1. Identification

Product identifier  AGROTAIN® 20% Yellow
Other means of identification
   Product code  KAS_Agro20Yellow_US_EN
   Synonyms  AGROTAIN® 20
Recommended use  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
                          kochmads@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 or vapor. 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. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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. Take off contaminated clothing and wash before reuse. If exposed or concerned: Get medical advice/attention. Specific treatment (see this label).
   Storage  Store in a well-ventilated place. Keep container tightly closed. Store locked up.
   Disposal  Dispose of contents/container in accordance with local/regional/national/international regulations.
3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane -1,2 -diol</td>
<td>57-55-6</td>
<td>40 - 70</td>
</tr>
<tr>
<td>N-(n-butyl)-thiophosphoric triamide</td>
<td>94317-64-3</td>
<td>10 - 30</td>
</tr>
<tr>
<td>N-methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Non-hazardous components</td>
<td>Proprietary</td>
<td>2 - 6</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 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. Contact may produce eye irritation with associated redness, swelling, tears and pain. Skin irritation. Respiratory tract irritation.

Indication of immediate medical attention and special treatment needed
Treat symptomatically. The effects might be delayed.

General information
Keep victim warm. Keep victim under observation. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media

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 must be worn in case of fire.

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 so without risk.

General fire hazards
This product is not flammable. Will burn if involved in a fire.

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.
Methods and materials for containment and cleaning up

The product is soluble 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.

Environmental precautions

Never return spills in 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.

7. Handling and storage

Precautions for safe handling

Avoid exposure - obtain special instructions before use. Do not breathe mist or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. 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

Avoid exposure - obtain special instructions before use. 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

<table>
<thead>
<tr>
<th>US. Workplace Environmental Exposure Level (WEEL) Guides</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-methyl-2-pyrrolidone (CAS 872-50-4) TWA</td>
<td>40 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Propane -1,2 -diol (CAS 57-55-6) TWA</td>
<td>10 ppm</td>
<td>Aerosol.</td>
</tr>
</tbody>
</table>

Biological limit values

<table>
<thead>
<tr>
<th>ACGIH Biological Exposure Indices</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-methyl-2-pyrrolidone (CAS 872-50-4)</td>
<td>100 mg/l</td>
<td>5-Hydroxy-N-methyl-2-pyrrolidone</td>
<td>Urine</td>
<td>*</td>
</tr>
</tbody>
</table>

* - 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

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

Hand protection

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

Other

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. In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment. Wear air supplied respiratory protection if exposure concentrations are unknown. 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.
Wear appropriate thermal protective clothing, when necessary. Wash hands after handling. 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**
Yellow to golden-brown liquid.

**Physical state**
Liquid.

**Form**
Liquid.

**Color**
Yellow to golden-brown.

**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**
> 200 °C (> 392 °F)

**Flash point**
> 93,3 °C (> 200 °F)

**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)**
Soluble.

**Partition coefficient (n-octanol/water)**
Not available.

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

**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 use, storage and transport.

**Chemical stability**
Stable under normal temperature conditions.

**Possibility of hazardous reactions**
Hazardous polymerization does not occur.

**Conditions to avoid**
Extreme temperatures.

**Incompatible materials**

**Hazardous decomposition products**

11. Toxicological information

**Information on likely routes of exposure**
- **Inhalation**
  May cause respiratory irritation.
- **Skin contact**
  Causes skin irritation. May be absorbed through the skin.
- **Eye contact**
  Causes serious eye damage.
Ingestion may cause severe irritation of the mouth, the esophagus and the gastrointestinal tract.

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
May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>Rabbit</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Wistar rat</td>
<td>&gt; 2.1 mg/l, 4 hours</td>
</tr>
<tr>
<td>Oral</td>
<td>Wistar rat</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td>N-methyl-2-pyrrolidone (CAS 872-50-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>Rat</td>
<td>&gt; 5000 mg/kg</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Rat</td>
<td>&gt; 5.1 mg/l, 4 hours</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>3605 mg/kg</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Acute</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal</td>
<td>Rabbit</td>
<td>20800 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>22000 mg/kg</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
Causes skin irritation.

Serious eye damage/eye irritation
Causes serious eye damage.

Respiratory or skin sensitization

- Respiratory sensitization
  Not a respiratory sensitizer.
- Skin sensitization
  Not classified as a sensitizer.
- Germ cell mutagenicity
  Not classified.
- Carcinogenicity
  Not classified.

<table>
<thead>
<tr>
<th>IARC Monographs. Overall Evaluation of Carcinogenicity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NTP Report on Carcinogens</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not regulated.</td>
<td></td>
</tr>
</tbody>
</table>

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
Based on available data, the classification criteria are not met.

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.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>EC50</td>
<td>Selenastrum capricornutum</td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia magna</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Lepomis macrochirus</td>
</tr>
<tr>
<td><strong>Fish</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>EC50</td>
<td>Scenedesmus subspicatus</td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia magna</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Oncorhynchus mykiss</td>
</tr>
<tr>
<td>Chronic</td>
<td>NOEC</td>
<td>Daphnia magna</td>
</tr>
</tbody>
</table>

Persistence and degradability
The product is not readily biodegradable.

Bioaccumulative potential
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
No data available.

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
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations
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
Dispose in accordance with applicable regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

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 1.0 % One-Time Export Notification only.
(CAS 94317-64-3)

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 regulated.

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)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>10 - 30</td>
</tr>
</tbody>
</table>

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

<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 (NDSSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>No</td>
</tr>
<tr>
<td>Country(s) or region</td>
<td>Inventory name</td>
<td>On inventory (yes/no)*</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------------------------------------------------------</td>
<td>------------------------</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>No</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Taiwan Chemical Substance Inventory</td>
<td>No</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, including date of preparation or last revision

- **Issue date**: 06-February-2019
- **Revision date**: -
- **Version #**: 01
- **HMIS® ratings**: Health: 3*, Flammability: 0, Physical hazard: 0
- **NFPA ratings**: ![NFPA ratings](image)

### List of abbreviations
- EC50: Effective Concentration, 50%.
- LD50: Lethal Dose, 50%.
- LC50: Lethal Concentration, 50%.
- NOEC: No Observed Effect Concentration.

### 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.