


SAFETY DATA SHEET

1. Identification

Product identifier	AGROTAIN® ADVANCED 1.0
Other means of identification	
SDS number	KAS_AGROADV1_CA_EN
Recommended use	Fertilizer Additive.
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 following single exposure	Category 3 respiratory tract irritation
Environmental 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 statements	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist/vapours/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/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 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 centre/doctor. If exposed or concerned: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison centre/doctor if you feel unwell.
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.
Other hazards	None known.
Supplemental information	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	20 - 30
Triethylene glycol monobutyl ether	143-22-6	< 6
Tetraethylene glycol monobutyl ether	1559-34-8	< 2
Non-hazardous dye	Proprietary	< 1
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 (CO₂). 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 vapours 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 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. Long term storage at temperatures above 36°C (100°F), and long term storage of opened containers, will cause the product to degrade. As the product degrades, it can release harmful gases. Store below 36°C (100°F), and use opened containers within 30 days. Always use oldest stock first.

8. Exposure controls/personal protection

Occupational exposure limits

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

Components	Type	Value	Form
N-methyl-2-pyrrolidone (CAS 872-50-4)	TWA	400 mg/m ³	
Propylene glycol (CAS 57-55-6)	TWA	155 mg/m ³	Vapour and aerosol.
		10 mg/m ³	Aerosol
		50 ppm	Vapour and 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.

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.

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	Green liquid.
Physical state	Liquid.
Form	Liquid.
Colour	Green.
Odour	Slight.
Odour threshold	Not available.
pH	8.1 - 8.6 in 10% solution
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
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	Not available.
Solubility(ies)	
Solubility (water)	Soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	20 - 30 cP
Other information	
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal temperature conditions.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Extreme temperatures.
Incompatible materials	Acids. Strong reducing agents. Strong oxidising agents.
Hazardous decomposition products	During combustion: Carbon oxides. Nitrogen oxides. Sulphur 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
N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
LC50	Wistar rat	> 2.1 mg/l, 4 hours
Oral		
LD50	Wistar rat	> 2000 mg/kg
N-methyl-2-pyrrolidone (CAS 872-50-4)		
Acute		
Dermal		
LD50	Rat	> 5000 mg/kg
Inhalation		
<i>Mist</i>		
LC50	Rat	> 5.1 mg/l, 4 hours
Oral		
LD50	Rat	3605 mg/kg
Propylene glycol (CAS 57-55-6)		
Acute		
Inhalation		
LC50	Rat	> 5 mg/l
Oral		
LD50	Rat	30 g/kg
Triethylene glycol monobutyl ether (CAS 143-22-6)		
Acute		
Dermal		
LD50	Rabbit	3.54 ml/kg
Oral		
LD50	Rat	5300 mg/kg
Skin corrosion/irritation Causes skin irritation.		
Irritation Corrosion - Skin		
N-methyl-2-pyrrolidone (CAS 872-50-4)		Result: Slightly irritating Species: Rabbit
Serious eye damage/eye irritation Causes serious eye damage.		
Eye		
N-methyl-2-pyrrolidone (CAS 872-50-4)		Result: Moderately irritating Species: Rabbit Observation Period: 14 days
Respiratory or skin sensitisation		
Respiratory sensitisation		No data available.
Skin sensitisation		No data available.
Germ cell mutagenicity		No data available.
Carcinogenicity		This product is not considered to be a carcinogen by NTP, IARC, or OSHA.
Reproductive toxicity		May damage fertility or the unborn child.
Specific target organ toxicity - single exposure		May cause respiratory irritation.

Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	No data available.
Chronic effects	Prolonged exposure may cause chronic effects.
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.
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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			
Acute			
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
Chronic			
Crustacea	NOEC	Daphnia magna	12.5 mg/l, 21 days
Propylene glycol (CAS 57-55-6)			
Aquatic			
Crustacea	LC50	Water flea (Ceriodaphnia dubia)	18340 mg/l, 48 hours
Triethylene glycol monobutyl ether (CAS 143-22-6)			
Aquatic			
Acute			
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

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.

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
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	19-February-2016
Revision date	05-April-2017
Version No.	02
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.