

## Material Safety Data Sheet

### MANGANESE OXIDE

#### Section 1 - Product Identification

Product Name : Manganese Oxide  
CAS No. : 1344-43-0  
Synonym : MnO, "Natural manganosite", "Cassel green", "manganese monoxide", "manganese (II) oxide", "C.I. 77726", "manganese green",  
Nu-manese, Rosenthal  
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#### Section 2 – Composition/Information on Ingredients

##### Substances


Name of substance	Manganese Oxide
Identifiers	
CAS No	1344-43-0
Molecular formula	MnO
Molar Mass	70.9374 g/mol

#### Section 3 – Hazardous Ingredients & Occupational Exposure Limits

##### Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 4), H332  
Skin Corrosion/Irritation Category 2 (H315)  
Serious Eye Damage/Eye Irritation Category 2 (H319)  
Specific target organ toxicity - (single exposure) Category 3 (H335)

##### Labelling according Regulation (EC) No 1272/2008

Pictogram 

Signal word - Warning

##### Hazard statement(s)

H315 - Causes skin irritation  
H319 - Causes serious eye irritation  
H335 - May cause respiratory irritation  
H302 + H312 - Harmful if swallowed or in contact with skin

##### Precautionary statement(s)

P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
P312 - Call a POISON CENTER or doctor/physician if you feel unwell  
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P337 + P313 - If eye irritation persists: Get medical advice/attention

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P332 + P313 - If skin irritation occurs: Get medical advice/attention

#### **Other hazards**

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB) Toxic to terrestrial vertebrates

### **Section 4 – First-Aid Measures**

**General Measures:** Remove patient from area of exposure.

**INHALATION:** Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.

**INGESTION:** Rinse mouth with water. Do not induce vomiting. Seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

**SKIN:** Remove contaminated clothing, brush material off skin, wash affected area with soap and water. Seek medical attention if symptoms persist.

**EYES:** Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

**Most Important Symptoms/Effects, Acute and Delayed:** May cause irritation.

**Indication of Immediate Medical Attention and Special Treatment:** No other relevant information available.

### **Section 5 – Employee Protection**

**Extinguishing Media:** Use suitable extinguishing agent for surrounding materials and type of fire..

**Unsuitable Extinguishing Media:** No information available.

**Specific Hazards Arising from the Material:** May release manganese oxide fumes if involved in a fire.

**Special Protective Equipment and Precautions for Firefighters:** Wear full face, self-contained breathing apparatus and full protective clothing.

### **Section 6 – Accidental Release Measures**

**Personal Precautions, Protective Equipment, and Emergency Procedures:** Wear appropriate respiratory and protective equipment specified in section 8. Isolate spill area and provide ventilation. Avoid breathing dust or fume. Avoid contact with skin and eyes.

**Methods and Materials for Containment and Cleaning Up:** Avoid creating dust. 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**

**Precautions for 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.

**Conditions for Safe Storage:** Store in a cool, dry area. Store material tightly sealed in properly labeled containers. Protect from moisture. Store away from oxidizers.

### **Section 8 – Exposure Controls/Personal Protection (later)**

**Exposure guidelines:**

**A: General Product Information**

No exposure guidelines have been established. There are exposure limits for, Manganese and Inorganic compounds, as Mn and Manganese fume (CAS # 7439-96-5)

#### B: Component Exposure Limits

The exposure limits given are for Manganese and Inorganic compounds, as Mn and Manganese fume:

ACGIH: TWA = 0.2 mg/m<sup>3</sup> (compounds and fumes)

OSHA: TWA = 1 mg/m<sup>3</sup> (fume) vacated 1989 PEL, 5 mg/m<sup>3</sup> (ceiling) (compounds) vacated 1989 PEL STEL = 3 mg/m<sup>3</sup> (compounds and fume)

NIOSH RELs TWA = 1 mg/m<sup>3</sup> (compounds and fume) STEL = 3 mg/m<sup>3</sup> (compounds and fume) IDLH = 500 mg/m<sup>3</sup> (compounds and fume)

DFG MAKs: TWA = 0.5 mg/m<sup>3</sup> TWA (inhalable fraction) (compounds and fume) PEAK = 3•MAK, 15 min., average value, 1-hr interval

**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.

#### Individual Protection Measures, Such as Personal Protective Equipment:

**Respiratory Protection:** Use suitable 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

#### Appearance:

Form: Powder

Color: Green

Odor: Odorless

Odor Threshold: Not determined

pH: No data

Melting Point: 1839 oC

Boiling Point: No data

Flash Point: N/A

Evaporation Rate: N/A

Flammability: N/A

Upper Flammable Limit: N/A

Lower Flammable Limit: N/A

Vapor Pressure: No data

Vapor Density: N/A

Relative Density (Specific Gravity): 5.37 g/cc

Solubility in H<sub>2</sub>O: Insoluble

Partition Coefficient (n-octanol/water): Not determined

Autoignition Temperature: No data

Decomposition Temperature: No data

Viscosity: N/A

#### Other information

No data available.

## Section 10 – Stability and Reactivity

**Reactivity:** No specific test data available.

**Chemical Stability:** Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** No data

**Conditions to Avoid:** No data

**Incompatible Materials:** Strong oxidizers.

**Hazardous Decomposition Products:** Manganese oxide fume.

## Section 11 – Toxicological Information

### Acute toxicity

#### A: General Product Information

Acute exposure may cause mild skin, respiratory and eye irritation. Chronic exposure to dusts may lead to pneumonitis and manganese toxicity. Inhalation exposures of rabbits to Manganous Oxide dust 4 hours/day for 3 to 6 months at levels of 10 to 20 mg/m<sup>3</sup> resulted in decreased hemoglobin and erythrocytes in the blood; manganese pneumonitis did not occur, but fibrotic changes in the lung resembling those in silicosis were observed.

#### B: Component LD<sub>50</sub>/LC<sub>50</sub> (CAS # 1344-43-0)

LD<sub>50</sub> (Subcutaneous-Mouse) 1 gm/kg

#### C: Component TDLo/TCLo (CAS # 1344-43-0)

TDLo (Subcutaneous-Monkey) 2 gm/kg/22 weeks-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Neurotransmitters or modulators (putative): catecholamine levels in CNS, Neurotransmitters or modulators (putative): dopamine in striatum; TDLo (Subcutaneous-Mouse) 6000 mg/kg/12 days-intermittent.

#### D: Component LDLo/LCLo (CAS # 1344-43-0)

No data available.

#### E: Component LD/LC (CAS # 1344-43-0)

LD (Intratracheal-Rat) > 50 mg/kg

**Carcinogenicity** – No data available

**Reproductive toxicity** – No data available

**Specific target organ toxicity - single exposure** – Category 3, Respiratory system

**Specific target organ toxicity - repeated exposure** – No data available

**Aspiration hazard** - No data available

**Additional Information** – No data available

## Section 12 – Ecological Information

No data available

## Section 13 – Disposal Considerations

**Waste from Residues/Unused Products:** Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point.

**European Waste Catalogue (EWC):** According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

**Other Information:** Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.

## Section 14 – Transport Information

Not regulated for transport of dangerous goods: DOT, IATA, IMDG

## Section 15 – Regulatory Information

### 1. US Federal regulations

As a manganese compound, Manganous Oxide is a SARA Section 313 (40 CFR 372.65) compound; the SARA 313 Category Code is N450. This material is a CERCLA (40 CFR 302.4) compound, but has no specific CERCLA RQ assigned. This material is not listed under SARA Section 302 (40 CFR 355 Appendix A). **Manganous Oxide (1344-43-0)**

CERCLA: Final RQ = Not Applicable

SARA 302 (EHS TPQ) = There are no specific Threshold Planning Quantities for Manganous Oxide. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4,540 kg) therefore applies, per 40 CFR 370.20.

### 2. International regulations

No data available

### 3. National regulations

**WGK Classification** Water endangering class = 3 (self classification)

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

### 4. US State regulations

No data available

## Section 16 - Additional Information

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product