



MATERIAL SAFETY DATA SHEET

1. We would like to inform our customers that this material is subject to the 29 CFR 1910.1200 OSHA requirements and to the Canadian WHMIS requirements.

1. IDENTIFICATION

PRODUCT NAME: MANGANESE DIOXIDE (HIGH PURITY)

Chemical Description: Grey-black-granular/powder

EMERGENCY TELEPHONE NUMBER: 800-424-9300 (24 hr, Chemtrec)

Environmental Health & Safety Information: 1-800-237-7000

EDITION DATE: 09-16-2011

APPROVED BY: Kevin J. Domack

2. INGREDIENTS

INGREDIENT NAME	CAS #	%	TLV/TWA
Manganese Dioxide as compound	1313-13-9	90-99	C 5 (Mn TWA as dust)*
Non-hazardous particulates	None	2-5	none

*Source: OSHA 29 CFR 1910.1000 Table Z-1, 2 or 3 3-01-2010

3. PHYSICAL DATA

Melting Point @ 760 mm Hg (°C):	535 C (Will oxidize to higher Mn compounds)
Vapor Pressure (mm Hg @ 25°C):	NA
Vapor Density (Air = 1):	NA
Specific Gravity :	5.03 (Water =1)
Percent Volatile by Volume (%):	None
Evaporation Rate (Butyl Acetate = 1):	NA
Physical State:	Solid-stable
Solubility in Water (% by Weight):	Insoluble (soluble in most acids)
pH:	NA
Appearance and Odor:	Granular solid-Black of gray-odorless

4. FIRE & EXPLOSION HAZARD DATA

FLASH POINT: Not flammable

FLAMMABLE LIMITS IN AIR (%): LOWER (LEL): NA UPPER (UEL): NA

EXTINGUISHING MEDIA: Smothering media as dry chemical, sand or Talc

AUTO-IGNITION: NA

SPECIAL FIRE FIGHTING PROCEDURES: Manganese Dioxide is an oxidizer. Do not mix Manganese Dioxide with combustible organic materials (fire potential) or strong acids (heat producing reactions). Keep Manganese Dioxide mixed with other combustible materials away from sparks or flames.

5. HEALTH HAZARD DATA

Recommendations and limitations (with source*): TWA Ceiling 5 Mg/M3 (OSHA Table Z as Mn-dust)
TWA 1 Mg/M3 (NIOSH as dust)-STEL 3 Mg/M3 (NIOSH as dust)-Not listed as a carcinogen

EFFECTS OF OVEREXPOSURE: Overexposure can cause mild to moderate irritation to skin, eyes, nose and throat depending upon duration of contact. Tearing of eyes and red, dry skin are possible. Direct inhalation of Manganese Dioxide can cause difficult, shallow respiration and fever or cold-like symptoms. Central nervous system disorders have been report to occur 5 months to 2 years after continued elevated exposure.

EMERGENCY FIRST AID PROCEDURES:

Skin and Eyes:

Wash off skin with soap and water with copious amount of clean water. Flush eyes for at least 15 minutes. Seek trained medical assistance if irritations develop. Wash hands, face and clothing regularly.

Ingestion or inhalation:

If ingested, do not induce vomiting unless directed by medical personnel and victim is conscious. Call a physician if overexposure symptoms are present. For inhalation exposures remove person to fresh air, treat symptoms and support breathing as required. Inhalation exposure can aggravate pre-existing respiratory conditions such as bronchitis or emphysema-consult a physician if pre-existing conditions may be present.

6. STABILITY AND REACTIVITY

STABLE OR UNSTABLE: Stable

INCOMPATIBILITY (MATERIALS TO AVOID): Reacts with easily oxidized materials, hydrochloric acid to form chlorine gas, and other chemical classes such as peroxides, fluorides, and chlorates.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxidizes materials as listed above. Oxidized material may release hazardous components.

HAZARDOUS POLYMERIZATION: Will Not Occur

7. DISPOSAL AND TRANSPORTATION

LEAKS OR SPILLS: Use clean-up procedures that minimize dust. Use approved respirators when ventilation cannot be supplied. Vacuuming is preferred to recover material-use HEPA equipped vacuum. Clean-up materials may be recycled. Dry recovered materials may be placed in closed containers for proper storage and waste management.

WASTE DISPOSAL METHOD: Always comply with federal, state or local requirements. Properly label and contain manganese containing materials for recovery or disposal.

TRANSPORTATION: Manganese Dioxide is not a DOT controlled material. For containers in transportation, an OSHA precautionary statement should be placed on the individual containers. The warning should contain the following statements: **WARNING: Contains Manganese-Avoid Inhaling Dust, Chronic Exposure to heavy concentrations of manganese containing dust can cause central nervous system disorders.**

8. PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): Full face-supplied air respirators are recommended if they are the only means of protection available in variable or unknown concentrations. Use ventilation engineering controls when available.

VENTILATION: Local exhaust ventilation is recommended. Use approved respirator if unavailable or in concentrations are expected to exceed the threshold values.

EYE/HAND PROTECTION: Use safety glasses and washable/disposable gloves when handling.

OTHER PRECAUTIONS: Regularly wash clothing to prevent prolonged skin contact or accidental inhalation of dust.

9. REPORTING REQUIREMENTS

Depending upon the volume and manner in which the Manganese Dioxide is used there may be federal or state reporting requirements or employee training requirements. Examples of regulations users should review are: CERCLA 103, EPCRA 313 (Form R), EPCRA 211/312, OSHA 1910.1200, Michigan (CM), California Proposition 65, and international requirements such as WHIMIS (Canada-toxic material label requirements).

As of the date of this edition, the following regulations do not apply to this material: RCRA Hazardous Waste, TSCA registry or reporting, EPCRA Extremely Hazardous Substances reporting.

10. SARA 312/313

Manganese compounds may be required to be reported as immediate (for dust) and delayed (chronic exposure) hazards to SERC/LEPC if threshold quantities are exceeded. Manganese compounds are listed as Form R reportable in section 313 for certain facilities exceeding stated thresholds. For more information contact EPA's EPCRA Hotline at (800) 535-0202.

NOTICE: The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Rayovac makes no warranty expressed or implied.