Material Safety Data Sheet

FOR EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT, CALL:
CHEMTREC 1-800-424-9300

Section 1 - Chemical Product and Company Identification

Product Name: Origin MAX-IN Manganese NF
Common Name: Micronutrient fertilizer
Chemical Description: Liquid Fertilizer

Distributed by:
Winfield Solutions, LLC
PO Box 64589
St Paul, Minnesota 55164-0589

Date Prepared: 02-06-06
Revision Date: 05-13-08

Section 3 - Hazards Identification

Emergency Overview: Clear to light pink liquid, slight organic odor that can irritate the eyes or skin. May be harmful if swallowed.

Route(s) of Entry: Eyes, Inhalation, Skin and Ingestion
Health Hazards (Acute and Chronic):
Inhalation: Inhalation of mist may cause irritation of the upper respiratory tract.
Eyes: Irritation of eyes.
Skin: Not Expected to be a primary skin irritant of toxic by skin contact.
Ingestion: Harmful if swallowed.

Carcinogenicity: NTP: Not Listed IARC: Not Listed OSHA: Not Listed

Medical Conditions Generally Aggravated by Exposure:
None known. Preexisting respiratory conditions may be aggravated by exposure to mists.

Section 4 - First Aid Measures
Inhalation: Remove person to fresh air and support breathing as needed. Seek medical attention if irritation persists.

Ingestion: If conscious, rinse mouth and give large quantities of water. Seek medical attention or call a poison control center immediately. Never give anything by mouth to an unconscious person.

Eyes: Flush with clean water for at least 15 minutes. Lift eyelids to facilitate irrigation. Seek medical attention if eye irritation persists.

Skin: Remove contaminated clothing and wash before re-using. Flush skin with water, and then wash with soap and water. Seek medical attention if skin becomes irritated.

After first aid, get appropriate in-plant, paramedic, or community medical support.

### Section 5 – Fire and Explosion Hazard Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point:</td>
<td>Non-combustible</td>
</tr>
<tr>
<td>Flammable Limits:</td>
<td>Non-established</td>
</tr>
<tr>
<td>LEL:</td>
<td>Not Established</td>
</tr>
<tr>
<td>UEL:</td>
<td>Not Established</td>
</tr>
</tbody>
</table>

**Extinguishing Media:** water, dry chemical, or carbon dioxide

**Special Fire Fighting Procedures:** Wear self-contained breathing apparatus and full bunker gear. Smoke and fumes from fire may contain hazardous components.

**Hazardous Combustion Products:** Thermal decomposition may include carbon dioxide, carbon monoxide and oxides of manganese. Airborne manganese may also be present (harmful to respiratory system)

**Unusual Fire and Explosion Hazards:** Closed containers may explode from vapor expansion in high heat. Contain run off by placing dikes to prevent contamination to water supplies.

### Section 6 – Accidental Release Measures

**Small Spills:** Clean up personnel should protect against mist inhalation and skin contact. Avoid generating mists. Spills when handling should be cleaned up immediately to prevent spreading.

**Large Spills:** Clean up personnel should protect against mist inhalation and skin contact. Avoid generating mist.

**Containment:** Do not release into sewers or waterways. Dike spills to prevent contamination to water supplies. Contained spills, absorb liquids by covering with clay or other absorbent material, vacuum, scoop or sweep up waste and place in a container for disposal.

### Section 7 – Precautions for Safe Handling and Use

**Precautions to Be taken in Handling and Storing:** Store in cool, dry areas away from children, feed and food products and sources of heat. Immediately clean up spills that occur during handling or storage. Protect from freezing keep containers closed when not in use. Store out of direct sunlight.

**Other Precautions:** Consult local, State and Federal regulations pertaining to storage and disposal.

### Section 8 – Control Measures / Personal Protection

**Respiratory Protection (Specify Type):** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear an MSHA/NIOSH-approved respirator.

**Ventilation:** Local Exhaust: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs. Local exhaust ventilation is preferred.

**Protective Gloves:** Wear rubber or neoprene gloves

**Eye Protection:** Wear protective eyeglasses or chemical safety goggles. Contact lenses are not eye protective devices.

**Other Protective Clothing or Equipment:** Wear chemically protective boots, aprons and gauntlets to prevent prolonged or repeated skin contact.

**Work / Hygienic Practices:** Never eat, drink or smoke in work areas. Practice good hygiene after using this material, especially before eating, drinking, smoking, using the toilet or applying cosmetics.
### Section 9 - Physical / Chemical Characteristics

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Liquid</th>
<th>Specific Gravity (water=1)</th>
<th>1.21 (10.1 lbs./Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Pressure (mm Hg.)</td>
<td>N/A</td>
<td>Freezing Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Density (AIR=1)</td>
<td>N/A</td>
<td>Boiling Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>100%</td>
<td>pH</td>
<td>2 to 3</td>
</tr>
<tr>
<td>Appearance and Odor:</td>
<td>clear to light pink</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Section 10 - Reactivity Data

**Stability:** Product stable at room temperature in closed containers under normal storage and handling conditions.

**Chemical Incompatibilities:** Avoid mixing with calcium solutions, strong reducing agents, finely powdered metals

**Conditions to avoid:** Avoid excessive heat.

**Hazardous Decomposition Products:** None Known

**Hazardous Polymerization:** Cannot occur.

### Section 11 - Toxicological Information

**Eye Effects:** Irritation

**Chronic Effects:** No unusual chronic effects

**Skin Effects:** May cause irritation

**Carcinogenicity:** none known

**Mutagenicity:** Not listed as mutagenic

Toxicological information listed below for manganese nitrate

DNA Repair Bacillus subtillis 50 mol/L

### Section 12 - Ecological Information

**Soil Absorption / Mobility:** Mobile in soil profile

### Section 13 - Disposal Considerations

**Disposal:** Dispose of in an approved landfill or apply at recommended label rates.

**Disposal Regulatory Requirement:** Follow applicable Federal, State and local regulations.

### Section 14 - Transport Information

Not regulated if shipped by ground, do not ship by air.

### Section 15 - Regulatory Information

**SARA TITLE II HAZARD CATEGORY:**

Immediate: No

Delayed: No

**CERCLA:** None Listed

**SARA, TITLE III, SECTION 313:** This product is subject to the reporting requirements of Sara 304 (40 CFR Table 302.4) manganese compounds.
**Section 16 - Other**

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