

# SAFETY DATA SHEET

## 1. Identification

**Product identifier**                      **UFLEXX™ Stabilized Nitrogen Fertilizer**

**Other means of identification**

**SDS Number**                              KAS\_UFLEXX\_US\_EN

**Synonyms**                                 UFLEXX™; UFLEXX™ Stabilized Nitrogen Fertilizer 46-0-0; \* UFLEXX™ Stabilized Nitrogen Fertilizer 46-0-0 Mini

**Recommended use**                         Fertilizer.

**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.

**OSHA defined hazards**                    Not classified.

**Label elements**

**Hazard symbol**                            None.

**Signal word**                                None.

**Hazard statement**                        The mixture does not meet the criteria for classification.

**Precautionary statement**

**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.

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

**Supplemental information**                Not applicable.

## 3. Composition/information on ingredients

### Mixtures

Chemical name	CAS number	%
Urea	57-13-6	60 - 100
Non hazardous dye	Proprietary	< 3
Dicyandiamide	461-58-5	0.5-1.5

N-(n-butyl)-thiophosphoric triamide	94317-64-3	< 0.1
N-Methyl-2-pyrrolidone	872-50-4	< 0.1
Non hazardous component	Proprietary	< 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 to fresh air. Get medical attention if any discomfort continues.

**Skin contact** Wash contact areas with soap and water. Get medical attention if irritation develops and persists.

**Eye contact** Dust in the eyes: Do not rub eyes. Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.

**Ingestion** Rinse mouth thoroughly. Get medical attention if any discomfort continues.

**Most important symptoms/effects, acute and delayed** Eye contact: Symptoms can include irritation, redness, scratching of the cornea, and tearing.  
Skin contact: May cause mild skin irritation.  
Dust may irritate throat and respiratory system and cause coughing.

**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.

#### 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** Urea is non-combustible under most conditions. However, during a fire, irritating/toxic gases may be generated. The dust can be ignited at very high temperatures, but not expected to explode (minimum ignition temperature (cloud) = 900 deg C.

**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. Use water spray to prevent dust formation, absorb heat, keep containers cool and protect fire-exposed material.

**General fire hazards** Bulk material is non-combustible.

#### 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures** Avoid inhalation of dust and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing. For personal protection, see section 8 of the SDS.

**Methods and materials for containment and cleaning up** Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas. Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. After removal flush contaminated area thoroughly with water.

**Environmental precautions** Never return spills to original containers for re-use.  
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 generation and spreading of dust. Avoid inhalation of dust and contact with skin and eyes. Use 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. Long term storage at temperatures above 100°F (36°C) can adversely affect the efficacy of products containing N-(n-butyl)-thiophosphoric triamide. Store away from incompatible materials.

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Dust (CAS -)	PEL	5 mg/m <sup>3</sup>	Respirable fraction.
		15 mg/m <sup>3</sup>	Total dust.

#### US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Dust (CAS -)	TWA	5 mg/m <sup>3</sup>	Respirable fraction.
		15 mg/m <sup>3</sup>	Total dust.
		50 mppcf	Total dust.
		15 mppcf	Respirable fraction.

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Dust (CAS -)	TWA	3 mg/m <sup>3</sup>	Respirable particles.
		10 mg/m <sup>3</sup>	Inhalable particles.

#### US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value	Form
N-Methyl-2-pyrrolidone (CAS 872-50-4)	TWA	40 mg/m <sup>3</sup>	
Urea (CAS 57-13-6)	TWA	10 ppm	
		10 mg/m <sup>3</sup>	Total particulate.

### 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

#### 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 dust.

#### Individual protection measures, such as personal protective equipment

**Eye/face protection** Risk of contact: Wear dust goggles.

#### Skin protection

**Hand protection** Risk of contact: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

#### Skin protection

**Other** No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid 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 dust, 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>	Blue. Granules.
<b>Physical state</b>	Solid.
<b>Form</b>	Granules.
<b>Color</b>	Blue.
<b>Odor</b>	Slight sulfurous
<b>Odor threshold</b>	Not available.
<b>pH</b>	7.2 (10% in water)
<b>Melting point/freezing point</b>	275 °F (135 °C) Decomposes.
<b>Initial boiling point and boiling range</b>	Not applicable.
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not applicable.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not applicable.
<b>Flammability limit - upper (%)</b>	Not applicable.
<b>Vapor pressure</b>	Not applicable.
<b>Vapor density</b>	Not applicable.
<b>Relative density</b>	1.32
<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>	Not available.
<b>Other information</b>	
<b>Density</b>	47.00 lb/ft <sup>3</sup>
<b>Explosive properties</b>	Not explosive.
<b>Oxidizing properties</b>	Not oxidizing.

**10. Stability and reactivity**

<b>Reactivity Chemical stability Possibility of hazardous reactions</b>	The product is stable and non-reactive under normal conditions of use, storage and transport. Stable under normal temperature conditions. Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	Extreme temperatures.
<b>Incompatible materials</b>	Acids. Strong reducing agents. Strong oxidizing agents.
<b>Hazardous decomposition products</b>	During combustion: Carbon oxides. Nitrogen oxides. Sulfur oxides.

**11. Toxicological information****Information on likely routes of exposure**

<b>Inhalation</b>	High concentrations of dust may irritate throat and respiratory system and cause coughing.
<b>Skin contact</b>	Dust may irritate skin.
<b>Eye contact</b>	Dust may irritate the eyes.

**Ingestion** May cause discomfort if swallowed.

**Symptoms related to the physical, chemical and toxicological characteristics** 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
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Dicyandiamide (CAS 461-58-5)

**Acute**

*Dermal*

LD50	New Zealand white rabbit	> 2000 mg/kg, 24 hours
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*Inhalation*

LC50	Wistar rat	> 259 mg/m <sup>3</sup> , 4 hours
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*Oral*

LD50	Wistar rat	> 10000 mg/kg > 7000 mg/kg
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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*

LC50	Rat	> 5.1 mg/l
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*Oral*

LD50	Rat	3605 mg/kg
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Urea (CAS 57-13-6)

**Acute**

*Oral*

LD50	Rat	14300 mg/kg
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**Skin corrosion/irritation** May cause irritation through mechanical abrasion.

**Irritation Corrosion - Skin**

N-Methyl-2-pyrrolidone (CAS 872-50-4)	Result: Slightly irritating Species: Rabbit
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**Serious eye damage/eye irritation** May cause irritation through mechanical abrasion.

**Eye**

N-Methyl-2-pyrrolidone (CAS 872-50-4)	Result: Moderately irritating Species: Rabbit Observation Period: 14 days
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**Respiratory or skin sensitization**

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

**Skin sensitization** Not a skin sensitizer.

**Germ cell mutagenicity** Based on available data, the classification criteria are not met.

**Carcinogenicity** This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Not listed.

## NTP Report on Carcinogens

Not listed.

## OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

<b>Reproductive toxicity</b>	Based on available data, the classification criteria are not met.
<b>Specific target organ toxicity - single exposure</b>	Based on available data, the classification criteria are not met.
<b>Specific target organ toxicity - repeated exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration hazard</b>	Not an aspiration hazard.
<b>Chronic effects</b>	Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.
<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
Dicyandiamide (CAS 461-58-5)			
<b>Aquatic</b>			
<i>Acute</i>			
Algae	EC50	Selenastrum capricornutum (Pseudokirchnerella subcapitata)	2.04 g/l, 4 days
Crustacea	EC50	Daphnia magna	> 3177 mg/l, 48 hours
Fish	LC50	Lepomis macrochirus	> 1000 mg/l, 96 hours
		Oncorhynchus mykiss	7700 ppm, 96 hours
<i>Chronic</i>			
Crustacea	LC50	Daphnia magna	> 100 mg/l, 21 days
Fish	LC50	Oryzias latipes	> 100 mg/l, 14 days
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>			
Crustacea	NOEC	Daphnia magna	12.5 mg/l, 21 days
<i>Acute</i>			
Algae	EC50	Scenedesmus subspicatus	> 500 mg/l, 72 Hours
Crustacea	EC50	Daphnia magna	> 1000 mg/l, 24 Hours
	LC50	Palaemonetes vulgaris	1107 mg/l, 96 Hours
Fish	LC50	Oncorhynchus mykiss	> 500 mg/l, 96 Hours
<i>Chronic</i>			
Crustacea	LC50	Daphnia magna	25 mg/l, 21 days
Urea (CAS 57-13-6)			
<b>Aquatic</b>			
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)

N-Methyl-2-pyrrolidone (CAS 872-50-4) -0.54

**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****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 applicable.**15. Regulatory information****US federal regulations** This product is not hazardous according to OSHA 29CFR 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.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not regulated.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Hazard categories** Immediate Hazard - No  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No**SARA 302 Extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical** Yes**SARA 313 (TRI reporting)**

Chemical name	CAS number	% by wt.
N-Methyl-2-pyrrolidone	872-50-4	< 0.1

**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)** Not regulated.**US state regulations** WARNING: This product contains chemical(s) known to the State of California to cause birth defects or other reproductive harm.

**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)

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

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

**US. Rhode Island RTK**

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

**US. California Proposition 65****US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

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

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

\*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** 08-January-2014**Revision date** -**Version #** 03**HMIS® ratings** Health: 1  
Flammability: 0  
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 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.