1. Identification

Product identifier: Urea Ammonium Nitrate Solution

Other means of identification:
- SDS number: KAS_UAN_CA_EN

Recommended use: Fertiliser.

Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier: Koch Agronomic Services, LLC
4111 E 37th St N
Wichita, KS 67220 US
kochmsds@kochind.com
1.866.863.5550

Emergency:
For Chemical Emergency
Call CHEMTREC day or night
USA/Canada - 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.
Environmental hazards: Not classified.

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

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

Other hazards: None known.

Supplemental information: None.

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 nitrate</td>
<td>6484-52-2</td>
<td>35 - 55</td>
</tr>
<tr>
<td>Urea</td>
<td>57-13-6</td>
<td>25 - 40</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>15 - 32</td>
</tr>
<tr>
<td>Free Ammonia</td>
<td>7664-41-7</td>
<td>0.02 - 0.15</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
Move person to fresh air. If the affected person is not breathing, apply artificial respiration. Get medical attention if discomfort develops or persists.

Skin contact
Immediately flush skin with plenty of water. Get medical attention if irritation develops and persists.

Eye contact
Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids wide apart. Get medical attention if irritation develops or persists.

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 include itching, burning, redness, and tearing of eyes.

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. Show this safety data sheet to the doctor in attendance.

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
Slight fire hazard. When water evaporates from this product residues may contain ammonium nitrate, and solid ammonium nitrate when sensitized during decomposition may become unstable and explosive.

Special protective equipment and precautions for firefighters
Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
Move containers from fire area if you can do it without risk.

General fire hazards
The product is not flammable.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Avoid inhalation of vapours 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 in 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.

Environmental precautions
Never return spills to original containers for re-use. For waste disposal, see Section 13 of the SDS.

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 vapours/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

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</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>

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (CAS 7664-41-7)</td>
<td>STEL</td>
<td>24 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>17 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ppm</td>
</tr>
</tbody>
</table>

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

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<tr>
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<tr>
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<td>TWA</td>
<td>25 ppm</td>
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Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

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Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

<table>
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<th>Value</th>
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Canada. Quebec OELs. (Ministry of Labour - Regulation Respecting the Quality of the Work Environment)

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<th>Value</th>
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<td>17 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 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
Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mist. Provide adequate general and local exhaust ventilation. Provide eyewash station.

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.

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 vapours, use suitable respiratory equipment.

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 practices.
9. Physical and chemical properties

Appearance
- Physical state: Liquid.
- Form: Liquid.
- Colour: Colourless.
- Odour: Slight ammonia.
- Odour threshold: Not available.
- pH: 6.8 - 8.5
- Melting point/freezing point: Not available.
- Initial boiling point and boiling range: 107.22 °C (225 °F)
- Flash point: Not available.
- Evaporation rate: Not available.
- Flammability (solid, gas): Not available.
- Upper/lower flammability or explosive limits
  - Flammability limit - lower (%): Not available.
  - Flammability limit - upper (%): Not available.
- Vapour pressure: Not available.
- Vapour density: Not available.
- Relative density: 1.05 - 1.35 @ 30 °C
- Solubility(ies)
  - Solubility (water): 100%
- Partition coefficient (n-octanol/water): Not available.
- Auto-ignition temperature: Not available.
- Decomposition temperature: Not available.
- Viscosity: Not available.
- Other information
  - Explosive properties: Not explosive.
  - Oxidising properties: Not oxidising.

10. Stability and reactivity

Reactivity
Reacts violently with strong oxidants, nitrites, inorganic chlorides, chlorites and perchlorates causing fire and explosion hazard.

Chemical stability
Stable under normal temperature conditions and recommended use.

Possibility of hazardous reactions
Hazardous polymerisation does not occur.

Conditions to avoid
Contact with incompatible materials. Heat, sparks, flames, elevated temperatures. UAN will form urea nitrate when mixed with nitric acid at low pH. Urea nitrate may become unstable and/or explosive under certain conditions.

Incompatible materials
Reacts violently with strong oxidants, nitrites, inorganic chlorides, chlorites and perchlorates causing fire and explosion hazard.

Hazardous decomposition products

11. Toxicological information

Information on likely routes of exposure
- Inhalation: Vapours and spray mist may irritate throat and respiratory system and cause coughing. No adverse effects due to inhalation are expected.
- Skin contact: Prolonged or repeated skin contact may cause irritation.
- Eye contact: May cause eye irritation.
- Ingestion: May cause discomfort if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics

Information on toxicological effects

Acute toxicity

Components | Species | Test results
---|---|---
Ammonia (CAS 7664-41-7)  
**Acute**  
**Inhalation**  
LC50 | Rat | 5.1 mg/l, 1 Hours
**Oral**  
LD50 | Rat | 350 mg/kg as Ammonium hydroxide
Ammonium nitrate (CAS 6484-52-2)  
**Acute**  
**Dermal**  
LD50 | Rat | > 5000 mg/kg
**Inhalation**  
**Dust**  
LC50 | Rat | > 88.8 mg/l, 4 Hours
**Oral**  
LD50 | Rat | > 2000 mg/kg
Urea (CAS 57-13-6)  
**Acute**  
**Oral**  
LD50 | Rat | 14300 mg/kg

Skin corrosion/irritation

Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation

May cause eye irritation.

Respiratory or skin sensitisation

**Respiratory sensitisation**  
Not a respiratory sensitizer.

**Skin sensitisation**  
This product is not expected to cause skin sensitisation.

Germ cell mutagenicity

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

Not available.

Reproductive toxicity

This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure

Not classified.

Specific target organ toxicity - repeated exposure

Not classified.

Aspiration hazard

Not an aspiration hazard.

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.

Components | Species | Test results
---|---|---
Ammonia (CAS 7664-41-7)  
**Aquatic**  
**Fish**  
LC50 | Chinook salmon (Oncorhynchus tshawytscha) | 0.43 - 0.47 mg/l, 96 hours
Ammonium nitrate (CAS 6484-52-2)  
**Aquatic**  
**Acute**  
**Crustacea**  
EC50 | Daphnia magna | 555 mg/l, 24 Hours

Urea Ammonium Nitrate Solution  
SDS Canada  
916058 Version #: 01 Revision date: - Issue date: 31-January-2017
<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea (CAS 57-13-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Oncorhynchus mykiss</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Leuciscus idus</td>
</tr>
</tbody>
</table>

**Persistence and degradability**
- No data available.

**Bioaccumulative potential**
- No data available.

**Partition coefficient n-octanol / water (log Kow)**
- Urea (CAS 57-13-6): -2.11

**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

**TDG**
- Not regulated as dangerous goods.

**IATA**
- Not regulated as dangerous goods.

**IMDG**
- Not regulated as dangerous goods.

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

15. Regulatory information

**Canadian regulations**
- This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

**Controlled Drugs and Substances Act**
- Not regulated.

**Export Control List (CEPA 1999, Schedule 3)**
- Not listed.

**Greenhouse Gases**
- Not listed.

**Precursor Control Regulations**
- Not regulated.

**International regulations**

**Stockholm Convention**
- Not applicable.

**Rotterdam Convention**
- Not applicable.

**Kyoto protocol**
- Not applicable.

**Montreal Protocol**
- Not applicable.

**Basel Convention**
- Not applicable.
<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<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

Issue date: 31-January-2017
Revision date: -
Version No.: 01

List of abbreviations:
- EC50: Effective Concentration, 50%.
- LC50: Lethal Concentration, 50%.

References:
- EPA: Acquire database
- HSDB® - Hazardous Substances Data Bank

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.