KOCH AGRONOMIC SERVICES, LLC

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance/preparation	**UFLEXX™ Stabilized Nitrogen Fertilizer**
Use of the substance/preparation	Fertiliser.
Version No.	01
Issue date	19-September-2016
Revision date	-
Supersedes date	-
Synonym(s)	UFLEXX™; UFLEXX™ Stabilized Nitrogen Fertilizer 46-0-0; * UFLEXX™ Stabilized Nitrogen Fertilizer 46-0-0 Mini
CAS No.	Mixture
SDS number	KAS_UFLEXX_ME_EN
Manufacturer	
Manufacturer/Supplier	Koch Agronomic Services, LLC 4111 E 37th St N Wichita, KS 67220 US kochmsds@kochind.com 1.866.863.5550
Emergency telephone number	Call CHEMTREC day or night USA/Canada - 1.800.424.9300 Outside USA/Canada -1.703.527.3887 (Collect calls accepted)

2. HAZARDS IDENTIFICATION

This preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

Physical hazards	Not classified as a physical hazard.
Health hazards	Not classified as a health hazard.
Environmental hazards	Not classified as an environmental hazard.
Specific hazards	For additional information on inhalation hazards, see Section 11 of this safety data sheet.
Main symptoms	Dusts may irritate the respiratory tract, skin and eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS No.	Percent	EC-No.	Classification
Urea	57-13-6	60 - 100	200-315-5	
Non hazardous dye	Proprietary	< 3		
Dicyandiamide	461-58-5	0.5-1.5	207-312-8	
N-(n-butyl)-thiophosphoric triamide	94317-64-3	< 0.1	435-740-7	Repr. Cat. 3;R62, Xi;R41
N-methyl-2-pyrrolidone	872-50-4	< 0.1	212-828-1	Repr. Cat. 2;R61, Xi;R36/37/38
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. The full text for all R- and H-phrases is displayed in section 16.
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.
General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
Notes to physician	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Extinguishing media which must not be used for safety reasons	None known.
Unusual fire & explosion hazards	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 for fire-fighters	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.
Hazardous combustion products	Carbon oxides. Nitrogen Oxides Cyanide compounds. Ammonia. Biuret.
General fire hazards	Bulk material is non-combustible.

6. ACCIDENTAL RELEASE MEASURES

Containment procedures	Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas. Collect and dispose of spillage as indicated in section 13 of the SDS.
Personal precautions	Avoid inhalation of dust and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.
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.
Methods for cleaning up	Stop the flow of material, if this is without risk. Prevent entry into waterways, sewers, 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. Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

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.
Storage	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. ACGIH Threshold Limit Values

Components	Type	Value	Form
Dust (CAS -)	TWA	3 mg/m3	Respirable particles.
		10 mg/m3	Inhalable particles.

Egypt. OELs. Threshold limits of air pollutants in the workplace (Decree No. 388, Annex 8)

Components	Type	Value	Form
Dust (CAS -)	TWA	3 mg/m3	Inhalable dust.
		10 mg/m3	Total dust.

Kuwait. OELs. Maximum Limits Allowance for Occupational Exposure to Chemical Substances (TVLs) (Decision No. 210/2001 Appendix No. (3-1))

Components	Type	Value	Form
Dust (CAS -)	TWA	5 mg/m3	Inhalable particulate.
		15 mg/m3	Particulate.

UAE. Dubai. OELs. Maximum Allowable Limits for Indoor Air Pollutants. Industrial Operation Regulation IO-11.0: Appendix, Tables 2 & 2A

Components	Type	Value	Form
Dust (CAS -)	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.
N-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	309 mg/m3	
		75 ppm	
	TWA	103 mg/m3	
		25 ppm	

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.

Recommended monitoring procedures

Additional exposure data Not available.

UAE - Dubai OELs: Skin designation

N-methyl-2-pyrrolidone (CAS 872-50-4) Can be absorbed through the skin.

Engineering measures Provide adequate general and local exhaust ventilation. Observe occupational exposure limits and minimise the risk of inhalation of dust.

Personal protective equipment

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.

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

Eye protection Risk of contact: Wear dust goggles.

Skin and body protection 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.

General Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Hygiene measures 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 Blue. Granules.

Physical state Solid.

Form Granules.

Colour Blue.

Odour Slight sulfurous

Odour threshold Not available.

pH 7.2 (10% in water)

Boiling point Not applicable.

Flash point Not available.

Flammability limits in air, upper, % by volume Not applicable.

Flammability limits in air, lower, % by volume Not applicable.

Vapour pressure Not applicable.

Relative density 1.32

Solubility (water) Soluble.

Partition coefficient (n-octanol/water)	Not available.
Viscosity	Not available.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Melting point/freezing point	135 °C (275 °F) Decomposes.
Auto-ignition temperature	Not available.
VOC	Not available.
Other data	
Density	47.00 lb/ft³
Explosive properties	Not explosive.
Flammability (solid, gas)	Not applicable.
Oxidising properties	Not oxidising.

10. STABILITY AND REACTIVITY

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Conditions to avoid	Extreme temperatures.
Hazardous decomposition products	During combustion: Carbon oxides. Nitrogen oxides. Sulphur oxides.
Stability	Stable under normal temperature conditions.
Materials to avoid	Acids. Strong reducing agents. Strong oxidising agents.
Hazardous polymerisation	Hazardous polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological data

Components	Species	Test results
Dicyandiamide (CAS 461-58-5)		
Acute		
Dermal		
LD50	New Zealand white rabbit	> 2000 mg/kg, 24 hours
Inhalation		
LC50	Wistar rat	> 259 mg/m3, 4 hours
Oral		
LD50	Wistar rat	> 10000 mg/kg
		> 7000 mg/kg
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		
LC50	Rat	> 5.1 mg/l
Oral		
LD50	Rat	3605 mg/kg
Urea (CAS 57-13-6)		
Acute		
Oral		
LD50	Rat	14300 mg/kg

Acute toxicity	May cause discomfort if swallowed.

Routes of exposure	Skin. Eyes. Ingestion. Inhalation.
Toxicological information	Occupational exposure to the substance or mixture may cause adverse effects.
Chronic toxicity	Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.
Sensitisation	Not classified as a sensitiser.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Mutagenicity	Based on available data, the classification criteria are not met.
Reproductivity	Based on available data, the classification criteria are not met.
Local effects	May cause skin and eye irritation. When heated, the vapours/fumes given off may cause respiratory tract irritation.
Symptoms and target organs	Symptoms can include irritation, redness, scratching of the cornea, and tearing.
Further information	No other specific acute or chronic health impact noted.

12. ECOLOGICAL INFORMATION

Ecotoxicological data

Components		Species	Test results
Dicyandiamide (CAS 461-58-5)			
Aquatic			
Acute			
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
Chronic			
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)			
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			
Crustacea	NOEC	Daphnia magna	12.5 mg/l, 21 days
Acute			
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
Chronic			
Crustacea	LC50	Daphnia magna	25 mg/l, 21 days
Urea (CAS 57-13-6)			
Aquatic			
Fish	LC50	Leuciscus idus	> 6810 mg/l, 96 hours

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.
Environmental effects	The product may cause risk of hazardous effects to the environment.
Persistence and degradability	No data available.
Bioaccumulation	No data available.

Bioaccumulative potential

Octanol/water partition coefficient log Kow

Urea (CAS 57-13-6)	-2.11

Mobility	No data available.

Other adverse effects No data available.

13. DISPOSAL CONSIDERATIONS

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

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

Labelling

Contains Dicyandiamide, N-(n-butyl)-thiophosphoric triamide, N-methyl-2-pyrrolidone, Urea

R-phrase(s) None.

S-phrase(s) None.

Bahrain. Chemicals Subject to the Prior Informed Consent Procedure under the Rotterdam Convention (Law No. 14 of 2012, Annex III)

Not listed.

Bahrain. CWC Chemical Substances (Decree No. 6 of 1997, Schedules 1, 2 and 3; Law No. 51 of 2009)

Not listed.

Bahrain. Prohibited Chemicals (Ministry of State for Municipal & Environmental Affairs, Resolution No 7 of 2002, On Control of Importing & Use of Prohibited & Restricted Chemicals, Table 1)

Not listed.

Bahrain. Severely Restricted Chemicals (Ministry of State for Municipal & Environmental Affairs, Resolution No 7 of 2002, On Control of Importing & Use of Prohibited & Restricted Chemicals, Table 2)

Not listed.

Regulatory information This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

16. OTHER INFORMATION

Wording of the R-phrases in sections 2 and 3
R36/37/38 Irritating to eyes, respiratory system and skin.
R41 Risk of serious damage to eyes.
R61 May cause harm to the unborn child.
R62 Possible risk of impaired fertility.

Bibliography
EPA: Acquire database
HSDB® - Hazardous Substances Data Bank

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