

# HALLIBURTON

## MATERIAL SAFETY DATA SHEET

**Product Trade Name:** MICROMAX FF

**Revision Date:** 05-Aug-2014

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Trade Name:** MICROMAX FF

**Synonyms:** None

**Chemical Family:** Mineral

**Application:** Weight Additive

**Manufacturer/Supplier** Halliburton Energy Services

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**Prepared By** Chemical Compliance

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### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	ACGIH TLV-TWA	OSHA PEL-TWA
Manganese tetraoxide	1317-35-7	60 - 100%	0.2 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>

### 3. HAZARDS IDENTIFICATION

**Hazard Overview** May cause eye, skin, and respiratory irritation. May cause metal fume fever with flu-like symptoms.

### 4. FIRST AID MEASURES

**Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Ingestion** Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

**Notes to Physician** Not Applicable

## 5. FIRE FIGHTING MEASURES

<b>Flash Point/Range (F):</b>	Not Determined
<b>Flash Point/Range (C):</b>	Not Determined
<b>Flash Point Method:</b>	Not Determined
<b>Autoignition Temperature (F):</b>	Not Determined
<b>Autoignition Temperature (C):</b>	Not Determined
<b>Flammability Limits in Air - Lower (%):</b>	Not Determined
<b>Flammability Limits in Air - Lower (oz./ft3):</b>	Not Determined
<b>Flammability Limits in Air - Upper (%):</b>	Not Determined
<b>Flammability Limits in Air - Upper (oz./ft3):</b>	

**Fire Extinguishing Media** All standard firefighting media.

**Special Exposure Hazards** Not applicable.

**Special Protective Equipment for Fire-Fighters** Not applicable.

**NFPA Ratings:** Health 1, Flammability 0, Reactivity 0

**HMIS Ratings:** Health 1, Flammability 0, Physical Hazard 0 , PPE: E

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautionary Measures** Use appropriate protective equipment. Avoid creating and breathing dust.

**Environmental Precautionary Measures** None known.

**Procedure for Cleaning / Absorption** Scoop up and remove.

## 7. HANDLING AND STORAGE

**Handling Precautions** Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust.

**Storage Information** Store in a cool, dry location. Store away from acids.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls** Use in a well ventilated area. Localized ventilation should be used to control dust levels.

**Respiratory Protection** If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.  
Dust/mist respirator. (N95, P2/P3)

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Safety glasses.

**Other Precautions** None known.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Powder
<b>Color:</b>	90% < 5um
<b>Odor:</b>	Red brown
<b>pH:</b>	Odorless
<b>Specific Gravity @ 20 C (Water=1):</b>	7-10
<b>Density @ 20 C (lbs./gallon):</b>	4.8
<b>Bulk Density @ 20 C (lbs/ft3):</b>	Not Determined
<b>Boiling Point/Range (F):</b>	195
<b>Boiling Point/Range (C):</b>	3027
<b>Freezing Point/Range (F):</b>	1650
<b>Freezing Point/Range (C):</b>	2822-3002
<b>Vapor Pressure @ 20 C (mmHg):</b>	1550-1650
<b>Vapor Density (Air=1):</b>	Not Determined
<b>Percent Volatiles:</b>	Not Determined
<b>Evaporation Rate (Butyl Acetate=1):</b>	Not Determined
<b>Solubility in Water (g/100ml):</b>	Insoluble
<b>Solubility in Solvents (g/100ml):</b>	Not Determined
<b>VOCs (lbs./gallon):</b>	Not Determined
<b>Viscosity, Dynamic @ 20 C (centipoise):</b>	Not Determined
<b>Viscosity, Kinematic @ 20 C (centistokes):</b>	Not Determined
<b>Partition Coefficient/n-Octanol/Water:</b>	Not Determined
<b>Molecular Weight (g/mole):</b>	Not Determined

## 10. STABILITY AND REACTIVITY

**Stability Data:** Stable

**Hazardous Polymerization:** Will Not Occur

**Conditions to Avoid** Avoid contact with hydrochloric acid. Can react to release chlorine gas.

**Incompatibility (Materials to Avoid)** None known.

**Hazardous Decomposition Products** None known.

**Additional Guidelines** Not Applicable

## 11. TOXICOLOGICAL INFORMATION

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### **Acute Toxicity**

##### **Inhalation**

May cause respiratory irritation. May cause Metal Fume Fever (if heated) which is characterized by chills, fever, aching muscles, dryness and metal taste in mouth and throat, headaches, sneezing, nausea, and irritation of the nose and trachea. May cause irritation and depression. Severe exposures may cause psychoses and mental deterioration.

##### **Eye Contact**

May cause mechanical irritation to eye.

##### **Skin Contact**

May cause mechanical skin irritation.

<b>Ingestion</b>	In large amounts: May cause abdominal pain, vomiting, nausea, and diarrhea. May cause hypoglycemia.
<b>Chronic Effects/Carcinogenicity</b>	Prolonged or repeated exposure may cause central nervous system and brain effects. Prolonged or repeated exposure may result in manganism. Symptoms are similar to Parkinson's disease. Prolonged or repeated exposure may cause kidney, lung and blood effects.

#### Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Manganese tetraoxide	1317-35-7	> 2000 mg/kg (Rat)	No data available	> 5.17 mg/L (Rat, 4h)

## 12. ECOLOGICAL INFORMATION

#### Ecotoxicological Information

##### Ecotoxicity Product

<b>Acute Fish Toxicity:</b>	EC50: > 20000 mg/kg (Abra alba)
<b>Acute Crustaceans Toxicity:</b>	Not determined
<b>Acute Algae Toxicity:</b>	EC50: > 10000 mg/l (Skeletonema costatum)

##### Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Manganese tetraoxide	1317-35-7	EC50(72h): > 10000 mg/l (Skeletonema costatum) EC50(72h): > 100 mg/L (Desmodesmus subspicatus)	LC50(96h): > 100 mg/L (orhynchus mykiss)	No information available	EC50(48h): > 100 mg/L (Daphnia magna) LOEC(8d): 100% (Ceriodaphnia dubia)

#### 12.2. Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

Substances	Persistence and Degradability
Manganese tetraoxide	The methods for determining biodegradability are not applicable to inorganic substances.

#### 12.3. Bioaccumulative potential

No information available

#### 12.4. Mobility in soil

No information available

#### 12.5. Results of PBT and vPvB assessment

No information available.

#### 12.6. Other adverse effects

## 13. DISPOSAL CONSIDERATIONS

**Disposal Method** Bury in a licensed landfill according to federal, state, and local regulations.

**Contaminated Packaging** Follow all applicable national or local regulations.

## 14. TRANSPORT INFORMATION

#### US DOT

<b>UN Number:</b>	Not restricted.
<b>UN Proper Shipping Name:</b>	Not restricted

**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

**US DOT Bulk DOT (Bulk)** Not Applicable

**Canadian TDG u10**

**UN Number:** Not restricted.  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

**IMDG/IMO**

**UN Number:** Not restricted.  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

**IATA/ICAO**

**UN Number:** Not restricted.  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable

**Special Precautions for User:** None

## 15. REGULATORY INFORMATION

### US Regulations

<b>US TSCA Inventory</b>	All components listed on inventory or are exempt.
<b>EPA SARA Title III Extremely Hazardous Substances</b>	Not applicable
<b>EPA SARA (311,312) Hazard Class</b>	Acute Health Hazard Chronic Health Hazard
<b>EPA SARA (313) Chemicals</b>	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
<b>EPA CERCLA/Superfund Reportable Spill Quantity</b>	Not applicable.
<b>EPA RCRA Hazardous Waste Classification</b>	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
<b>California Proposition 65</b>	All components listed do not apply to the California Proposition 65 Regulation.
<b>MA Right-to-Know Law</b>	One or more components listed.
<b>NJ Right-to-Know Law</b>	One or more components listed.
<b>PA Right-to-Know Law</b>	One or more components listed.

### Canadian Regulations

**Canadian DSL Inventory** All components listed on inventory or are exempt.

**WHMIS Hazard Class** D2B Toxic Materials

## **16. OTHER INFORMATION**

**The following sections have been revised since the last issue of this SDS**

Not applicable

**Additional information** For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

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**\*\*\*END OF MSDS\*\*\***