

## 1. Identification

<b>Product identifier</b>	<b>AGROTAIN® ADVANCED 1.0</b>
<b>Other means of identification</b>	
<b>SDS Number</b>	KAS_AGROADV1_US_EN
<b>Recommended use</b>	Fertilizer Additive.
<b>Recommended restrictions</b>	None known.
<b>Manufacturer/Importer/Supplier/Distributor information</b>	
<b>Manufacturer/Supplier</b>	Koch Agronomic Services, LLC 4111 E 37th St N Wichita, KS 67220 US kochmsds@kochind.com 1.866.863.5550
<b>Emergency</b>	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

<b>Physical hazards</b>	Not classified.	
<b>Health hazards</b>	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
<b>OSHA defined hazards</b>	Not classified.	

### Label elements



<b>Signal word</b>	Danger
<b>Hazard statement</b>	Causes skin irritation. Causes serious eye damage. May cause respiratory irritation. May damage fertility or the unborn child.
<b>Precautionary statement</b>	
<b>Prevention</b>	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/eye protection/face protection.
<b>Response</b>	If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash 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 exposed or concerned: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.
<b>Storage</b>	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Hazard(s) not otherwise classified (HNOC)</b>	None known.
<b>Supplemental information</b>	Not applicable.

### 3. Composition/information on ingredients

#### Mixtures

Chemical name	CAS number	%
N-methyl-2-pyrrolidone	872-50-4	30 - 60
N-(n-butyl)-thiophosphoric triamide	94317-64-3	15 - 40
Propylene Glycol	57-55-6	10 - 30
Triethylene glycol monobutyl ether	143-22-6	< 6
Non-hazardous components	Proprietary	< 2
Tetraethylene glycol monobutyl ether	1559-34-8	< 2
Diethylene glycol monobutyl ether	112-34-5	< 0.5
Triethylene glycol	112-27-6	< 0.1

#### 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. Symptoms may 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<sub>2</sub>). 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

Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. 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.

#### General fire hazards

The product is not flammable. Will burn if involved in a fire.

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. 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.

Never return spills to 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. 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. 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/m3	
		10 ppm	
Propylene Glycol (CAS 57-55-6)	TWA	10 mg/m3	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. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mist. Provide eyewash station and safety shower.

### 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 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. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

<b>Appearance</b>	Green liquid.
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>Color</b>	Green.
<b>Odor</b>	Slight.
<b>Odor threshold</b>	Not available.
<b>pH</b>	8.1 - 8.6 in 10% solution
<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	Not available.
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	Not available.
<b>Vapor density</b>	Not available.
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Soluble.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	20 - 30 cP
<b>Other information</b>	
<b>Density</b>	8.87 lb/gal (1.06 kg/l)
<b>Explosive properties</b>	Not explosive.
<b>Oxidizing properties</b>	Not oxidizing.

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Stable under normal temperature conditions.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	Extreme temperatures.
<b>Incompatible materials</b>	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** May cause discomfort if swallowed.

**Symptoms related to the physical, chemical and toxicological characteristics** Risk of serious damage to eyes. Skin irritation. Respiratory tract irritation.

### Information on toxicological effects

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

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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Propylene Glycol (CAS 57-55-6)

#### Acute

##### **Oral**

LD50	Rat	30 g/kg
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Triethylene glycol monobutyl ether (CAS 143-22-6)

#### Acute

##### **Dermal**

LD50	Rabbit	3.54 ml/kg
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##### **Oral**

LD50	Rat	5300 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** 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 NTP, IARC, or OSHA.

#### **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.

<b>Reproductive toxicity</b>	May damage fertility or the unborn child.
<b>Specific target organ toxicity - single exposure</b>	May cause respiratory irritation.
<b>Specific target organ toxicity - repeated exposure</b>	No data available.
<b>Aspiration hazard</b>	No data available.
<b>Chronic effects</b>	Prolonged exposure may cause chronic effects.
<b>Further information</b>	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.

Components		Species	Test Results
N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)			
<b>Aquatic</b>			
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)			
<b>Aquatic</b>			
<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
Propylene Glycol (CAS 57-55-6)			
<b>Aquatic</b>			
Crustacea	LC50	Water flea (Ceriodaphnia dubia)	18340 mg/l, 48 hours
Triethylene glycol monobutyl ether (CAS 143-22-6)			
<b>Aquatic</b>			
<i>Acute</i>			
Fish	LC50	Pimephales promelas	2400 mg/l, 96 hours

**Persistence and degradability** The product is not readily biodegradable.

**Bioaccumulative potential** No data available.

### Partition coefficient n-octanol / water (log Kow)

N-methyl-2-pyrrolidone (CAS 872-50-4)	-0.54
Propylene Glycol (CAS 57-55-6)	-0.92

**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 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****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)**

Triethylene glycol monobutyl ether (CAS 143-22-6) 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	30 - 60
Triethylene glycol monobutyl ether	143-22-6	< 6

**Other federal regulations****Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Triethylene glycol monobutyl ether (CAS 143-22-6)

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**Safe Drinking Water Act (SDWA)** Not regulated.

**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)

Propylene Glycol (CAS 57-55-6)

Triethylene glycol monobutyl ether (CAS 143-22-6)

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

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

Propylene Glycol (CAS 57-55-6)  
Triethylene glycol monobutyl ether (CAS 143-22-6)

**US. Rhode Island RTK**

Propylene Glycol (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](http://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)  
Triethylene glycol monobutyl ether (CAS 143-22-6)

**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)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
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)	No
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** 31-March-2017  
**Revision date** 10-June-2020  
**Version #** 03  
**HMIS® ratings** Health: 3\*  
Flammability: 1  
Physical hazard: 0

**NFPA ratings**



**List of abbreviations** EC50: Effective Concentration, 50%.

LC50: Lethal Concentration, 50%.

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



## Disclaimer

NOTICE: The information contained in this document is based on data considered to be accurate as of the preparation date of this Safety Data Sheet (SDS) and was prepared pursuant to applicable Government regulation(s). 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 above 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 about 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. Purchasers and users of the product are responsible for determining that this product is suitable for the intended use and application. No responsibility can be assumed by vendor for any damage or injury resulting from failure to adhere to recommended uses, or from any hazards inherent to 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 should explicitly advise their employees, agents, contractors and customers who will use the product of this SDS.