

Plasmaterials, Inc.  
 2268 Research Drive  
 Livermore, CA 94550  
 Ph: (925) 447-4030 Fx: (925) 447-4031  
<http://plasmaterials.com>

## MATERIAL SAFETY DATA SHEET

### Section 1- PRODUCT IDENTIFICATION

COMPOSITION <b>MnO2</b>	PRODUCT NAME <b>Manganese Oxide</b>
----------------------------	--

### Section 2- HAZARDOUS INGREDIENTS

Note: Products under normal conditions do not represent an inhalation, ingestion or contact health hazard.

MATERIAL OR COMPONENT	CAS NUMBER	WT%	EXPOSURE LIMITS	
			OSHA PEL (Mg/M3)	ACGIH TLV(MG/M3)
<b>Manganese Oxide</b>	<b>1313-13-9</b>	<b>100%</b>	<b>5mg/m<sup>3</sup></b>	<b>5mg/m<sup>3</sup></b>

### Section 3- PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS) <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other	APPEARANCE AND ODOR <b>Black Odorless Powder</b>
MELTING POINT (BASE METAL) <b>N/A</b>	SPECIFIC GRAVITY <b>5.0gm/cc</b>

### Section 4- FIRE AND EXPLOSION

Flash Point (Method Used) <b>N/A</b>	Flammable Limits <b>N/A</b>	LEL <b>N/A</b>	UEL <b>N/A</b>
EXTINGUISHING MEDIA <b>Use graphite, dry sodium chloride, dry chemical, carbon dioxide or an agent for metal fires.</b>			
SPECIAL FIRED FIGHTING PROCEDURES <b>Wear full face, self-contained breathing apparatus with full protective clothing. Isolate runoff to prevent environmental pollution.</b>			
UNUSUAL FIRE AND EXPLOSION HAZARDS <b>Flammable by chemical reaction. Violent thermaite reaction when heated with aluminum. Potentially explosive with hydrogen peroxide.</b>			

### Section 5- REACTIVITY DATA

STABILITY <b>Stable.</b>	INCOMPATABILITY (MATERIALS TO AVOID) <b>Strong oxidizers, hydrogen peroxide, sulfuric acid, sodium peroxide, chlorates, organic materials, aluminum powder &amp; sulfur</b>
CONDITIONS TO AVOID <b>None</b>	
HAZARDOUS DECOMPOISTION PRODUCTS <b>Manganese may react w/water to produce hydrogen peroxide and unsaturated hydrocarbons in the event of combustion.</b>	

## Section 6- HEALTH HAZARD GUIDE

MAJOR EXPOSURE HAZARD

**Inhalation**  **Skin**  **Skin Absorption**  **Eye Contact**  **Ingestion**

EFFECTS OF OVEREXPOSURE

**INHALATION:** Considered the primary route of exposure, may cause irritation to the respiratory tract. Inhalation of fine metal dusts may cause metal fume fever. Chronic inhalation of manganese compound dust particles for a period of three months may cause pulmonary pneumonitis. Manganese may also cause manganism, psychic and neurological disorders affecting the central nervous system.

**INGESTION:** Possibility of absorption is poor under normal circumstances.

**SKIN:** May cause irritation. Moderately toxic by subcutaneous route.

**EYE:** May cause chronic conjunctivitis damage.

**TARGET ORGANS:** May affect central nervous system, kidneys, respiratory system and liver.

EMERGENCY & FIRST AID PROCEDURES

**INGESTION:** Induce vomiting with milk or water.

**INHALATION:** Remove from exposed area to fresh air immediately; keep warm and quiet, give oxygen if breathing is difficult.

**SKIN CONTACT:** Remove contaminated clothing. Wash affected area with soap or mild detergent and large amounts of water.

**EYE CONTACT:** Flush eyes with lukewarm water lifting up the upper and lower lids for at least fifteen minutes. If irritation persists, seek medical attention.

## Section 7- SPILL OR LEAK PROCEDURES

SPILL OR LEAK PROCEDURES

**Wear appropriate protective equipment. Isolate spill area, provide ventilation, vacuum spill and place in a closed container for disposal.**

WASTE DISPOSAL METHODS

**Observe all federal, state and local regulations when storing or disposing.**

## Section 8- SPECIAL PROTECTION

RESPIRATORY:

**NIOSH approved dust-mist-vapor respirator.**

VENTILATION

**Local exhaust: Maintain concentration at or below the PEL & TLV.**

EYE PROTECTION & PROTECTIVE CLOTHING

**Safety glasses, rubber gloves, and protective gear suitable to prevent contamination.**

## Section 9- SPECIAL PRECAUTIONS

**Implement engineering and work practices to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking.**

The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, express or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control 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 the product.