)	**Class 9**	**Class 9**	**Class 9**	**Class 9**
Hazard label(s)		 GHS06 Danger	 GHS07 Warning	
14.4 Packing group	III	III	III	III
14.5 Transport label				

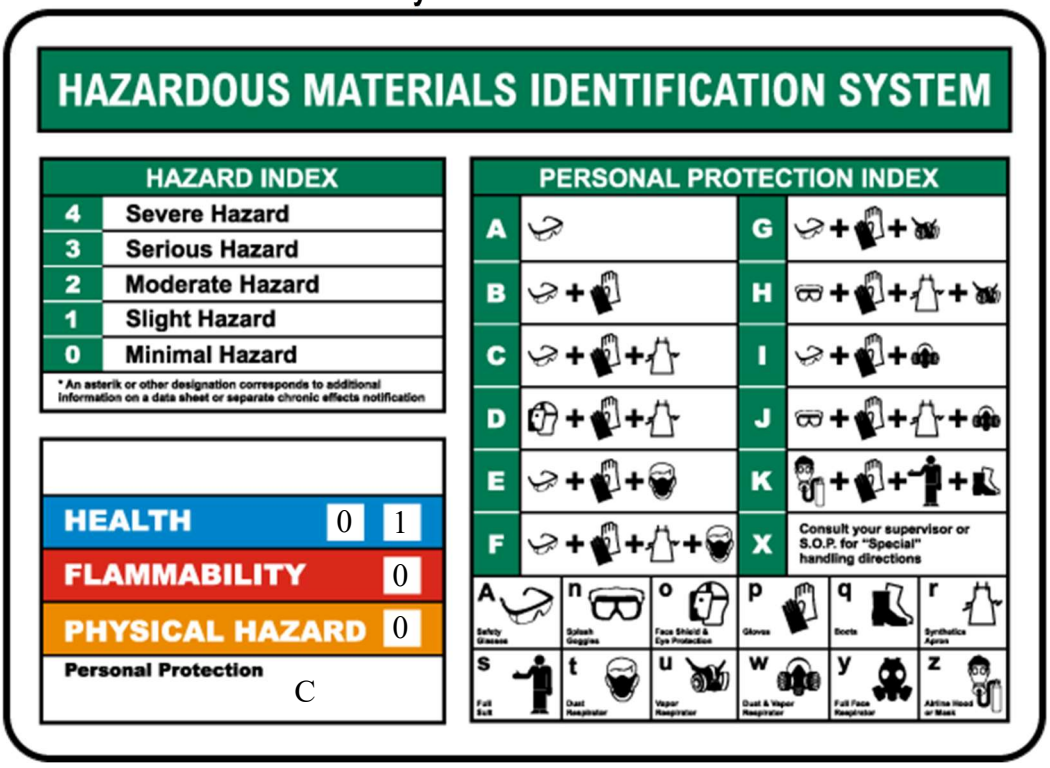
Section 15: Regulatory Information

15.1 Republic of South Africa Regulations:

National Water Act 36 of 1998. Occupational Health and Safety Act, 1993. Environmental Conservation Act 73 of 1989. Hazardous Substances Act, 1973. Provincial Ordinances and Local By-laws.

SECTION 16: Other Information

16.1 Hazardous material identification system:



16.2 Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with the International Organization for Standardization.

16.3 Disclaimer:

KIMLEIGH CHEMICALS SA (Pty) Ltd provides the information contained herein in good faith but does not assume any liability whatsoever for its accuracy or completeness. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.