1. Identification

Product identifier: Ammonium Thiosulfate solution
Other means of identification: Ammonium thiosulfate*ATS*Ammonium hyposulfite*12-0-0-26S
Synonyms: Not available.
Recommended use: Fertilizer.
Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor Information

Company name: Gavilon Fertilizer, LLC
Address: 5 Skidaway Village Walk
          Savannah, GA  31411 US
Telephone: 1-912-598-8392
Website: www.gavilon.com
Contact person: EH&S/Regulatory Department
Emergency phone number: CHEMTREC (24 hours): 1-800-424-3900

2. Hazard(s) identification

Physical hazards: Not classified.
Health hazards: Not classified.
OSHA defined hazards: Not classified.

Label elements

Hazard symbol: None.
Signal word: None.
Hazard statement: The mixture does not meet the criteria for classification.

Precautionary statement

Prevention: Observe good industrial hygiene practices.
Response: Wash hands after handling.
Storage: Store away from incompatible material.
Disposal: Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC): Not classified.

Supplemental information
Not applicable.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium thiosulfate</td>
<td>7783-18-8</td>
<td>40 - 70</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>30 – 60</td>
</tr>
<tr>
<td>Ammonium hydroxide</td>
<td>1336-21-6</td>
<td>0.1 – 1</td>
</tr>
<tr>
<td>Ammonium sulfate</td>
<td>7783-20-2</td>
<td>0.1 - 1</td>
</tr>
</tbody>
</table>
### Composition comments
All concentrations are in weight unless ingredient is a gas. Gas concentrations are in percent by volume.
The Safety Data Sheet is not a guarantee of product specification or NPK value(s). NPK content is on specified sales orders, customer invoices, or product specification sheets obtained from supplier.

### 4. First-aid measures

| **Eye contact** | Check for and remove contact lenses. Flush immediately with copious amounts of water or normal saline (minimum of 15 minutes), holding eyelids apart to ensure complete irritation of the eye and eyelid tissue. Take exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation. |
| **Skin contact** | Remove contaminated clothing, shoes and equipment. Wash exposed area with plenty of soap and water. Repeat washing. If redness or irritation occurs, seek medical attention. Wash contaminated clothing before reuse. |
| **Inhalation** | No adverse effects anticipated. If necessary, remove victim to fresh air and loosen clothing. Get medical attention. |
| **Ingestion** | Rinse mouth thoroughly. Drink 1 or 2 glasses of water. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention. Most important Symptoms/effects, acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Indication of immediate medical attention and special treatment needed Treat symptomatically. General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. |

### 5. Fire-fighting measures

| **Suitable extinguishing media** | Water fog. Water spray. Carbon dioxide (CO2). Foam. |
| **Unsuitable extinguishing media** | Do not use water jet as an extinguisher, as this will spread the fire. |
| **Specific hazards arising from the chemical** | Heating may cause the release of ammonia vapors. 3 (16-25%) may form flammable mixtures with air. If heated beyond dryness, some hydrogen sulfide gas may be given off. |
| **Special protective equipment and precautions for firefighters** | Self-contained breathing apparatus and full protective clothing should be worn when fighting chemical fires. Selection of respiratory protection for firefighting follow the general fire precautions indicated in the workplace. Fire-fighting equipment/instructions Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from the fire area if you can do so without risk. |

### 6. Accidental release measures

| **Personal precautions, protective equipment and emergency procedures** | Avoid inhalation of vapors and spray mist and contact with skin and eyes. Wear suitable protective clothing. For personal protection see Section 8 of the SDS. |
Methods and materials for containment and cleaning up  
Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb with vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

Environmental precautions  
Prevent further leakage or spillage if safe to do so. Do not contaminate water. Do not allow to enter drains, sewers or watercourses.

7. Handling and storage  
Precautions for safe handling  
Avoid inhalation of vapors/spray and contact with skin and eyes. Use only with adequate ventilation. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities  
Keep container tightly closed. Store in a cool, dry well-ventilated place. Store away from incompatible materials.

8. Exposure controls/personal protection  

Occupational exposure limits  

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (CAS 7664-41-7)</td>
<td>PEL</td>
<td>35 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (CAS 7664-41-7)</td>
<td>STEL</td>
<td>35 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>25 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (CAS 7664-41-7)</td>
<td>TWA</td>
<td>18 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (CAS 7664-41-7)</td>
<td>STEL</td>
<td>27 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 ppm</td>
</tr>
</tbody>
</table>

Biological limit values  
No biological exposure limits noted for the ingredient(s).

Exposure guidelines  
Follow standard monitoring procedures.

Appropriate engineering controls  
Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and mists.

Individual protection measures such as personal protective equipment  

Eye/face protection  
Wear approved safety glasses or goggles.

Skin Protection  
Hand protection  
Chemical resistant gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

Other  
Wear appropriate clothing to prevent repeated or prolonged skin contact.
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Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Wear air supplied respiratory protection if exposure concentrations are unknown. In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134 and ANSI Z88.2.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene consideration

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White liquid.</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Form</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Color</td>
<td>White.</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight ammonia.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>pH</td>
<td>8</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>23°F (-5°C)</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor Density (Air=1)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.325 @ 70°F</td>
</tr>
<tr>
<td>Solubility</td>
<td>Completely miscible.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Other information</td>
<td>Percent volatile: 1 %</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

Reactivity

The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability

Stable under normal temperature conditions.

Possibility of hazardous reactions

Hazardous polymerization does not occur.

Conditions to avoid

Heat. Extreme temperatures.

Incompatible materials


Hazardous decomposition products


11. Toxicological information

Information on likely routes of exposure

Ingestion

Ingestion may cause irritation and malaise.

Inhalation

Vapors and spray mist may irritate throat and respiratory system and cause coughing.
Skin contact
Prolonged or repeated skin contact may cause irritation.

Eye contact
May cause eye irritation on direct contact.

Symptoms related to the physical, chemical and toxicological characteristics
Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

**Acute toxicity**
May cause discomfort if swallowed.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium hydroxide (CAS 1336-21-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>Rat</td>
<td>350 mg/kg</td>
</tr>
<tr>
<td>Oral LD50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonium thiosulfate (CAS 7783-18-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>Rat</td>
<td>2890 mg/kg</td>
</tr>
<tr>
<td>Oral LD50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
Prolonged exposure may cause skin irritation.

Serious eye damage/eye irritation
May cause eye irritation on direct contact.

Respiratory sensitization
No data available.

Skin sensitization
No data available.

Germ cell mutagenicity
No data available.

Carcinogenicity
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Reproductive toxicity
No data available.

Specific target organ toxicity-
- single exposure
No data available.

Specific target organ toxicity-
- repeated exposure
No data available.

Aspiration hazard
Not classified.

Chronic effects
No data available.

Further information
No other specific acute or chronic health impact noted.

**12. Ecological information**

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium hydroxide (CAS 1336-21-6)</td>
<td>Daphnia magna</td>
<td>0.66 mg/L, 48 hours</td>
</tr>
<tr>
<td>Aquatic Crab</td>
<td>LC50</td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonium thiosulfate (CAS 7783-18-8)</td>
<td>Salmo gairdneri</td>
<td>173 mg/L, 96 hours</td>
</tr>
<tr>
<td>Aquatic Fish</td>
<td>LC50</td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>Chlorella vulgaris</td>
<td>2700 mg/L, 18 days</td>
</tr>
<tr>
<td>Aquatic Crustacea</td>
<td>EC50</td>
<td></td>
</tr>
<tr>
<td>Water flea (Daphnia magna)</td>
<td>EC50</td>
<td>&gt; 100 mg/L, 96 hours</td>
</tr>
</tbody>
</table>
Persistence and degradability
No data available.

Bioaccumulative potential
No data available.

Mobility in soil
This product is water soluble and may disperse in soil.

Other adverse effects
No data available.

13. Disposal considerations

Disposal instructions
Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Hazardous waste code
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products
Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT
Not regulated as a hazardous material by DOT.

IATA
Not regulated as a dangerous goods.

IMDG
Not regulated as a dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not established.

15. Regulatory information

US federal regulations
This product is not known to be a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)
Ammonium hydroxide (CAS 1336-21-6) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard – No

SARA 302 Extremely hazardous substance
No

SARA 311/312 Hazardous chemical
No

SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium thiosulfate</td>
<td>7783-18-8</td>
<td>40 - 70</td>
</tr>
<tr>
<td>Ammonium hydroxide</td>
<td>1336-21-6</td>
<td>0.1 – 1</td>
</tr>
<tr>
<td>Ammonium sulfate</td>
<td>7783-20-2</td>
<td>0.1 - 1</td>
</tr>
</tbody>
</table>
Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

Food and Drug Administration (FDA)
Not regulated.

US state regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s).
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 07-February-2014

Revision date --

Version # SDS

NFPA Ratings

References

EPA: Acquire database
HSDB® – Hazardous Substances Data Bank
IARC Monographs: Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Value and Biological Exposure Indices

Preparation

The preparation of this MSDS was in accordance with ANSI Z400.1-2010.
Disclaimer

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Safety Data Sheet (SDS) and was prepared pursuant to Government regulation(s) that identify specific types of information to be provided. This SDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided herein with respect to any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. No responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product. Purchasers and users assume all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Purchasers and users of the product specifically should advise all of their employees, agents, contractors and customers who will use the product of this (M)SDS.