

## SECTION 1: CHEMICAL PRODUCT - COMPANY IDENTIFICATION

**PRODUCT:** Manganese Sulfate

**TRADE NAMES:** Agri-B Manganese Sulfate

**SYNONYMS:** Manganese Sulfate

**CHEMICAL FAMILY:** Inorganic Salt

**RECOMMENDED USE:** For blending with finished fertilizers

**Agri-Business Technologies, Inc.**

1102 Third Avenue

Albany, Georgia 31707

(229) 436-4677

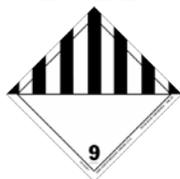
(800) 535-3820

**(800) 424-9300 - CHEMTREC (24 Hour Emergency Response)**

## SECTION 2: HAZARDS IDENTIFICATION

**NFPA RATINGS:** (SCALE 0-4): HEALTH=2, FIRE=0, REACTIVITY=0

**EMERGENCY OVERVIEW:** White to light pink free-flowing granules or powder. The primary health hazard associated with this product is the potential for irritation of the eyes, skin, nose and other tissues that come in contact with dusts or particulates of this product. Inhalation overexposures may cause metal fume fever and affect nervous system and lungs. Avoid contact with eyes and/or skin. May cause respiratory tract, skin and eye irritation, possibly severe. Wash thoroughly after handling. Work in a well ventilated area.



Miscellaneous Hazard



Environmental Hazard



Target Organ Health Hazard



Eye, respiratory Tract, Skin Irritant

## SECTION 3: COMPOSITION, INFORMATION ON INGREDIENTS

**COMPONENTS:** Manganese Sulfate

**FORMULA:** MnSO<sub>4</sub>

**CAS NUMBER:** 10034-96-5

**PERCENTAGE:** 32% Manganese, 18% Sulfur

## SECTION 4: FIRST AID MEASURES and EFFECTS of OVEREXPOSURE

**INHALATION:** Remove from exposure area to fresh air immediately. If breathing is difficult, give oxygen. If breathing has stopped, perform artificial resuscitation. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

**Short Term Effects:** May cause irritation of the nasal membranes and upper respiratory tract, possibly severe. Additional effects may include difficulty breathing, low blood pressure, dizziness, bluish skin color and lung congestion.

**Long Term Effects:** Harmful if inhaled. Inhalation overexposure can cause metal fume fever. Chronic overexposure may cause central nervous system effects. As the disease progresses into the intermediate phase, psychosis develops with symptoms of visual hallucinations, double vision, impaired hearing, uncontrollable impulses, mental confusion, and euphoria. In the last stage of the disease, neurological disturbances develop that simulate Parkinson's disease. These disturbances include excessive salivation, muscle weakness, muscle rigidity, tremor of upper extremities and head, and impaired gait. The severity of chronic manganese poisoning depends upon the length of exposure and the stage of the disease when exposure is terminated. The prognosis is more favorable in the young and in those with only a few years exposure. Chronic manganese poisoning is not a fatal disease but it can be extremely disabling

**SKIN CONTACT:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of product remains (at least 15-20 minutes). If burns occur, proceed with the following: cover affected area securely with sterile, dry, loose-fitting dressing. Treat symptomatically and supportively. Get medical attention immediately.

**Short Term Effects:** May cause irritation, possibly severe.

**Long Term Effects:** Same effects as short term exposure.

**EYE CONTACT:** Flush eyes immediately with large amounts of water or normal saline solution, occasionally lifting upper and lower lids until no evidence of product remains (approximately 15-20 minutes). Cover with sterile bandages. Get medical attention immediately.

**Short Term Effects:** Contact may cause irritation, possibly severe. Additional effects may include tearing and/or blurred vision.

**Long Term Effects:** Same effects as short term exposure.

**INGESTION:** Wash out mouth with water. Dilute the product immediately with large amounts of water or milk. Removal by gastric lavage should be performed by qualified medical personnel unless the victim is already vomiting ( Dreisbach, Handbook of Poisoning, 12<sup>th</sup> Ed.). Get medical attention immediately. Treat symptomatically and supportively. If vomiting occurs, turn on side and keep head lower than hips to prevent aspiration.

**Short Term Effects:** May cause burns. Additional effects may include fever, nausea, vomiting, diarrhea, stomach pain, blood in the stool, inability to urinate, low blood pressure, kidney damage, liver damage and convulsions.

**Long Term Effects:** Ingestion of Manganese Sulfate Monohydrate can cause nausea, vomiting, and abdominal cramps. Chronic ingestion of this product may cause systemic poisoning with symptoms similar to those described for chronic inhalation

**NOTE TO PHYSICIAN: Antidote:** The antidote, for poisoning from zinc salts recommended, is from Dreisbach, Handbook of Poisoning, 12th Edition. However, the decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel.

## **SECTION 5: FIRE FIGHTING MEASURES**



**FIRE AND EXPLOSION HAZARD:** Negligible fire and explosion hazard in dust form when exposed to heat or flame.

**EXTINGUISHING MEDIA:** Dry chemical, carbon dioxide, water spray or foam, as appropriate for surrounding material. For larger fires, use water spray, fog or regular foam (1996 North American Emergency Response Guidebook, RSPA P 5800.7, Guide Number 171).

**FIREFIGHTING:** Move product from fire area if you can without risk. Extinguish fire using agent suitable for type of surrounding fire and/or chemicals. Do not use water directly on material. Avoid breathing dust or vapors; keep upwind. Dike area with suitable material to prevent runoff and contamination of water sources. Cover and secure all drains with impermeable material to prevent runoff from entering the drains.

**HAZARDOUS COMBUSTION PRODUCTS:** Thermal decomposition may include toxic and hazardous metallic oxides and sulfur.

### **FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGERS TO LIFE OR HEALTH:**

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode

## **SECTION 6: ACCIDENTAL RELEASE MEASURES**

**OCCUPATIONAL SPILL:** Do not touch spilled material. Pick-up spills by scooping, shoveling or vacuuming and place into containers for reuse or disposal. Wear respirator, protective clothing and gloves. Keep unnecessary people away. Isolate hazard area and deny entry to avoid material dispersal. Wash thoroughly after handling. Maintain adequate ventilation.

## **SECTION 7: HANDLING AND STORAGE**

**STORAGE:** Store under roof to avoid outdoor any run-off could contaminate streams and/or ground water. It is recommended that this product be stored in a dry area and product transfer be done on an impervious surface so any spills can be contained.

**WARNING:** No smoking, eating or drinking in the areas where products are stored and/or handled.

Observe all federal, state and local regulations when storing this product.

## **SECTION 8: EXPOSURE LIMITS, PERSONAL PROTECTION**

### **EXPOSURE LIMITS (TWA):**

**OSHA:** 5 mg/m<sup>3</sup> Manganese, 1 mg/m<sup>3</sup> as fume

**ACGIH:** 1mg/m<sup>3</sup> Manganese, 3 mg/m<sup>3</sup> as fume STEL

**VENTILATION:** Provide local exhaust or process enclosure ventilation.

**EYE PROTECTION:** Wear safety glasses with splash shields or safety goggles/shield to prevent contact with this product.

**EMERGENCY WASH FACILITIES:** Where there is any possibility that an employee's eyes and/or skin may be exposed to this product, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

**CLOTHING:** Wear long pants, long sleeved shirt, boots and other appropriate protective clothing and equipment to prevent repeated or prolonged skin contact with this product. Although skin contamination is not generally a problem, it increases the possibility of ingestion through poor personnel hygiene. Contaminated work clothing and shoes should not be taken from the workplace.

**GLOVES:** Wear appropriate protective gloves to prevent contact with this product.

**RESPIRATOR:** The respirator selected must be based on contamination levels found in the work place and specific to the job assignment. Do not exceed the working limits of the respirator. Respirators must also be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

**Hazards:** Breathing dusts or particulates generated by Manganese Sulfate Monohydrate can lead to irritation of the nose, throat or respiratory system. Symptoms of such exposure could include coughing, sneezing, coughing and bronchitis. Repeated or prolonged exposure can cause metal fume fever, with resulting flu-like symptoms of chills and fever, sweating, and weakness. Chronic overexposure can also cause central nervous system effects including muscle weakness, speech impairment, insomnia, tremors and mental incapacity. Symptoms of such reaction can be delayed for several years. Work in a well ventilated area.

**FOR IMMEDIATELY DANGERS TO LIFE OR HEALTH:** Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**DESCRIPTION:** White to light pink Granules or Powder

**MOLECULAR FORMULA:** MnSO<sub>4</sub>

**MOLECULAR WEIGHT:** 169.01

**pH:** 5.0 @ 10% solution

**MELTING POINT:** Not Determined

**BOILING POINT:** Not applicable

**VAPOR PRESSURE:** No applicable

**VAPOR DENSITY:** Not applicable

**WATER SOLUBILITY:** 100% by weight

**SOLVENT SOLUBILITY:** Insoluble in alcohol

**SPECIFIC GRAVITY:** 2.9

## **SECTION 10: STABILITY AND REACTIVITY**

**REACTIVITY:** Stable under normal temperatures and pressures.

**CONDITIONS TO AVOID:** May burn but does not ignite readily. Avoid contact with strong oxidizers, alkaloids or acids, and/or excessive heat. Do not allow spilled material to contaminate water sources.

**INCOMPATIBILITIES:**

**Oxidizers (Strong):** Fire and explosion hazard.

**HAZARDOUS DECOMPOSITION:** Thermal decomposition products may include toxic and hazardous metallic oxides and sulfur.

**POLYMERIZATION:** Has not been reported to occur under normal temperatures and pressures.

## **SECTION 11: TOXICOLOGICAL INFORMATION**

**TOXICITY DATA:**

**Oral:** LD<sub>50</sub> (anhydrous): 332 mg/kg, intraperitoneal, mouse; mutagenic, reproductive effects, tumorigenic data-see Registry of Toxic Effects of Chemical Substances (RTECS) file. (monohydrate): mutagenic, reproductive effects data (RTECS)

**Carcinogenicity:** There was equivocal evidence of carcinogenic activity of Manganese Sulfate, Monohydrate in male and female mice, based on the marginally increased incidences of thyroid gland follicular cell adenoma and the significantly increased incidences of follicular cell hyperplasia

**NTP:** None

**OSHA:** None

**Teratogenic Effects:** Tests in mice produced spermatogenesis (including genetic material, sperm morphology, motility and count) in mice

**LOCAL EFFECTS:** Corrosive-inhalation, skin, eye, ingestion

**ACUTE TOXICITY LEVEL:** Moderately toxic by ingestion

**TARGET EFFECTS:** Poisoning may affect the liver and kidneys

**HEALTH EFFECTS:**

**INHALATION:**

**Acute Exposure:** Inhalation of dust may cause irritation of the respiratory tract with sore throat, coughing, shortness of breath, labored breathing, pain in the nose, mouth, and throat, and burns of the mucous membranes. If sufficient quantities are inhaled, pulmonary edema may develop, often with a latent period of 5 - 72 hours. The symptoms may include tightness in the chest, dyspnea, frothy sputum, cyanosis, and dizziness. Physical findings may include weak, rapid pulse, hypotension, hemoconcentration, and moist rales.

**Chronic Exposure:** Depending on the concentration and duration of exposure, repeated or prolonged exposure may cause inflammatory and ulcerative changes in the mouth and possibly bronchial and gastrointestinal disturbances.

## **SKIN CONTACT:**

**Acute Exposure:** Direct contact may cause irritation, redness, pain, and possibly burns.

**Chronic Exposure:** Effects depend on concentration and duration of exposure. Repeated or prolonged contact with metal salts may result in dermatitis with erythematous, papular, and granulomatous reactions in susceptible individuals or effects similar to acute exposure.

## **EYE CONTACT:**

**Acute Exposure:** Direct contact may cause irritation, redness, pain, blurred vision, and burns, possibly severe. The degree of injury depends on the concentration and duration of contact. The full extent of the injury may not be immediately apparent. Application of a 20% zinc oxide solution to corneas infected with herpetic keratitis ulcers resulted in edema and residual scarring upon healing.

**Chronic Exposure:** Effects depend on concentration and duration of exposure. Repeated or prolonged contact may result in conjunctivitis or effects as in acute exposure.

## **INGESTION:**

**Acute Exposure:** Ingestion may cause a burning pain in the mouth and throat, fever, nausea, violent vomiting with severe abdominal pain, watery or bloody diarrhea, prostration, tenemus, retching, hyperglycemia, anuria, liver damage, kidney damage with albuminuria, acetonuria, and glycosuria, hypotension, sudden collapse, and convulsions.

**Chronic Exposure:** Depending on the concentration, repeated ingestion may cause effects as with acute ingestion. Prolonged ingestion of 33,000 mg/kg in drinking water resulted in severe anemia in mice. Reproductive effects have been reported in animals (anhydrous).

## **SECTION 12: ECOLOGICAL INFORMATION**

**ENVIRONMENTAL IMPACT RATING (0-4):** No data available

**ACUTE AQUATIC TOXICITY:** No data available

**DEGRADABILITY:** No data available

**LOG BIOCONCENTRATION FACTOR (BCF):** No data available

**LOG OCTANOL/WATER PARTITION COEFFICIENT:** No data available

## **SECTION 13: DISPOSAL INFORMATION**

Observe all federal, state and local regulations when disposing of this product.

## **SECTION 14: TRANSPORT INFORMATION**

**DOT Shipping Name:** Manganese Sulfate

DOT Hazard Class or Division: None

DOT Identification Number: NA

DOT Packing Group: NA

Guide Number: NA

## **SECTION 15: REGULATORY INFORMATION**

	TSCA STATUS:	Yes
40 CFR 302.4	CERCLA SECTION 103:	Yes
40 CFR 355.30	SARA SECTION 302:	No
40 CFR 355.40	SARA SECTION 304:	No
40 CFR 372.65	SARA SECTION 313:	Yes
29 CFR 1910.119	OSHA Process Safety:	No
	California Proposition 65:	No
40 CFR 370.21	SARA HAZARD CATEGORIES, SARA SECTIONS 311/312	
	ACUTE HAZARD:	Yes
	CHRONIC HAZARD:	Yes
	FIRE HAZARD:	No
	REACTIVITY HAZARD:	No
	SUDDEN RELEASE HAZARD:	No

## **SECTION 16: OTHER INFORMATION**

**DISCLAIMER:** The information contained on this Safety Data Sheet is based on our current knowledge and data obtained from other sources. The information is believed to be accurate but Agri-Business Technologies, Inc. makes no representations as to its accuracy and/or completeness. Users must use their own independent judgment as to its appropriateness for a particular use or purpose and assume all risks in the use, handling, storage and disposal of the product. Users must use their own independent judgment its appropriateness for a particular use or purpose and assume all risks in the publication, use of, or reliance on the information contained on this Safety Data Sheet.

SDS Prepared: June, 2014

Prepared by: JMW