1. Identification

Product identifier: Ammonium Sulfate

Other means of identification:

SDS Number: KNC_(NH4)2SO4_US_EN

Synonyms: GAS, Granular Ammonium Sulfate

Recommended use: Fertilizer.

Recommended restrictions: None known.

Manufacturer / Importer / Supplier / Distributor information:

Company Name: Koch Nitrogen Company, LLC
4111 E 37th Street North
PO Box 2219
Wichita, KS, 67201-2219
kochmsds@kochind.com
1-316-828-7672

Emergency:

For Chemical Emergency
Call CHEMTREC day or night
1.800.424.9300
Mexico - 1.800.681.9531
Outside USA/Canada
1.703.527.3887 (collect calls accepted)

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: None.
- Precautionary statement:
  - Prevention: Observe good industrial hygiene practices.
  - Response: Get medical attention/advice if you feel unwell.
  - Storage: Store away from incompatible materials.
  - Disposal: Dispose of waste and residues in accordance with local authority requirements.

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

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium sulfate</td>
<td>GAS, Granular Ammonium Sulfate</td>
<td>7783-20-2</td>
<td>100</td>
</tr>
</tbody>
</table>

Composition comments:
All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
This 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

Inhalation: If symptomatic, move to fresh air. Get medical attention if any discomfort continues.
Skin contact: Wash skin with soap and water. Should dermal irritation or dermal sensitization occur, seek medical attention.
Eye contact: Do not rub eyes. Flush thoroughly with water. If irritation occurs, get medical assistance.
**5. Fire-fighting measures**

**Suitable extinguishing media**
Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media**
None known.

**Specific hazards arising from the chemical**
Heating may cause the release of ammonia vapors. NH3 (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 fire area if you can do so without risk.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**
Avoid inhalation of dust and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing. For personal protection, see section 8 of the SDS.

**Methods and materials for containment and cleaning up**
Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas. Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. After removal flush contaminated area thoroughly with water.

**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 generation and spreading of dust. Avoid inhalation of dust and contact with skin and eyes.

**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**
No exposure limits noted for ingredient(s).

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

**Appropriate engineering controls**
Provide adequate general and local exhaust ventilation. Observe occupational exposure limits and minimize the risk of inhalation of dust.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**
Risk of contact: Wear dust goggles.

**Skin protection**
Risk of contact: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

**Hand protection**
No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

**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 dust, use suitable respiratory equipment with particle filter. 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 considerations**
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**

**Appearance**

**Physical state**
Solid.
Form: Crystals. Granules.

Color: White.

Odor: Odorless.

Odor threshold: Not available.

pH: 5 - 6 (Concentration 5%)

Melting point/freezing point: > 455 °F (> 235 °C) (Decomposes.)

Initial boiling point and boiling range: Not applicable.

Flash point: Not applicable.

Evaporation rate: Not applicable.

Flammability (solid, gas): Not available.

Upper/lower flammability or explosive limits:
- Flammability limit - lower (%): Not available.
- Flammability limit - upper (%): Not available.
- Explosive limit - lower (%): Not available.
- Explosive limit - upper (%): Not available.

Vapor pressure: < 0 kPa at 25 °C

Vapor density: > 1 (Air = 1)

Relative density: Not available.

Solubility(ies): 76g / 100 ml (20°C). Easily soluble in cold water.

Partition coefficient (n-octanol/water): -5.1 at 25 °C

Auto-ignition temperature: Not available.

Decomposition temperature: Not available.

Viscosity: Not available.

Other information:
- Density: 1.77 g/cm³ estimated
- Flammability: Not applicable.
- Flammability (Train fire): Not applicable.
- Molecular formula: (N-H₄)₂-S-O₄
- Molecular weight: 132.14

10. Stability and reactivity
Reactivity: The product is 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: Excessive heat.

Incompatible materials: Strong oxidizing agents.

Hazardous decomposition products: Ammonia fumes may be released upon heating.

11. Toxicological information
Information on likely routes of exposure:
- Ingestion: May cause discomfort if swallowed.
- Inhalation: Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.
- Skin contact: May cause irritation through mechanical abrasion.
- Eye contact: May cause irritation through mechanical abrasion.
Symptoms related to the physical, chemical and toxicological characteristics

Information on toxicological effects

Acute toxicity

May cause skin irritation on prolonged or repeated contact.

Information on toxicological effects

Acute toxicity

May cause discomfort if swallowed.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium sulfate (CAS 7783-20-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 1000 mg/m3, 8 hours</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>2840 mg/kg</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation

May cause irritation through mechanical abrasion.

Serious eye damage/eye irritation

May cause irritation through mechanical abrasion.

Respiratory sensitization

No data available.

Skin sensitization

Not a skin sensitizer.

Germ cell mutagenicity

Based on available data the product is not mutagenic.

Carcinogenicity

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

Reproductive toxicity

Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure

No data available.

Specific target organ toxicity - repeated exposure

No data available.

Aspiration hazard

Based on available data, the classification criteria are not met.

Chronic effects

This product contains compounds that may release ammonia when heated. Prolonged or repeated overexposure to ammonia vapors may harm the eyes, mucous membranes, and/or upper respiratory tract.

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>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium sulfate (CAS 7783-20-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>173 mg/l, 96 hours</td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>EC50</td>
<td>2700 mg/l, 18 days</td>
</tr>
<tr>
<td>Crustacea</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 discharge into drains or the environment, please contact your local municipality / waste handler for disposal requirements.

Hazardous waste code

Not regulated.

Waste from residues / unused products

Dispose in accordance with all applicable regulations.

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 good.

IMDG
Not regulated as a dangerous good.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable. However, this product is a solid and transported in bulk covered under Appendix I of the IMSBC Code.

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.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not 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)
Not regulated.

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)
Total food additive
Direct food additive
GRAS food additive

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.

US. Massachusetts RTK - Substance List
Ammonium sulfate (CAS 7783-20-2)

US. New Jersey Worker and Community Right-to-Know Act
Not regulated.

US. Pennsylvania RTK - Hazardous Substances
Ammonium sulfate (CAS 7783-20-2)

US. Rhode Island RTK
Not regulated.

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.

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 (TSCA) 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 08-January-2014
Revision date -
Version # 01
NFPA Ratings

References
ACGIH
EPA: Acquire database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

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.