

1. Identification

Product identifier KAS Liquid Urease Inhibitor 20%

Other means of identification

Product number KAS_LiqUrea20_US_EN

Recommended use Fertilizer Coating

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

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Reproductive toxicity	Category 1B
Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Hazard statement Causes skin irritation. Causes serious eye damage. May cause respiratory irritation. May damage fertility or the unborn child.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If exposed or concerned: Get medical advice/attention.

Storage Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Propane -1,2 -diol	57-55-6	40 - 70
N-(n-butyl)-thiophosphoric triamide	94317-64-3	10 - 30
N-methyl-2-pyrrolidone	872-50-4	10 - 30
Non-hazardous components	Proprietary	2 - 6

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 immediately.
Skin contact	Immediately flush skin with plenty of water. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
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	Risk of serious damage to eyes. Skin irritation. Respiratory tract irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically. The effects might be delayed.
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 (CO ₂). Foam.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or toxic gases.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing should be worn when fighting chemical fires.
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 it without risk.
General fire hazards	The product is not flammable.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them.
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Methods and materials for containment and cleaning up

Remove sources of ignition. This product is miscible in water.

Large Spills: Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

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

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

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. Handling and storage**Precautions for safe handling**

Avoid exposure - obtain special instructions before use. Do not get in eyes. Do not breathe mist or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid contact with skin. Avoid prolonged exposure. Wash thoroughly after handling. Do not empty into drains. Handle and open container with care. Use care in handling/storage. Wash before eating, drinking and/or smoking.

Conditions for safe storage, including any incompatibilities

Store in a well-ventilated place. Store in original tightly closed container. Keep away from food, drink and animal feedingstuffs. Use care in handling/storage. Store in accordance with local/regional/national/international regulation. Keep out of reach of children. Long term storage at temperatures above 100°F (36°C), and long term storage of opened containers, will cause the product to degrade. As the product degrades, it can release harmful gases. Store below 100°F (36°C) and use opened containers within 30 days. Always use oldest stock first.

8. Exposure controls/personal protection**Occupational exposure limits****US. Workplace Environmental Exposure Level (WEEL) Guides**

Components	Type	Value	Form
N-methyl-2-pyrrolidone (CAS 872-50-4)	TWA	40 mg/m ³	
		10 ppm	
Propane -1,2 -diol (CAS 57-55-6)	TWA	10 mg/m ³	Aerosol.

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
N-methyl-2-pyrrolidone (CAS 872-50-4)	100 mg/l	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

Follow standard monitoring procedures.

US - California OELs: Skin designation

N-methyl-2-pyrrolidone (CAS 872-50-4)

Can be absorbed through the skin.

US WEEL Guides: Skin designation

N-methyl-2-pyrrolidone (CAS 872-50-4)

Can be absorbed through the skin.

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Provide eyewash station.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Chemical goggles are recommended.

Skin protection**Hand protection**

Neoprene gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

Other

Chemical resistant clothing is recommended. Routinely wash work clothing and protective equipment to remove contaminants.

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 mist, 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.

9. Physical and chemical properties

Appearance Green liquid.

Physical state Liquid.

Form Liquid.

Color Green.

Odor Slight ammonia.

Odor threshold 0.1 ppm

pH 8.9 - 9.1 (10% solution in H₂O).

Melting point/freezing point Not available.

Initial boiling point and boiling range > 392 °F (> 200 °C)

Flash point > 200.0 °F (> 93.3 °C)

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not applicable.

Flammability limit - upper (%) Not applicable.

Vapor pressure < 0.32 mbar @20°C

Vapor density Not available.

Relative density 1.06

Solubility(ies)

Solubility (water) Soluble.

Partition coefficient (n-octanol/water) Log Pow = 0.444

Auto-ignition temperature > 212 °F (> 100 °C)

Decomposition temperature Not available.

Viscosity Not available.

Other information

Explosive properties Not explosive.

Flammability Not applicable.

Oxidizing properties Not oxidizing.

10. Stability and reactivity

Reactivity The product is stable and non reactive under normal conditions of storage and transport.

Chemical stability Stable under normal temperature conditions.

Possibility of hazardous reactions Hazardous polymerization does not occur.

Conditions to avoid Extreme temperatures. Contact with incompatible materials.

Incompatible materials Acids. Strong reducing agents. Strong oxidizing agents.

Hazardous decomposition products During combustion: Carbon oxides. Nitrogen oxides. Sulfur oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause respiratory irritation.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Ingestion may cause severe irritation of the mouth, the esophagus and the gastrointestinal tract.

Symptoms related to the physical, chemical and toxicological characteristics Risk of serious damage to eyes. Contact may produce eye irritation with associated redness, swelling, tears and pain. Skin irritation. Respiratory tract irritation.

Information on toxicological effects

Acute toxicity Ingestion may cause severe irritation of the mouth, the esophagus and the gastrointestinal tract.

Components	Species	Test Results
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N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)

Acute

Dermal

LD50	Rabbit	> 2000 mg/kg
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Inhalation

LC50	Wistar rat	> 2.1 mg/l, 4 hours
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Oral

LD50	Wistar rat	> 2000 mg/kg
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N-methyl-2-pyrrolidone (CAS 872-50-4)

Acute

Dermal

LD50	Rat	> 5000 mg/kg
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Inhalation

Mist

LC50	Rat	> 5.1 mg/l, 4 hours
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Oral

LD50	Rat	3605 mg/kg
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Propane -1,2 -diol (CAS 57-55-6)

Acute

Dermal

LD50	Rabbit	20800 mg/kg
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Oral

LD50	Rat	22000 mg/kg
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Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not classified.

Skin sensitization Not classified as a sensitizer.

Germ cell mutagenicity Not classified.

Carcinogenicity Not classified.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Reproductive toxicity May damage fertility or the unborn child.

Specific target organ toxicity - single exposure	May cause irritation of respiratory tract.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not classified.
Chronic effects	Prolonged exposure may cause chronic effects.
Further information	N-Methyl-2-pyrrolidone: The effects might be delayed. May adversely affect the liver and kidney based on animal testing

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
N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)		
Aquatic		
Algae	EC50	Selenastrum capricornutum 280 mg/l, 96 hours
Crustacea	EC50	Daphnia magna 290 mg/l, 48 hours
	LC50	Daphnia 350 mg/l, 48 hours
Fish	LC50	Lepomis macrochirus 1140 mg/l, 96 hours
N-methyl-2-pyrrolidone (CAS 872-50-4)		
Aquatic		
<i>Acute</i>		
Algae	EC50	Scenedesmus subspicatus > 500 mg/l, 72 Hours
Crustacea	EC50	Daphnia magna > 1000 mg/l, 24 Hours
Fish	LC50	Oncorhynchus mykiss > 500 mg/l, 96 Hours
<i>Chronic</i>		
Crustacea	NOEC	Daphnia magna 12.5 mg/l, 21 days

Persistence and degradability The product is not readily biodegradable.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

N-methyl-2-pyrrolidone (CAS 872-50-4)	-0.54
Propane -1,2 -diol (CAS 57-55-6)	-0.92

Mobility in soil Not available.

Mobility in general The product is soluble in water.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Do not discharge into drains or water courses.

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 Dispose in accordance with all applicable regulations. 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 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 available.

15. Regulatory information

US federal regulations This product is 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)

N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3) 1.0 % One-Time Export Notification only.

N-methyl-2-pyrrolidone (CAS 872-50-4) 1.0 % Annual Export Notification required.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA)

All components of the mixture on the TSCA 8(b) inventory are designated "active".

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Skin corrosion or irritation
Serious eye damage or eye irritation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
N-methyl-2-pyrrolidone	872-50-4	10 - 30

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) Contains component(s) regulated under the Safe Drinking Water Act.

US state regulations

US. Massachusetts RTK - Substance List

N-methyl-2-pyrrolidone (CAS 872-50-4)

US. New Jersey Worker and Community Right-to-Know Act

N-methyl-2-pyrrolidone (CAS 872-50-4)

Propane -1,2 -diol (CAS 57-55-6)

US. Pennsylvania Worker and Community Right-to-Know Law

N-methyl-2-pyrrolidone (CAS 872-50-4)

Propane -1,2 -diol (CAS 57-55-6)

US. Rhode Island RTK

Propane -1,2 -diol (CAS 57-55-6)

California Proposition 65



WARNING: This product can expose you to N-methyl-2-pyrrolidone, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Developmental toxin

N-methyl-2-pyrrolidone (CAS 872-50-4) Listed: June 15, 2001

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

N-methyl-2-pyrrolidone (CAS 872-50-4)

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
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	No
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, including date of preparation or last revision

Issue date 22-January-2020
Revision date -
Version # 01
HMIS® ratings Health: 3*
Flammability: 0
Physical hazard: 0

NFPA ratings



List of abbreviations

LD50: Lethal Dose, 50%.
LC50: Lethal Concentration, 50%.

References

ACGIH
EPA: AQUIRE database
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
National Toxicology Program (NTP) Report on Carcinogens

Disclaimer

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