



A Division of Stream Restoration Incorporated (Non-Profit)  
 434 Spring Street Ext., Mars, PA 16046  
 Phone: (724) 316-3417 Fax: (724) 776-0166  
 ccp@cleancreek.org www.cleancreek.org

# Material Safety Data Sheet

Updated: 7/14/2011

## Recovered Manganese Oxide Powder – Manganese Oxide MSDS Number: CCP-02

### I. Product and Company Information

Product Name(s)            Recovered Manganese Oxide Powder-  
                                          Manganese Oxide

Product Number(s)        CCP-02

Company                      Clean Creek Products  
                                          [a division of Stream Restoration Incorporated (Non-Profit)]  
                                          434 Spring Street Ext., Mars, PA 16046  
                                          United States of America

Business Phone              724-776-0161

Fax                                724-776-0166

### II. Composition / Information on Ingredients

CAS No.                        1313-13-9

EINECS No.                   215-202-6

Product Name                Recovered Manganese Oxide Powder –  
                                          Manganese Oxide

Synonyms                      Manganese (IV) Dioxide, Manganese  
                                          Superoxide, Manganese Peroxide, Black  
                                          Manganese Oxide, Manganese Black, Pyrolusite

Chemical Name                Manganese Dioxide

Chemical Formula            MnO<sub>2</sub>

Major Oxide Constituents					
Product	% MnO <sub>2</sub>	% SiO <sub>2</sub> *	% Al <sub>2</sub> O <sub>3</sub>	% Fe <sub>2</sub> O <sub>3</sub>	% CaO
Recovered Manganese Oxide CCP-02	24	23	12	4	11
CAS No.	1313-13-9	14808-60-7	1344-28-1	20344-49-4	1305-78-8

*\*Naturally occurring Crystalline Silica which is likely present in quantities greater than 0.1% for this product has been reviewed by IARC. IARC believes there is sufficient evidence to conclude that Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans.*

*Exposure Limits for Quartz [OSHA PEL: 10mg/M<sup>3</sup>TWA;ACGIH TLV: 0.1 mg/M<sup>3</sup>TWA]*

### III. Hazards Identification

Hazards Identification	Contains Crystalline Silica (CAS #14808-60-7)
Potential Health Effects	Information concerning the hazards of this product was limited. Skin contact may cause mechanical irritation due to the abrasion. Eye contact will result in no specific effects other than general particulate irritation in the eye. Not absorbed by the body. Excessive exposure above the TLV can give mild pulmonary irritation.
Inhalation	Dust may cause irritation to respiratory tract, symptoms may include coughing, sore throat, and shortness of breath. The inhalation of manganese dioxide fume can cause 'metal fume fever': a 24-48 hr flu-like illness characterized by chills, fever, aching muscles, dryness in the mouth and throat, and headache. Inhalation may increase the incidence of upper respiratory tract and pulmonary infections. Inhalation could also cause emphysema, acute pulmonary edema, and in chronic cases could contribute to manganese adsorption through the lungs.
Ingestion	May cause abdominal pain and nausea. Although manganese salts are poorly absorbed through the intestines, they may produce hypoglycemia and decreased blood calcium levels should absorption occur.
Skin Contact	May cause mechanical abrasion irritation
Eye Contact	May cause mechanical abrasion irritation, redness, pain, blurred vision, and discoloration.
Chronic Exposure	Chronic inhalation/ingestion exposures to manganese dioxide can lead to manganese poisoning, call manganism. Manganism primarily involves the central nervous system. Early symptoms include languor, sleepiness, poor appetite, and weakness in the legs. Advanced cases have shown fixed facial expression, muscle cramps, twitching and tremors, changes in mood and personality, emotional disturbances (such as uncontrollable laughter followed by crying), spastic gait, a tendency to fall while walking, and anemia have all been found in workers exposed to the dust or fumes of manganese compounds. Later

symptoms closely resemble Parkinson's disease. Repeated or prolonged exposure may also damage the kidneys, liver, induce manganese psychosis, and may cause a decrease in heart rate. Long term overexposure to manganese dioxide in combination with crystalline silica causes silicosis, a form of pulmonary fibrosis. Continued exposure to silica can lead to cardiopulmonary impairment.

Aggravation of Pre-existing Conditions

Persons with pre-existing impaired pulmonary function, psychiatric or neurological disturbances, and nutritional deficiencies may be more susceptible to the effects of this material.

**IV. First Aid Measures**

After Inhalation	Remove to fresh air. Obtain medical help for any breathing difficulty.
After Skin Contact	Wash skin thoroughly with mild soap and water.
After Eye Contact	Immediately flush eyes with plenty water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical help if irritation persists.
After Ingestion	Dilute with water to induce vomiting as directed by medical personnel. Never give anything by mouth to and unconscious person.

**V. Fire Fighting Measures**

Fire	Not considered to be a fire hazard
Explosion	Not considered to be an explosion hazard
Extinguishing Media	Material will not support combustion
Special Risks	Does not produce toxic effects
Special Protective Equipment for Firefighters	NIOSH – approved respirators to avoid dust inhalation

**VI. Accident Release Measures**

Personal Precautions & Procedures	Wear NIOSH approved dust mask/respirator and safety glasses
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Methods for Spill Cleanup

Ventilate area of spill. Wear appropriate personal protective equipment as specified in Section VIII (exposure controls/personal protection). Individuals involved in cleanup should use respiratory protection for airborne dust. For spills: pick up and place material in a suitable container for reclamation or disposal, using a method that does not generate excess dust. Wetting the spill with a water spray may help to keep the airborne dust levels down. Wash the spill area after material pickup is complete. Material is not considered to be hazardous to the environment.

**VII. Handling and Storage**

Handling

Do not breathe dust. Good industrial hygiene practice requires that employee exposure be maintained below TLV. This is preferably achieved through the provision of adequate ventilation where necessary. Where dust cannot be controlled in this way, personal respiratory protection should be employed.

Storage

Keep in a tightly closed container, store in a cool, dry, ventilated area.

**VIII. Exposure Controls / Personal Protection**

Airborne Exposure Limits

OSHA Permissible Exposure Limit (PEL): 5 mg/m<sup>3</sup> ceiling for manganese compounds as Mn

ACGIH Threshold Limit Value (TLV): 0.2 mg/m<sup>3</sup> (TWA) for manganese, elemental and inorganic compounds as Mn

General Hygiene Measures

Wash thoroughly with soap and water.

Ventilation System

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion 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 exposure limits are exceeded, use appropriately rated NIOSH-approved dust mask/respirators to avoid breathing dust.

Skin Protection	Use leather or rubber gloves
Eye Protection	Use safety glasses with side shields or dust tight goggles to avoid eye irritation.

## IX. Physical and Chemical Properties

Appearance	Physical State: Solid Color: Black-Gray Form: Fine Powder Typical -200 Mesh (varies upon request)
Odor	Odorless
pH Value	3-9
Boiling Point	N/A
Melting Point	N/A
Flash Point	N/A
Flammability	N/A
Autoignition Temperature	N/A
Explosive Properties	N/A
Explosive Limits	N/A
Vapor Pressure (mm Hg)	N/A
Vapor Density (Air=1)	N/A
Solubility	Insoluble in water
Specific Gravity (Water=1)	5.0
Viscosity	N/A
Evaporation Rate (BuAc=1)	N/A
Bulk Density	N/A
Decomposition Temperature	N/A

## X. Stability and Reactivity

Stability	Stable under ordinary conditions of use and storage.
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Hazardous Decomposition Products	Toxic metal fumes may form when heated to decomposition.
Hazardous Polymerization	Will not occur
Incompatibilities	Easily oxidizable materials, sulfur, sulfides, phosphids, 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	Incompatibilities, heat, flames, and ignition sources.

## XI. Toxicological Information

Toxicological testing has not been conducted with this product, at the current time. For reference the acute oral toxicity LD<sub>50</sub> oral (RAT) for manganese dioxide is 3,478 mg/kg (RAT).

## XII. Ecological Information

Environmental Fate	Not hazardous to the environment
Environmental Toxicity	Not hazardous to the environment
	<i>*No information found indicating any known harmful effects to the environment.</i>

## XIII. Disposal Considerations

Substance Disposal	Consult a local expert for advice on the disposal of the material. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous water and require appropriate analysis to determine specific disposal requirements. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state, and local requirements.
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## XIV. Transport Information

RID/ADR	Non-hazardous for road transport
IMDG	Non-hazardous for sea transport
IATA	Non-hazardous for air transport

## XV. Regulatory Information

Designation according to EU guidelines

The material is not subject to classification according to the EEC Directive 67/548/EEC. This is a natural product.

WHMIS

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## XVI. Additional Information

NFPA Ratings

Health: 2

Flammability: 0

Reactivity: 0

Label Hazard Warning

**WARNING! BREATHING DUSTS MAY CAUSE IRRITATION TO RESPIRATORY TRACT.**

Label Precautions

Keep container closed. Use only with adequate ventilation.

Label First Aid

If swallowed, dilute with water and induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If in eyes, flush eyes with plenty water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical help if irritation persists after any exposure.

Product Use

Artisan Use

**WARRANTY:** This information was last updated on 14<sup>th</sup> of July 2011. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge about this and other similar products with regards to appropriate health and safety precautions. It does not represent any guarantee of the properties of the product. Clean Creek Products and Stream Restoration Incorporated shall not be held liable for any damage resulting from handling, storage, disposal, or from contact with the above product. It is the users' responsibility to determine the suitability of this product and the relevance of this information for their use.