

MATERIAL SAFETY DATA SHEET

Product Name: Manganese dioxide

CAS No.: 1313-13-9

Version: 0

1. Identification

Product Code : 90450
Company Name : Advent Chembio Private Limited
Address : W-288, MIDC, TTC INDUSTRIAL AREA, THANE-BELAPUR ROAD, RABALE, NAVI MUMBAI - 400 701.
E-mail : info@adventchembio.com
WEBSITE : www.adventchembio.com
Company Phone Number : 022-27690837

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent
MANGANESE DIOXIDE	1313-13-9	72 - 80%
Quartz	14808-60-7	1 - 3%
Barium	7440-39-3	1 - 2%
Nonhazardous Ingredients (Nuisance Particulates)	N/A	15 - 25%
Lead	7439-92-1	0 - 0.2%

3. Hazards Identification

Emergency Overview : DANGER! OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.
HARMFUL IF SWALLOWED OR INHALED. AFFECTS LUNGS, CENTRAL NERVOUS SYSTEM, BLOOD AND KIDNEYS. MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT. MAY AFFECT THE GUM TISSUE AND REPRODUCTIVE SYSTEM. INHALATION CANCER HAZARD. CONTAINS QUARTZ WHICH CAN CAUSE CANCER.
Risk of cancer depends upon duration and level of exposure.

Saf-T-Data

Health Rating : 3 - Severe (Cancer Causing)
Flammability Rating : 0 - None
Reactivity Rating : 3 - Severe (Oxidizer)
Contact Rating : 2 - Moderate

Potential Health Effects

Inhalation : Inhalation can cause a flu-like illness (metal fume fever). This 24- to 48-hour illness is characterized by chills, fever, aching muscles, dryness in the mouth and throat and headache. May irritate the

MATERIAL SAFETY DATA SHEET**Product Name:** Manganese dioxide**CAS No.:** 1313-13-9**Version:** 0**Ingestion**

respiratory tract. May increase the incidence of upper respiratory infections (pneumonia). Absorption of inorganic manganese salts through the lungs is poor but may occur in chronic poisoning. Lead can be absorbed through the respiratory system.

- : May cause abdominal pain and nausea. Although they are poorly absorbed through the intestines, inorganic manganese salts may produce hypoglycemia and decreased calcium blood levels should absorption occur. The symptoms of lead poisoning include abdominal pain and spasms, nausea, vomiting, headache. Acute poisoning can lead to muscle weakness, "lead line" on the gums, metallic taste, definite loss of appetite, insomnia, dizziness, high lead levels in blood and urine with shock, coma and death in extreme cases.

Skin Contact

- : No adverse effects expected.

Eye Contact

- : May cause irritation, redness and pain.

Chronic Exposure

- : Chronic manganese poisoning can result from excessive inhalation and ingestion exposure and involves impairment of the central nervous system. Early symptoms include sluggishness, sleepiness, and weakness in the legs. Advanced cases have shown fixed facial expression, emotional disturbances, spastic gait, and falling. Illness closely resembles Parkinson's Disease. Kidney effects, blood changes and manganese psychosis also may occur as a result of chronic exposure. Chronic inhalation exposure can cause lung damage. Inhalation of quartz is classified as a human carcinogen. Chronic exposure can cause silicosis; a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death. Lead is a cumulative poison and exposure even to small amounts can raise the body's content to toxic levels. The symptoms of chronic exposure are like those of ingestion poisoning; restlessness, irritability, visual disturbances, hypertension and gray facial color may also be noted.

Aggravation of Pre-existing Conditions

- : Persons with impaired respiratory function, psychiatric or neurological disturbances, and nutritional deficiencies may be more susceptible to the effect of this substance. Inhalation of quartz may increase the progression of tuberculosis; susceptibility is apparently not increased.

4. First Aid Measures**General information**

- : Get medical advice/attention if you feel unwell. If medical advice is needed, have product container or label at hand. Show this safety data sheet to the doctor in attendance.

Inhalation

- : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention

Ingestion

- : Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

MATERIAL SAFETY DATA SHEET**Product Name:** Manganese dioxide**CAS No.:** 1313-13-9**Version:** 0

- Skin Contact** : Not expected to require first aid measures. Wash exposed area with soap and water. Get medical advice if irritation develops.
- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

5. Fire fighting measures

- Fire** : Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles May cause ignition. Increases the flammability of any combustible material.
- Explosion** : Contact with oxidizable substances may cause extremely violent combustion.
- Fire Extinguishing Media** : Dry chemical, foam or carbon dioxide.
- Special Information** : In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

- Personal precautions, protective equipment and emergency procedures** : Keep unauthorized personnel away. Keep upwind. Ventilate closed spaces before entering them. Avoid inhalation of dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Methods and material for containment and cleaning up** : Sweep up and place in a clearly labeled container for chemical waste.
Clean surface thoroughly to remove residual contamination.
- Notification Procedures** : Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.
- Environmental precautions** : Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and Storage

- Precautions for safe handling** : Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Wear special protective equipment for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when

MATERIAL SAFETY DATA SHEET**Product Name:** Manganese dioxide**CAS No.:** 1313-13-9**Version:** 0

empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Conditions for safe storage, including any incompatibilities : Keep containers tightly closed. Store in cool, dry place. Store in a well-ventilated place.

8. Exposure Controls Personal Protection**Control parameters****Occupational exposure limits****OSHA Permissible Exposure Limit (PEL):**

5 mg/m³ (Ceiling) for Manganese
30 mg/m³ (%SiO₂+2) for Quartz, total dust
10 mg/m³ (%SiO₂+2) for Quartz, respirable fraction
0.5 mg/m³ (TWA) for Barium
0.05 mg/m³ (TWA), 0.03 mg/m³ (Action Level) for Lead

ACGIH Threshold Limit Value (TLV):

0.2 mg/m³ (TWA) for Manganese
0.025 mg/m³ (TWA), respirable fraction, A2 - Suspected Human Carcinogen. for Quartz
0.5 mg/m³ (TWA), A4 - not classifiable as a human carcinogen, for Barium
0.05 mg/m³ (TWA), A3 - animal carcinogen, for Lead

Ventilation System : A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal Respirators (NIOSH Approved): : If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a

MATERIAL SAFETY DATA SHEET**Product Name:** Manganese dioxide**CAS No.:** 1313-13-9**Version:** 0

	: full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection	: Wear protective gloves and clean body-covering clothing.
Eye Protection:	: Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.
Other	: Clothing contaminated with this material may be an increased fire hazard. Wash contaminated clothing as soon as possible.
Respiratory protection	: In case of inadequate ventilation use suitable respirator.
Hygiene measures	: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

9. Physical and Chemical Properties

Appearance	: Gray lumps or fine, black to brownish-black powder.
Odor	: Odorless.
pH	: 9 - 10 (10% aqueous slurry)
Melting point/freezing point	: > 1539C (> 2802F)
Initial boiling point and boiling range	: Not applicable.
Flash Point	: No information found.
Vapor pressure	: No information found.
Vapor density	: No information found.
Relative density	: 5.0
Solubility in water	: Insoluble in water.
Solubility (other)	: No data available.
Formula	: MnO ₂
Molecular Weight	: 86.94 g/mol

10. Stability and Reactivity

Stability	: Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products	: Toxic metal fumes may form when heated to decomposition.
Hazardous Polymerization	: Will not occur.
Incompatibilities:	: Easily oxidizable materials, sulfur, sulfides, phosphides, hypophosphites, chlorates, peroxides, aluminum powder, rubidium acetylide, potassium azide, chlorine trifluoride. Reacts with hydrochloric acid to form corrosive chlorine gas. Heating or rubbing this material with organic materials can cause a fire hazard
Conditions to Avoid:	: Heat, flame, ignition sources, air, incompatibles.

MATERIAL SAFETY DATA SHEET

Product Name: Manganese dioxide

CAS No.: 1313-13-9

Version: 0

11. Toxicological Information

Toxicological Data:

Manganese Dioxide: LD50 oral rat > 3478 mg/kg. Investigated as a reproductive effector. Quartz: Investigated as a tumorigen and mutagen. Lead: Investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity:

For manganese metal:

May damage the reproductive system. Has shown teratogenic effects in laboratory animals.

Lead and other smelter emissions are human reproductive hazards. (Chemical Council on Environmental Quality; Chemical Hazards to Human Reproduction, 1981).

Carcinogenicity:

Quartz: NIOSH considers this substance to be a potential occupational carcinogen.

For lead and inorganic lead compounds:

EPA / IRIS classification: Group B2 - Probable human carcinogen, sufficient animal evidence.

Cancer Lists

Ingredient	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans DIOXANE	US. National Toxicology Program (NTP) Report on Carcinogens DIOXANE	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Manganese Dioxide (1313-13-9)	No	No	None
Quartz (14808-60-7)	Yes	No	1
Barium (7440-39-3)	No	No	None
Nonhazardous Ingredients (Nuisance Particulates)	No	No	None
Lead (7439-92-1)	No	No	2 b

12. Ecological Information

Ecotoxicity

Acute hazards to the aquatic environment :

Fish Product : No data available.

Aquatic invertebrates Product : No data available.

Chronic hazards to the aquatic environment :

Fish Product : No data available.

Aquatic invertebrates Product : No data available.

Toxicity to Aquatic Plants Product: : No data available.

Persistence and degradability

Biodegradation Product : No data available.

BOD/COD ratio Product : No data available.

MATERIAL SAFETY DATA SHEET**Product Name:** Manganese dioxide**CAS No.:** 1313-13-9**Version:** 0**Bioaccumulative potential****Bioconcentration factor (BCF) Product** : No data available on bioaccumulation.**Partition coefficient n-octanol /****water (log Kow) Product** : No data available.**Mobility in soil** : No data available.**Other adverse effects** : No data available.**13. Disposal consideration****Disposal instructions** : Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.**Contaminated packaging** : Since emptied containers retain product residue, follow label warnings even after container is emptied.**14. Transport Information**

	UN No.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
DOT					Not regulated.
IMDG					Not regulated.
IATA					Not regulated.

15. Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Safety, health and environmental regulations/legislation specific for the substance or mixture
No Data Available.

MATERIAL SAFETY DATA SHEET**Product Name:** Manganese dioxide**CAS No.:** 1313-13-9**Version:** 0**16. Other Information****Issue Date :**01/08/2014**Version : 0**

Disclaimer: This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. ADVENT CHEMBIO PRIVATE LIMITED makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the technical instructor in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of ADVENT CHEMBIO PRIVATE LIMITED and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).