

SAFETY DATA SHEET

Section 1. Identification of the material and the supplier

Product: **Foliar Urea 46%N LBU**
 Item Code:

Product Use: Fertilizer, additive to feeds, antifreeze and de-icing products, intermediate, pH regulator.
 Restriction of Use: Refer to Section 15

New Zealand Supplier: Horticulture Ltd
 Address: 10 Firth Street
 Drury, 2113

Telephone: +64 9 294 8453
 Fax Number: +64 9 294 7272

Emergency Telephone: 0800 764 766 (National Poison Centre)

Date of SDS Preparation: 25 August 2021

Section 2. Hazards Identification

The manufacturer has stated that this substance is NOT hazardous according to Regulation (EC) No. 1272/2008 and Council Directive 67/548/EWG therefore non-hazardous as per EPA Hazardous Substances (Classification) Notice 2020.

Section 3. Composition / Information on Ingredients

Ingredients

Product containing urea as a main ingredient. (total content of urea min. 99)

Section 4. First Aid Measures

Routes of Exposure:

If in Eyes: Rinse cautiously with water for 15 minutes. If eye irritation persists: call doctor/physician.

If on Skin: Wash with plenty of soap and water. If skin irritation occurs: get medical advice/attention.

If Swallowed: Rinse mouth with water. Never give anything to the mouth of an unconscious person. If vomiting occurs, place victim face downwards, with the head turned to the side and lower than the hips to prevent vomit entering the lungs. Call a POISON CENTER or doctor/physician if you feel unwell.

If Inhaled Remove person to fresh air. Remove contaminated clothing and loosen remaining clothing. Allow person to assume most comfortable position and keep warm. Keep at rest until fully recovered. In case of lung irritation, first treatment with dexametason aerosol (spray). Get medical advice if breathing becomes difficult.

Most important symptoms and effects, both acute and delayed

Skin effect: Longer contact may cause skin irritation
 Eyes effect: Longer contact may cause serious eye irritation. Remove contact lenses.
 Swallowing: Ingestion of a larger amount (above 50 g) leads to gastrointestinal discomforts.
 Inhalation: High concentration of airborne dust may cause nose irritation and irritation of the upper respiratory tract. Medical assistance is needed in case of inhalation of large amounts of dust.
 Long - term effects: No negative effects are known. In a natural state it is present in a human's body. Urea is used as an ingredient of cosmetics, medical preparations, is a product of metabolism in a human's body and is present in urine.

Section 5. Fire Fighting Measures

Hazard Type	Non Flammable, Non-combustible material.
Hazards from decomposition products	Urea decomposes when heating producing ammonia. In case of fire toxic gases containing ammonia, carbon dioxide and nitric oxides - NOx may be released. Inhalation of gases coming from thermal decomposition may cause irritation and caustic action for the respiratory system. Influence on lungs may occur over some time.
Suitable Extinguishing media	Extinguishing media for surrounding fires: All extinguishing media allowed. Use fire extinguishing methods suitable to surrounding conditions.
Precautions for firefighters and special protective clothing	Irritating substances may be emitted upon thermal combustion so self-contained breathing apparatus will be required. Call fire brigade. Avoid inhaling of vapours (they are toxic). Stand with a face towards fire, always back to a wind. When extinguishing a fire, use proper masks. If vapours are released, use breathing apparatus. Use large amount of water. Prevent release of a melted product to sewage ducts. If water containing a dissolved product is released to sewage or waters, inform local authorities immediately.
HAZCHEM CODE	None allocated

Section 6. Accidental Release Measures

Wear appropriate protective clothing. Exclude non-essential people from the area.

Prevent large amounts from getting through to environment or waterways. Keep animals away from large spills.
 Pay attention to avoid pollution of waters or sewage ducts and inform proper authorities in case of their accidental pollution.

Any spillage of urea should be immediately cleaned and placed in a clean, labelled container. Depending on a degree and type of pollution, a collected product may be used as a fertilizer for agricultural purposes scattering it with a thin layer over a field or product may be transferred to a specialized company for neutralization purposes. Dispose of according to Local Regulations detailed in Section 13.

Section 7. Handling and Storage

Precautions for Handling:

- Avoid contact with eyes.

- Avoid repeated or prolonged contact with skin or clothing.
- Avoid dust inhalation.
- Wear suitable protective clothing.
- Avoid excessive accumulation of dusts.
- Avoid unnecessary exposure to atmospheric air to prevent moisture retention.
- When handling the product for a longer time, wear proper protective clothes and gloves.

Precautions for Storage:

- Store in cool and dry conditions.
- Keep away product from ignition sources.
- Keep storage rooms clean.
- Storage buildings should be dry and well vented.

Section 8 Exposure Controls / Personal Protection

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

Substance	TWA		STEL	
	ppm	mg/m ³	ppm	mg/m ³

No ingredients have exposure limits

Workplace Exposure Standard – Time Weighted Average (WES-TWA). The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure. Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply. Workplace Exposure Standards and Biological Exposure Indices NOV 2020 12TH EDITION.

DNELs for workers

Acute - systemic effects Dermal DNEL1: 580 mg/kg bw/d
 Acute - systemic effects Inhalation DNEL: 292 mg/m³
 Long-term - systemic effects Dermal DNEL: 580 mg/kg bw/d
 Long-term - systemic effects Inhalation DNEL: 292 mg/m³

DNELs for general population

Acute - systemic effects Dermal DNEL: 580 mg/kg bw/d
 Acute - systemic effects Inhalation DNEL: 125 mg/m³
 Acute - systemic effects Oral DNEL: 42 mg/kg bw/d
 Long-term - systemic effects Dermal DNEL: 580 mg/kg bw/d
 Long-term - systemic effects Inhalation DNEL: 125 mg/m³
 Long-term - systemic effect Oral DNEL: 42 mg/kg bw/d

PNEC2

PNEC aqua (freshwater) 0.047 g/L

Engineering Controls

Avoid excessive accumulation of dusts and install a local exhaust ventilation system where it is necessary.

Personal Protection Equipment

Eyes	Not required.
Skin	When handling the product for a longer time, wear proper protective gloves.
Respiratory	At high concentration of dusts, wear proper dust-masks.

Section 9 Physical and Chemical Properties

Physical state at 20°C and 1013 hPa	Solid
Odour	Odourless
Odour Threshold	Not available

pH	Not available
Boiling Point	Urea decomposes before reaching the boiling point.
Melting/Freezing Point	407 K at 1013 hPa
Flash Point	Not available
Flammability	Not available
Upper and Lower Explosive Limits	Not available
Vapour Pressure	0.002 Pa at 298 K
Vapour Density	Not available
Relative Density	1330 at 20°C
Water Solubility	624000 mg/L at 20 °C
Partition coefficient (n-octanol/water)	Log Kow (Pow): -1.73 at 20 °C
Auto-ignition Temperature	Not available
Decomposition Temperature	The substance decomposes at the melting point.
Viscosity	The substance is a solid at room temperature.
Granulometry	Fraction 1 – 3 mm min. 90%
Dissociation constant	Above 0.6 (pKb)

Section 10. Stability and Reactivity

Stability of Substance	Stable during storage, handling and application in normal conditions.
Hazardous Reactions	Non-reactive during storage, handling and application in normal conditions.
Conditions to Avoid	Heating above the melting point. Welding or heat treatment of equipment on installation, where urea may be present without earlier thorough washing to remove all residue of a fertilizer.
Incompatible Materials	Strong oxidants, acids, alkalis, nitrates, calcium hypochlorite or sodium hypochlorite.
Hazardous Decomposition Products	Urea reacts with calcium hypochlorite or sodium hypochlorite forming explosive nitrogen trichloride.

Section 11 Toxicological Information

Information on toxicological effects

Toxicokinetics (absorption, metabolism, distribution and elimination)

Dermal absorption - Dermal absorption values of 7.2-9.5% is reported for urea. Absorption rate (%): 9.5

Basic toxicokinetics

The handling of urea by the human body is well characterised as it is a normal product of protein catabolism and is normally produced in large quantities.

Acute toxicity

Urea is of very low acute toxicity by all routes investigated. The acute oral LD50 of urea is reported to be 14.3-15.0 g/kg bw in the rat and 11.5-13.0 g/kg bw in the mouse. The acute subcutaneous LD50 is reported to be 8.2-9.4 g/kg bw in the rat and 9.2-10.7 g/kg bw in the mouse. The acute intravenous LD50 of urea is reported to be 5.3-5.4 g/kg bw in the rat and 4.6-5.2 g/kg bw in the mouse.

LD50 (oral): 14300 mg/kg bw

Irritation

Data from various species (including human volunteers) indicate that urea is not irritating to intact skin. The results of a guideline-compliant eye irritation study do not trigger classification as an eye irritant.

Skin irritation / corrosion: not irritating Eye irritation: not irritating

Corrosivity

Human and animal data show that urea is not corrosive.

Sensitisation Skin sensitisation

Urea is naturally present at relatively high concentrations in human skin (up to 1% by weight) and is widely used in skin creams for the treatment of dry and irritant skin conditions without any reports of sensitisation reactions. It is therefore considered to be very unlikely to be a skin sensitizer.

not sensitising Respiratory sensitisation

There are no animal or human data which indicate that urea is a respiratory sensitizer. not sensitising

Repeated dose toxicity

12- month carcinogenicity screening studies in the rat and mouse demonstrate that urea is of very low chronic toxicity by the oral route. Similarly, no evidence of local or systemic toxicity was seen in 4- week and 25-week dermal toxicity studies in the rat. No clear toxicity was seen in dogs administered high doses of urea by subcutaneous injection over a period 45 days.

(route: oral): NOAEL: 2250 mg/kg bw/day

Mutagenicity

Negative results are reported in three Ames tests. Positive results are reported in assays for mutagenicity and clastogenicity in mammalian cells, however the value of these studies are limited by the extremely high test concentrations. A positive result is reported in a mouse bone marrow assay of unconventional design, however this study is not considered to be reliable. Based on its physiological role and presence in the body at high concentrations, urea is not considered to be genotoxic.

Genetic toxicity: negative

Carcinogenicity

No evidence of carcinogenicity was seen in NCI screening studies in the rat and mouse. (route: oral): NOAEL4 : 2250 mg/kg bw/day

Toxicity for reproduction

Effects on fertility

No standard studies are available. It is considered extremely unlikely that occupational, primary or secondary exposure to urea will result in any effects on fertility as the levels of exposure will be insignificant compared to those present in the body as a result of protein catabolism.

Developmental toxicity

No standard studies are available. It is considered extremely unlikely that occupational, primary or secondary exposure to urea will result in developmental toxicity as the levels of exposure will be insignificant compared to those present in the maternal and foetal circulation as a result of protein catabolism.

(route: oral): LOAEL5: 500 mg/kg bw/day Toxicity to reproduction: other studies No additional information is available.

Section 12. Ecotoxicological Information

This product is not hazardous to the environment.

Persistence and degradability	Urea does not fulfill the P or vP criteria.
Bioaccumulation	Urea does not fulfill the B or vB criteria.
Mobility in Soil	Highly biodegradable in soil and in water.
Other adverse effects	No data available.

Toxicity

Urea does not fulfill the T criteria.

Aquatic compartment (including sediment)

Fish

Urea is of very low acute toxicity to fish: reported LC50 values range from >6810 to 28000 mg/L LC506 for freshwater fish: 6810 mg/L

Long-term toxicity to fish

Urea is of inherently low toxicity to fish species: it is a normal product of protein catabolism and therefore fish have evolved effective excretion mechanisms. Additionally, exposure will be limited by the action of microorganisms and incorporation of urea into the urea cycle.

Short-term toxicity to aquatic invertebrates

Low toxicity was demonstrated in Daphnia, freshwater snails and Aedes egypti larvae.

EC507/LC50 for freshwater invertebrates: 10000 mg/L

Long-term toxicity to aquatic invertebrates

A waiver is proposed on exposure grounds. Urea is of inherently low toxicity to species of aquatic invertebrates and exposure will be limited by the action of microorganisms and incorporation of urea into the urea cycle.

Algae and aquatic plants

The 192 hour toxicity threshold of blue-green algae urea was 47 mg/l. To some extent urea exhibits toxic action to *Microcystis aeruginosa*. The 7 day toxicity threshold of urea to *Scenedesmus quadricauda* was >10000 mg/l.

EC10/LC10 or NOEC for freshwater algae: 47 mg/L Sediment organisms

Urea is rapidly broken down by soil and sediment bacteria and assimilated into the nitrogen cycle. The very high water solubility of urea and low adsorption additionally indicates very low exposure to sediment organisms.

Other aquatic organisms No data are available

Toxicity to aquatic micro-organisms

The 72 hour toxicity threshold of *Entosiphon sulcatum* to urea was 29 mg/l, and the 16 hour toxicity threshold of urea to *Pseudomonas putida* was > 10000 mg/l.

Terrestrial compartment

Toxicity to soil macro-organisms

Application of urea (in common with other nitrogen fertilizers) releases ammoniacal-N which is nitrified to nitrate: an acidic species that causes gradual lowering of soil pH unless the effect is counteracted by lime application. This is not a direct effect of exposure to urea.

Toxicity to terrestrial plants

Low toxicity to plants is predicted: the substance is widely used as a fertilizer and therefore has a beneficial effect on plant growth.

Toxicity to soil micro-organisms

Urea is of inherently low toxicity to microorganisms as it is utilized as a nutrient and nitrogen source.

Toxicity to other terrestrial organisms

No data are available. Atmospheric compartment No data are available.

Non compartment specific effects relevant for the food chain (secondary poisoning) Toxicity to birds

A waiver is proposed on exposure grounds.

Toxicity to mammals

No additional data are available; low toxicity is predicted on a base of the physiological production of urea by mammalian species.

Section 13. Disposal Considerations

Disposal Method:

Remains of the product, including packaging waste, should be transferred to the specialized companies with an appropriate waste management permit.

Depending on a degree and type of contamination, the product is either used as a fertilizer for agricultural purposes or transferred to the specialized company for neutralization.

Precautions or methods to avoid: None known.

Section 14 Transport Information

This product is NOT classified as a Dangerous Good for transport in NZ ; NZS 5433:2012

Section 15 Regulatory Information

The manufacturer has stated that this substance is NOT hazardous according to Regulation (EC) No. 1272/2008 [CLP] therefore non-hazardous as per EPA Hazardous Substances (Classification) Notice 2020

Section 16 Other Information

Glossary

EC₅₀

Median effective concentration.

EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority
HSNO	Hazardous Substances and New Organisms.
LC ₅₀	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD ₅₀	Lethal dose to kill 50% of test animals/organisms.
LEL	Lower explosive level.
OSHA	American Occupational Safety and Health Administration.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level
WES	Workplace Exposure Limit

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2020 edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433:2012
5. HSW (Hazardous Substances) Regulations 2017

Disclaimer

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Please contact the New Zealand distributor, if further information is required.

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