

Oxide  
Powder & Gran

001  
0015  
2004

MATERIAL SAFETY DATA SHEET

**Identity:**

Common Name: Manganese Mineral Ore

CAS Number: None Established

SECTION I

Manufacturer's Name: American Minerals

Address: 301 Pigeon Point Road  
New Castle, DE 19720

Emergency Telephone Number: 302-652-3301

Telephone Number for Information: 302-652-3301

Date Prepared: 04-01-90

SECTION II-HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Material	CAS Number	% Weight	Transitional <sup>1</sup> OSHA PEL	OSHA PEL	ACGIH TLV
Manganese dioxide* as Mn: Dust and Comp.	1313-13-9	69-84			
			5 MG/M3 Ceiling	5 MG/M3 Ceiling	5 MG/M3
Fume			5 MG/M3 Ceiling	1 MG/M3 3 MG/M3 STEL	1 MG/M3 3 MG/M3 STEL
Iron oxide as Fe	1309-37-1	2-10	10 MG/M3	10 MG/M3 for Iron oxide fume	5 MG/M3 for Iron oxide fume
Silicon dioxide as SiO <sub>2</sub> (Quartz)	14808-60-7	3-8	10 MG/M3 %SiO <sub>2</sub> +2	0.1 MG/M3 Resp. Dust	0.1 MG/M3 Resp. Dust

Page Two - Manganese Mineral Ore

Material	CAS Number	% Weight	Transitional <sup>1</sup> OSHA PEL	OSHA PEL	ACGIH TLV
Amorphous Silica	61790-53-2	2-8	<u>80 MG/M3</u> %SiO <sub>2</sub> ,	6 MG/M3	10 MG/M3
Aluminum Oxide as Al	1344-28-1	2-5	15 MG/M3 Total Dust 5 MG/M3 Resp. Dust	15 MG/M3 Total Dust 5 MG/M3 Resp. Dust	10 MG/M3 Total Dust
Barium Oxide as Ba	1304-28-5	0.1-2	0.5 MG/M3	0.5 MG/M3	0.5 MG/M3

Trace (<1.0%) amounts of calcium oxide, magnesium oxide, copper, lead and zinc exist in this product.

<sup>1</sup> The transitional OSHA-PELs are the previous PELs. On January 19, 1989, OSHA published its amendments to the existing air contaminants standards which are contained in 29 CFR 1910.1000 Tables Z-1, Z-2, and Z-3. These new limits became effective on March 1, 1989, and are indicated as FINAL OSHA-PEL's. As defined by OSHA, a STEL (Short-Term Exposure Limit) is the employee's 15-minute, time-weighted average exposure which must not be exceeded at anytime during a workday.

**\*Note** - SARA Title III - Section 313 - Toxic Chemical

**EPA SARA Title III Hazard Categorization**

As defined by 40 CFR 370, the product is categorized as both an "immediate (acute) health hazard" and a "delayed (chronic) health hazard".

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### SECTION III-PHYSICAL/CHEMICAL CHARACTERISTICS

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Boiling Point: N/A

Freezing Point: N/A

Vapor Pressure (mm Hg): N/A

Specific Gravity: N/A

Vapor Density (AIR = 1): N/A

Evaporation Rate: N/A

Melting Point: N/A

Appearance and Odor: Black powder or granular material. No odor

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### SECTION IV-FIRE AND EXPLOSION HAZARD DATA

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Flash Point (Method Used): N/A

Flammable limits: N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Dry chemical, salt or sand

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: Manganese mineral ore should be kept away from heat and flammable materials. When heated above 1,000°F. manganese dioxide liberates oxygen which will support combustion.

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### SECTION V-REACTIVITY DATA

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Stability:

Unstable:

Stable: X

Conditions to avoid: See Incompatibility

**Incompatibility:** Manganese mineral ore is incompatible with chlorates, aluminum dirubidium acetylide, hydrogen sulfide, reducing substances, potassium azide, chlorine trifluoride, hydrogen peroxide, and sodium peroxide. If manganese mineral ore is processed further to release manganese metal, then the resulting manganese metal would be incompatible with aluminum, chlorine, fluorine, water, nitric acid, nitrogen dioxide, phosphorus, sulfur dioxide, rubidium acetylide, hydrogen sulfide and chlorine trifluoride. Manganese metal can also react with oxidizers and can generate hydrogen when in contact with water or steam.

**Hazardous Decomposition or Byproducts:** None. If further processing released manganese metal it would be possible that hydrogen could be generated when manganese metal contacted water or steam.

**Hazardous Polymerization:**

May Occur:

Will Not Occur: X

Conditions to Avoid: None

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**SECTION VI-HEALTH AND HAZARD DATA**

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**Route(s) of Entry:** Inhalation: Yes Skin: No Ingestion: No Other: None

**Health Hazards:**

Although free or elemental manganese is not present in this ore, a discussion of the components of the ore is provided as information relating to potential future use of the ore.

**Acute:**

Manganese ore does not exert any significant acute effects however if further processing releases manganese metal or metallic iron, the possibility of metal fume fever exists.

Barium oxide dust may cause skin and nasal irritation

High concentrations of ore dust can result in irritation of the eyes

**Chronic:**

Manganese ore exposure has been associated with pneumonia and manganese poisoning. Poisoning has been reported to occur after a period of 6 months to 24 years after exposure to the ore. Elemental manganese fume and dusts, when in high concentrations, may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections. Some studies have indicated a correlation between manganese exposure and bronchial asthma. Concentrations averaging 210 MG/M3 have been associated with pneumonia.

Iron oxide fume or dust exposures, when excessive, may result in development of a benign pneumoconiosis, called siderosis, which is observable as an x-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

Silicon dioxide or crystalline silica (quartz) is an acute irritant dust. The prolonged inhalation of excessive levels of dusts containing free silica may result in the development of the disabling pulmonary fibrosis known as silicosis. Silicosis is a disease characterized by generalized fibrotic changes and the development of miliary nodules in both lungs, and clinically by shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to tuberculosis and characteristic x-ray findings. It has been concluded from toxicological and epidemiological studies that silicon dioxide should be classified as a carcinogen.

Aluminum fume and dust exposures have been associated with lung disease but the effects are complicated due to other simultaneous exposures to silica and iron oxide.

Barium exerts a physiological effect on muscle tissue such as bronchial, skeletal, intestinal, arterial and especially heart muscle. Barium has been observed to effect the neural tissue and the hematopoietic system.

**Carcinogenicity:** NTP: Yes IARC Monographs: Yes OSHA Reg.: No  
Crystalline silica is considered by NTP as reasonably anticipated to be a carcinogen and by IARC as an animal carcinogen and limited human carcinogen.

**Signs and Symptoms of Exposure:**  
Exposure to metal fumes and dusts may cause metal fume fever. Excessive manganese exposure may cause emotional disturbances, weakness and sleepiness.

**Medical Conditions Generally Aggravated by Exposure:**  
Excessive dust exposures may aggravate impaired respiratory systems.

**Emergency and First Aid Procedures:**

**Inhalation:** If acute overexposure to dusts or fumes occurs, remove victim from the adverse environment and seek medical attention. Give artificial respiration if victim has stopped breathing.

**Eye Contact:** Should eye contact occur flush with large amounts of water. Seek prompt medical attention.

**Skin Contact:** If dust gets on the skin, wash the contaminated area with soap and water.

**Ingestion:** Ingestion is not a probable source of exposure to the dust or fume. If particles are ingested, give 1-2 glasses of water or milk. Induce vomiting only if the victim is fully conscious and has not convulsed. Seek prompt medical attention.

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## SECTION VII-PRECAUTIONS FOR SAFE HANDLING AND USE

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**Steps to be Taken in Case Material is Released or Spilled:**

If there is a spill of ore, clean up using methods which avoid dust generation such as dry or wet vacuuming. Compressed air should not be used to clean up spills. During cleanup, skin and eye contact and inhalation of dust should be avoided as much as practical. Provide local exhaust or dilution ventilation as required. Collect material in appropriately labeled containers.

**Waste Disposal Method:**

Dispose of in accordance with applicable regulations.

**Precautions to be Taken in Handling and Storing:**

Store in a cool, dry, well-ventilated area. Do not store near strong acids or flammable materials.

**Other Precautions:** N/A

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## SECTION VIII-CONTROL MEASURES

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### **Respiratory Protection:**

When engineering controls are not sufficient to control overexposure, appropriate NIOSH approved respirators should be used, such as half-mask air-purifying respirators. A competent health professional should be consulted for respirator selection.

**Ventilation:** Local Exhaust: As needed, to control dust and fume.  
Mechanical (General): As needed, to control dust and fume.  
Special and Other: N/A

### **Protective Gloves:**

As needed, to protect against physical hazards.

### **Eye Protection:**

Safety glasses with side shields are recommended when there is a reasonable probability of injury during handling.

### **Other Protective Clothing or Equipment: N/A**

This fact sheet was prepared by Comprehensive Safety Compliance, Inc., a professional occupational safety and health consultant. The information, recommendations and suggestions were compiled from reference materials and other sources believed to be reliable. However, the fact sheet's accuracy or completeness is not guaranteed by either American Minerals, its affiliates, or Comprehensive Safety Compliance, Inc., nor is any responsibility assumed or implied for any loss or damage resulting from inaccuracies or omissions. Since conditions of use are beyond our control, we expressly disclaim all warranties, including warranties of merchantability and fitness for a particular purpose. This fact sheet is not intended as a license to operate under, or recommendation to infringe on, any patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.