

Urea Microprill Feed Grade

Section 1. Identification

GHS product identifier : Urea Microprill Feed Grade
Other means of identification : Product code: **2496-14032**
Product type : Solid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	
For further manufacture of feed.	
Uses advised against	Reason
Not to be used as an ingredient for human food.	Not approved for humans

Supplier's details : Agrium Canada Partnership (A Subsidiary of Nutrien Ltd.)
 13131 Lake Fraser Drive, S.E.
 Calgary, Alberta, Canada, T2J 7E8

 Agrium U.S. Inc. (A Subsidiary of Nutrien Ltd.)
 5296 Harvest Lake Drive
 Loveland, CO 80538

 Company phone number (North America):
 1-800-403-2861 (Customer Service)

 sds@nutrien.com - www.nutrien.com

Emergency telephone number (with hours of operation) : Nutrien North American
 24 HOUR EMERGENCY TELEPHONE NUMBERS:

 English:
 Transportation Emergencies: 1-800-792-8311
 Medical Emergencies: 1-303-389-1653

 French or Spanish:
 Transportation or Medical Emergencies: 1-303-389-1654

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Hazard pictograms : **Not Applicable.**
No Aplicable.
Non applicable.

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention : Not applicable.

Section 2. Hazards identification

Response	: Not applicable.
Storage	: Not applicable.
Disposal	: Not applicable.
Hazards not otherwise classified	: None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

CAS number/other identifiers

CAS number : Not applicable.

Ingredient name	%	CAS number
Urea	>98	57-13-6
Urea formaldehyde polymer	<2	9011-05-6
Imidodicarbonic diamide	<1.5	108-19-0

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: May cause irritation due to mechanical action. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
Inhalation	: Remove person to fresh air and keep comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: No known effect after skin contact. Rinse with water for a few minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if symptoms occur.
Ingestion	: Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: No known significant effects or critical hazards.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: No specific data. May cause irritation due to mechanical action.
Inhalation	: No specific data. Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
Skin contact	: No specific data. Inorganic salt. Prolonged or repeated exposure may dry the skin, causing irritation.
Ingestion	: Adverse symptoms may include the following: stomach pains bloating

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section 4. First aid measures

Specific treatments : Under controlled feeding conditions, urea is used as a nutritional supplement in cattle and other animals. The toxic dose in cattle given urea for the first time is considered to be 0.45 g/kg or a total of 100-200 g. Mature bulls can digest as much as 400 grams per day without ill effects. As little as 50 g may cause adverse effects in cattle not accustomed to it.

Animal Antidote and Emergency Treatment:

In animals, the cold water - acetic acid treatment may work. The adult cow is given 19-38 liters cold water and 3.8 liters of 5% acetic acid (vinegar) orally. This treatment limits absorption of ammonia from the rumen by diluting the rumen contents and slowing the rate of hydrolysis of urea by decreasing rumen pH and temperature. The treatment also promotes urine flow that, if maintained by fluid therapy, may assure recovery from urea toxicity. Gaseous or fluid bloat should be relieved before pumping water into the rumen. Consult your veterinarian immediately.

If necessary, veterinary advice may be obtained by calling the Medical Emergency number in Section 1.

Antidote information

Product/ingredient name	Antidote information
vinegar water solution	

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Not considered to be flammable. No specific fire or explosion hazard.

Hazardous thermal decomposition products : Material will not burn. Undergoes thermal decomposition at elevated temperatures to produce solid cyanuric acid and release toxic and combustible gases (ammonia, carbon dioxide, and oxides of nitrogen). Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Contain and collect the water used to fight the fire for later treatment and disposal. Do not release runoff from fire to drains or watercourses.

Remark : Incompatible with halogens. If mixed with chlorine or hypochlorites, it may form nitrogen trichloride which may explode spontaneously in air.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused adverse impacts (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Recover the material and use it for the intended purpose.
or
Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Collect spillage. Recover the material and use it for the intended purpose.
or
Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8).
- Advice on general occupational hygiene** : Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. May form steep piles that can collapse without warning when stored in bulk. Avoid forming steep slopes when removing product. Ensure that bulk bags or smaller packaged products stored in tiers are stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, rolling, or collapse. Use caution when opening truck or railcar doors as product may have shifted during transport.

Must be stored in a dry location. Absorbs moisture on long-term storage under high humidity conditions. Store away from incompatible materials (see Section 10). When product is stored in sealable containers, keep container tightly closed and sealed until ready for use. Sealable containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Urea	AIHA WEEL (United States, 10/2011). TWA: 10 mg/m ³ 8 hours.
Urea formaldehyde polymer	OSHA PEL: Particulates not otherwise regulated (PNOR) Total dust: 15 mg/m ³ TWA (8 hours), Respirable fraction: 5 mg/m ³ TWA (8 hours)
Biuret	OSHA (United States): Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m ³ ; Respirable fraction: 5 mg/m ³ . OSHA (United States): Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m ³ ; Respirable fraction: 5 mg/m ³ .

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: sealed eyewear

Skin protection

Hand protection : The personal protective equipment required varies, depending upon your risk assessment. Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : No special protective clothing is required.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Solid. [Solid beads.]

Color : White.

Odor : Characteristic.

Odor threshold : Not available.

pH : 7.2 @ 10% solution.

Melting point : 133°C (271.4°F)

Boiling point : Not available.

Flash point : [Product does not sustain combustion.]

Evaporation rate : Not available.

Flammability (solid, gas) : Non-flammable substance. Non-combustible.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 0.08 kPa (0.6 mm Hg) [room temperature].

Vapor density : Not available.

Relative density : 1.33

Solubility : Easily soluble in the following materials: cold water and hot water.

Solubility in water : 1080 g/l

Partition coefficient: n-octanol/water : -1.59

Auto-ignition temperature : Not applicable.

Decomposition temperature : 135°C (275°F)

Viscosity : Not available.

Aerosol product

Section 10. Stability and reactivity

- Reactivity** : Incompatible with halogens, hydrogen peroxide, chlorinated hydrocarbons, fluorine, nitric acid, oxidizing agents and sulfuric acid.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : High temperature
Absorbs moisture on long-term storage under high humidity conditions.
- Incompatible materials** : Incompatible with halogens, hydrogen peroxide, chlorinated hydrocarbons, fluorine, nitric acid, oxidizing agents and sulfuric acid.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Urea	LD50 Oral	Mouse - Male	11 g/kg	-
	LD50 Oral	Rat - Male	8471 mg/kg	-
	LD50 Oral	Rat - Male	14300 mg/kg	-

Conclusion/Summary : Non-hazardous substance.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Urea	Non-irritating to the skin.	Human	0	-	-

Conclusion/Summary

- Skin** : Non-irritating to the skin.
- Eyes** : Non-irritating to the eyes.
- Respiratory** : Non-irritating to the respiratory system.

Sensitization

Conclusion/Summary

- Skin** : Non-sensitizer to skin.
- Respiratory** : Non-sensitizer to lungs.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Urea	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Cell: Somatic Metabolic activation: With and without	Negative

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Urea	Negative - Oral - TC	Rat - Male, Female	2250 mg/kg Continuous	-

Reproductive toxicity

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
No known significant effects or critical hazards.			

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
No known significant effects or critical hazards.			

Aspiration hazard

Name	Result
Not applicable.	

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Inhalation.
Routes of entry not anticipated: Dermal.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data. May cause irritation due to mechanical action.
Inhalation : No specific data. Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
Skin contact : No specific data. Inorganic salt. Prolonged or repeated exposure may dry the skin, causing irritation.
Ingestion : Adverse symptoms may include the following:
 stomach pains
 bloating

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.
Potential delayed effects : See Section 4 of the safety data sheet (first aid measures).

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.
Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Urea	Chronic NOAEL Oral	Rat - Male, Female	2250 mg/kg Continuous	12 months Continuous

Conclusion/Summary : No known significant effects or critical hazards.
General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Urea	Acute EC50 6573.1 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute EC50 3910000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 >1000 mg/l Marine water	Crustaceans - Chaetogammarus marinus - Young	48 hours
	Acute LC50 5000 µg/l Fresh water	Fish - Colisa fasciata - Fingerling	96 hours
	Acute LC50 22500 mg/l Fresh water	Fish - Oreochromis mossambicus - Young	96 hours
	Chronic NOEC 2 g/L Fresh water	Fish - Heteropneustes fossilis	30 days

Conclusion/Summary : Practically non-toxic to aquatic organisms.

Persistence and degradability

Not available.

Conclusion/Summary : Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Urea	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Urea	<-1.73	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : 0.037

Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-	-

Section 14. Transport information

Packing group	-	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

U.S. Federal Regulations: : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 304 RQ : Not applicable.

SARA 311/312 Classification : Not applicable.

State regulations

Massachusetts : This material is not listed.

New York : This material is not listed.

New Jersey : This material is not listed.

Pennsylvania : This material is not listed.

California Prop. 65

This product, as manufactured, does NOT contain any substance in concentrations known to the state of California to cause cancer, birth defects or other reproductive harm. Nutrien cannot guarantee the downstream compliance of any product once out of Nutrien custody.

International regulations

International lists

National inventory

Canada : This material is listed or exempted.

Europe : This material is listed or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 5/7/2019

Date of previous issue : 6/13/2018

Version : 1.8

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not applicable.

Indicates information that has changed from previously issued version.

Notice to reader

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