



SAFETY DATA SHEET

1. Identification

Product identifier	UFLEXX™ Stabilized Nitrogen Fertilizer
Other means of identification	
Synonyms	UFLEXX™; UFLEXX™ Stabilized Nitrogen Fertilizer 46-0-0; * UFLEXX™ Stabilized Nitrogen Fertilizer 46-0-0 Mini
SDS number	KFAU_UFLEXX_AU_EN
Recommended use of the chemical and restrictions on use	
Recommended use	Fertiliser.
Restrictions on use	Not available.
Details of manufacturer or importer	
Manufacturer	Koch Fertiliser Australia Pty Ltd. PO Box 7024 St Kilda Rd, Victoria 8000 Australia
Telephone	+61 3 9452 8200 or +1.316.828.7672
Fax	+61 3 9867 7030 Email: kochmsds@kochind.com
Emergency telephone	For Chemical Emergency Call CHEMTREC day or night USA/Canada - 1.800.424.9300 Outside USA/Canada - 1.703.527.3887 (Please reverse charges)

2. Hazard(s) identification

Classification of the hazardous chemical

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Not classified.

Label elements, including precautionary statements

Hazard symbol(s)	None.
Signal word	None.
Hazard Statement(s)	The mixture does not meet the criteria for classification.
Precautionary Statement(s)	
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.

Other hazards which do not result in classification None known.

Supplemental information Not applicable.

3. Composition/information on ingredients

Mixture

Identity of chemical ingredients	CAS number and other unique identifiers	Concentration of ingredients
Urea	57-13-6	60 - 100
Dicyandiamide	461-58-5	1 - 5
Non hazardous dye	Proprietary	< 3
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

Description of necessary 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.

Personal protection for first-aid responders Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

Symptoms caused by exposure 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.

Medical attention and special treatment Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

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 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.

Hazchem Code None.

General fire hazards Bulk material is non-combustible.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel 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.

For emergency responders Use personal protection recommended in Section 8 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.

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.

Never return spills to original containers for re-use.

Other issues relating to spills and releases

Clean up in accordance with all applicable regulations.

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 and personal protection**Control parameters****Occupational exposure limits****Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)**

Components	Type	Value
N-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	309 mg/m ³
	TWA	75 ppm
		103 mg/m ³
		25 ppm

Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)

Components	Type	Value
N-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	309 mg/m ³
	TWA	75 ppm
		103 mg/m ³
		25 ppm

US. ACGIH Threshold Limit Values

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

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value	Form
Dust (CAS -)	TWA	4 mg/m ³	Respirable dust.
		10 mg/m ³	Inhalable dust.
		80 mg/m ³	
N-methyl-2-pyrrolidone (CAS 872-50-4)	TWA	20 ppm	
		40 mg/m ³	
		10 ppm	

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Components	Type	Value	Form
Dust (CAS -)	TWA	4 mg/m ³	Inhalable dust.
		0.3 mg/m ³	Respirable dust.
N-methyl-2-pyrrolidone (CAS 872-50-4)	TWA	82 mg/m ³	Vapor and aerosol.
		20 ppm	Vapor and aerosol.

Biological limit values

Germany. TRGS 903, BAT List (Biological Limit Values)

Components	Value	Determinant	Specimen	Sampling time
N-methyl-2-pyrrolidone (CAS 872-50-4)	150 mg/l	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	*

* - For sampling details, please see the source document.

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

Australia OELs: 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 minimise the risk of inhalation of dust.

Individual protection measures, for example personal protective equipment (PPE)

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.

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.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

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-green granules
Physical state	Solid.
Form	Granules.
Colour	Blue-green.
Odour	Slight sulfurous
Odour threshold	Not available.
pH	7.2 (10% in water)
Melting point/freezing point	135 °C (275 °F) Decomposes.
Initial boiling point and boiling range	Not applicable.
Flash point	Not available.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.

Vapour pressure	Not applicable.
Vapour density	Not applicable.
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	Not available.
Other physical and chemical parameters	
Density	47.00 lb/ft ³
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

10. Stability and reactivity

Reactivity	Reacts violently with strong oxidants, nitrites, inorganic chlorides, chlorites and perchlorates causing fire and explosion hazard.
Chemical stability	Normally stable. May gradually give off ammonia. The product is hygroscopic and will absorb water by contact with the moisture in the air.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Moisture. High temperatures. Contact with incompatible materials.
Incompatible materials	Strong oxidising agents. Nitric acid. Nitrites.
Hazardous decomposition products	Carbon oxides. Nitrogen oxides (NOx). Ammonia. Biuret.

11. Toxicological information

Information on possible routes of exposure

Inhalation	Dust may irritate respiratory system.
Skin contact	Dust may irritate skin.
Eye contact	Dust may irritate the eyes.
Ingestion	May irritate and cause stomach pain, vomiting and diarrhoea.

Symptoms related to exposure Symptoms can include irritation, redness, scratching of the cornea, and tearing.

Acute toxicity May irritate and cause stomach pain, vomiting, diarrhoea and nausea.

Components	Species	Test results
Dicyandiamide (CAS 461-58-5)		
Acute		
<i>Dermal</i>		
LD50	New Zealand white rabbit	> 2000 mg/kg, 24 hours
<i>Inhalation</i>		
LC50	Wistar rat	> 259 mg/m ³ , 4 hours
<i>Oral</i>		
LD50	Wistar rat	> 10000 mg/kg > 7000 mg/kg
N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg
<i>Inhalation</i>		
LC50	Wistar rat	> 2.1 mg/l, 4 hours

Components	Species	Test results
<i>Oral</i> LD50	Wistar rat	> 2000 mg/kg
N-methyl-2-pyrrolidone (CAS 872-50-4)		
Acute		
<i>Dermal</i> LD50	Rat	> 5000 mg/kg, 24 Hours
<i>Inhalation</i> LC50	Rat	> 5.1 mg/l, 4 Hours
<i>Oral</i> LD50	Rat	4150 mg/kg
Urea (CAS 57-13-6)		
Acute		
<i>Oral</i> LD50	Rat	14300 mg/kg
Skin corrosion/irritation	May cause irritation through mechanical abrasion.	
Serious eye damage/irritation	May cause eye irritation.	
Respiratory or skin sensitisation		
Respiratory sensitisation	No data available.	
Skin sensitisation	Not a skin sensitiser.	
Germ cell mutagenicity	No data available.	
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
Reproductive toxicity	The product contains a small amount of substance that is suspected of damaging fertility or the unborn child.	
Specific target organ toxicity - single exposure	No data available.	
Specific target organ toxicity - repeated exposure	No data available.	
Aspiration hazard	Not classified.	
Chronic effects	Prolonged exposure may cause chronic effects.	
Other 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.

Components	Species	Test results
Dicyandiamide (CAS 461-58-5)		
Aquatic		
<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)		
Aquatic		
Algae	EC50	Selenastrum capricornutum 280 mg/l, 96 hours
Crustacea	EC50	Daphnia magna 290 mg/l, 48 hours

Components		Species	Test results
	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			
<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)			
Aquatic			
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	
Urea (CAS 57-13-6)		-2.11	
Mobility in soil	No data available.		
Other adverse effects	No data available.		

13. Disposal considerations

Disposal methods	Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Residual waste	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

ADG	Not regulated as dangerous goods.
RID	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

Safety, health and environmental regulations	
National regulations	This Material Safety Data Sheet was prepared in accordance with the Australia National Code of Practice for the Preparation of Material Safety Data Sheets (NOHSC: 2011.) Australia. SUSMP, (Standard for the Uniform Scheduling of Medicines and Poisons as amended).
Australia Medicines & Poisons Appendix A	
Poisons schedule number not allocated.	
Australia Medicines & Poisons Appendix B	
Poisons schedule number not allocated.	

Australia Medicines & Poisons Appendix C

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix D

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix E

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

Australia Medicines & Poisons Appendix F

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix G

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix H

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix I

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix J

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix K

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 2

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 3

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 4

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 5

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

Australia Medicines & Poisons Schedule 6

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

Australia Medicines & Poisons Schedule 7

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 8

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 9

Poisons schedule number not allocated.

High Volume Industrial Chemicals (HVIC)

Not listed.

Importation of Ozone Depleting Substances (Customs(Prohibited imports) Regulations 1956, Schedule 10)

Not listed.

National Pollutant Inventory (NPI) substance reporting list

Not listed.

Prohibited Carcinogenic Substances

Not regulated.

Prohibited Substances (National Model Regulation for the control of Workplace Hazardous Substances, Schedule 2 NOHSC:1005 (1994) as amended)

Not listed.

Restricted Importation of Organochlorine Chemicals (Customs(Prohibited Imports) Regulations 1956, Schedule 9)

Not listed.

Restricted Carcinogenic Substances

Not regulated.

International regulations

Stockholm Convention

Not applicable.

For advice, contact a Poisons information Centre (Phone eg Australia 131 - 126; New Zealand 03 - 4747 - 000) or a doctor (at once)., If swallowed, do NOT induce vomiting., If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.

in preparations Exception may apply, see the regulation for relevance.

Exception was applied to data.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Dicyandiamide (CAS 461-58-5)

WASTES HAVING AS CONSTITUENTS: ORGANIC CYANIDES

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	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

Issue date	29-December-2015
Revision date	-
Key abbreviations or acronyms used	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.