

SAFETY DATA SHEET

1. Identification

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|---|---|
| Product identifier | Urea Ammonium Nitrate Solution |
| Other means of identification | |
| SDS number | KAS_UAN_CA_EN |
| Synonyms | UAN 28% Nitrogen, UAN 30% Nitrogen, UAN 32% Nitrogen, UN-28, UN-30, UN-32, URAN, TRI-N-28, TRI-N-30, TRI-N-32, STCC 2871315. |
| 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

| Chemical name | CAS number | % |
|------------------|------------|-------------|
| Ammonium nitrate | 6484-52-2 | 35 - 55 |
| Urea | 57-13-6 | 25 - 40 |
| Water | 7732-18-5 | 15 - 32 |
| Free Ammonia | 7664-41-7 | 0.02 - 0.15 |

| | |
|---|---|
| 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

| Components | Type | Value |
|-------------------------|------|--------|
| Ammonia (CAS 7664-41-7) | STEL | 35 ppm |
| | TWA | 25 ppm |

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

| Components | Type | Value |
|-------------------------|------|----------------------|
| Ammonia (CAS 7664-41-7) | STEL | 24 mg/m ³ |
| | | 35 ppm |
| | TWA | 17 mg/m ³ |
| | | 25 ppm |

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

| Components | Type | Value |
|-------------------------|------|--------|
| Ammonia (CAS 7664-41-7) | STEL | 35 ppm |
| | TWA | 25 ppm |

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

| Components | Type | Value |
|-------------------------|------|--------|
| Ammonia (CAS 7664-41-7) | STEL | 35 ppm |
| | TWA | 25 ppm |

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

| Components | Type | Value |
|-------------------------|------|--------|
| Ammonia (CAS 7664-41-7) | STEL | 35 ppm |
| | TWA | 25 ppm |

Canada. Quebec OELs. (Ministry of Labour - Regulation Respecting the Quality of the Work Environment)

| Components | Type | Value |
|-------------------------|------|----------------------|
| Ammonia (CAS 7664-41-7) | STEL | 24 mg/m ³ |
| | | 35 ppm |
| | TWA | 17 mg/m ³ |
| | | 25 ppm |

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 Carbon oxides. Nitrogen oxides (NOx). Ammonia. Biuret. Cyanide compounds.

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

Direct contact with eyes may cause temporary irritation. Symptoms can include irritation, redness, scratching of the cornea, and tearing.

Information on toxicological effects

Acute toxicity May cause discomfort if swallowed.

| 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 | | |
| <i>Dust</i> | | |
| 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 sensitiser.

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 (<i>Oncorhynchus tshawytscha</i>) |
| | | 0.43 - 0.47 mg/l, 96 hours |
| Ammonium nitrate (CAS 6484-52-2) | | |
| Aquatic | | |
| <i>Acute</i> | | |
| Crustacea | EC50 | Daphnia magna |
| | | 555 mg/l, 24 Hours |

| Components | Species | Test results |
|--|---|-----------------------|
| Fish | LC50 Oncorhynchus mykiss | > 100 mg/l, 96 Hours |
| Urea (CAS 57-13-6) | | |
| Aquatic | | |
| Fish | LC50 Leuciscus idus | > 6810 mg/l, 96 hours |
| 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

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|--|--|
| 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

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|--|--|
| 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. |

International Inventories

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*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

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