



SAFETY DATA SHEET
UREA AMMONIUM NITRATE SOLUTION
REVISION 5, DATE 30 DEC 22

1. IDENTIFICATION

Product Name	Urea Ammonium Nitrate Solution
Other Names	UAN Solution
Uses	Nitrogen fertiliser solution.
Chemical Family	No Data Available
Chemical Formula	Unspecified
Chemical Name	Contains: Ammonium nitrate
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887


2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Not Scheduled



Globally Harmonised System

Hazard Classification		Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
Hazard Categories		Serious Eye Damage/Irritation - Category 2A	
Pictograms			
Signal Word		Warning	
Hazard Statements		H319	Causes serious eye irritation.
Precautionary Statements	Prevention	P264	Wash hands and contaminated body thoroughly after handling.
		P280	Wear protective gloves/protective clothing/eye protection/face protection.
	Response	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P337 + P313	If eye irritation persists: Get medical advice.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Ammonium nitrate	H3N.HNO3	6484-52-2	42 - 47 %
Urea	CH4N2O	57-13-6	34 - 37 %
Water	H2O	7732-18-5	Balance %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth with water. Do not induce vomiting. Get medical advice/attention if large quantities have been ingested or if you feel unwell. Never give anything by mouth to an unconscious person.

Eye IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting

the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.

Skin	IF ON SKIN: Remove and isolate contaminated clothing and shoes. Immediately flush skin with running water for at least 15 minutes. Wash with plenty of soap and water. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention.
Advice to Doctor	Overexposure to this material may result in methemoglobinemia – Emergency response should treat appropriately, such as by intravenous administration of methylene blue. *Most important symptoms and effects, both acute and delayed: Causes serious eye irritation. Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin colour being slate grey. Further manifestation is characterized by headache, weakness, dyspnoea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and possibly shock.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	Exercise caution when fighting any chemical fire. If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Dike fire-control water for later disposal.
Flammability Conditions	Non-combustible: Material itself does not burn. Oxidiser if allowed to dry. *Do not allow product to evaporate to dryness. Contains substances that are oxidizers when in solid form. May cause fire or explosion if allowed to dry.
Extinguishing Media	If material is involved in a fire, use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Do not use a heavy water stream. Use of heavy stream of water may spread fire.
Fire and Explosion Hazard	Under fire conditions closed containers may rupture or explode. May be explosive in contact with flammable or organic substances and confinement during fire.
Hazardous Products of Combustion	Fire or heat may produce irritating and/or toxic gases, including Nitrogen oxides, Ammonia, Carbon oxides (CO, CO ₂).
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources and prevent exposure to heat. Do not contaminate - Keep combustibles away from spilled material. Do not touch or walk through spilled material. Clean up spills immediately and dispose of waste safely. Avoid breathing mist/vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Pick up with sand or other non-combustible absorbent material and place into containers for later disposal (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Dike far ahead of large spill for later disposal.
Decontamination	Clean surfaces thoroughly with water to remove residual contamination.

Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation, especially in confined areas. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing mist/vapours/spray and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Do not contaminate. Keep away from heat and sources of ignition - No smoking.
Storage	Store in a cool, dry and well-ventilated area, out of direct sunlight. Keep container tightly closed when not in use - Check regularly for leaks. Protect containers against corrosion, physical damage and extreme temperatures. Keep away from heat and sources of ignition - No smoking. Keep away from combustibles and incompatible materials (see SECTION 10).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. DECOMPOSITION PRODUCT: Ammonia (CAS No. 7664-41-7): - Safe Work Australia Exposure Standard: TWA = 25 ppm (17 mg/m ³); STEL = 35 ppm (24 mg/m ³). - New Zealand Workplace Exposure Standard [Next review 2023]: TWA = 25 ppm (17 mg/m ³); STEL = 35 ppm (24 mg/m ³).
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	- Respiratory protection: Respiratory protection is not required under normal use conditions. Use an approved vapour respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentrations of mist or vapour, inadequate ventilation, development of respiratory tract irritation) and engineering controls are not feasible (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles or safety glasses. - Hand protection: Handle with gloves. Recommended: Nitrile or butyl rubber gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Occupational protective clothing, such as coveralls, rubber apron, boots. The type of protective equipment must be selected according to the concentration and amount of the hazardous substance(s) at the specific workplace.
Special Hazards Precautions	Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. Ventilate confined spaces before entering. Proper grounding procedures to avoid static electricity should be followed. Comply with applicable regulations.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Food, beverages and tobacco products should not be stored or consumed where this material is in use. Wash hands after handling, before breaks and at the end of the workday. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Odourless to slight

Colour	Colourless
pH	6.5 - 7.5
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Soluble in water
Specific Gravity	1.3
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	May be explosive in contact with flammable or organic substances and confinement during fire.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible: Material itself does not burn. Oxidiser if allowed to dry. *Do not allow product to evaporate to dryness. Contains substances that are oxidisers when in solid form. May cause fire or explosion if allowed to dry.
Reactions That Release Gases or Vapours	Fire or heat may produce irritating and/or toxic gases, including Nitrogen oxides, Ammonia, Carbon oxides (CO, CO2).
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	When the water in UAN evaporates, residue may include solid ammonium nitrate and urea. When sensitized or during decomposition, solid ammonium nitrate may become unstable and/or explosive. UAN pumps operated with blocked
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discharge have been known to detonate! UAN will form urea nitrate when mixed with nitric acid at low pH. Urea nitrate may become unstable and/or explosive under certain conditions. UAN will form nitrogen trichloride, which may be explosive, when mixed with chlorine and hypochlorite.

Chemical Stability	Stable under normal temperature conditions and recommended use.
Conditions to Avoid	Avoid extremely high or low temperatures. Keep away from heat and sources of ignition. Avoid high pressures - explodes if heated under confinement. Do not allow product to dry out.
Materials to Avoid	Incompatible/reactive with strong acids, strong bases, strong oxidizers, chlorine, hypochlorites, metallic powders, combustible materials, chromates, zinc, copper and its alloys, chlorates.
Hazardous Decomposition Products	Fire or heat may produce irritating and/or toxic gases, including Nitrogen oxides, Ammonia, Carbon oxides (CO, CO ₂).
Hazardous Polymerisation	Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<p>Information on toxicological effects:</p> <ul style="list-style-type: none"> - Acute toxicity: Not classified. - Skin corrosion/irritation: Not classified. - Eye damage/irritation: Causes serious eye irritation. - Respiratory/skin sensitisation: Not classified. - Germ cell mutagenicity: Not classified. - Carcinogenicity: Not classified. - Reproductive toxicity: Not classified. - STOT (single exposure): Not classified. - STOT (repeated exposure): Not classified. - Aspiration toxicity: Not classified. <p>Information on likely routes of exposure:</p> <ul style="list-style-type: none"> - Ingestion: Ingestion may cause gastrointestinal irritation, nausea, diarrhoea and vomiting. Overexposure to this material may result in methemoglobinemia. - Eye contact: Causes serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision. - Skin contact: May cause skin irritation, redness, rash, dermatitis. - Inhalation: May cause irritation to the respiratory tract, coughing. <p>Chronic effects: No information available.</p>
Acute	
Ingestion	<p>Acute toxicity (Oral):</p> <p>COMPONENT: Urea (CAS No. 57-13-6):</p> <ul style="list-style-type: none"> - LD50, Rat: 8,471 mg/kg <p>COMPONENT: Ammonium nitrate (CAS No. 6484-52-2):</p> <ul style="list-style-type: none"> - LD50, Rat: 2,217 mg/kg
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	No information available.
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	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.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Empty containers may contain hazardous residues. Do not cut, puncture or weld on or near to the container. Labels should not be removed from containers until they have been cleaned. Contaminated containers must not be treated as household waste. Do not incinerate closed containers.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name	Urea Ammonium Nitrate Solution
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	Urea Ammonium Nitrate Solution
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	Urea Ammonium Nitrate Solution
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available

Comments NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)

US DOT

Proper Shipping Name	Urea Ammonium Nitrate Solution
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Urea Ammonium Nitrate Solution
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Urea Ammonium Nitrate Solution
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

SAFETY DATA SHEET UREA AMMONIUM NITRATE SOLUTION REVISION 5, DATE 30 DEC 22

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002571 - Fertilisers (Subsidiary Hazard) Group Standard 2020
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National/Regional Inventories

Australia (AIIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	URAMNI0001, URAMNI0006, URAMNI1000, URAMNI1001, URAMNI1002, URAMNI1003, URAMNI1005, URAMNI1500, URAMNI2000, URAMNI2001, URAMNI2100, URAMNI3200, URAMNI4000, URAMNI4200, URAMNI4250, URAMNI4350, URAMNI5200, URAMNI5300, URAMNI6000, URAMNI7000, URAMNI7001, URAMNI7002, URAMNI7100, URAMNI8000, URAMNI8001, URAMNI8010, URAMNI8020, URAMNI8100, URAMNI9000
Revision	5
Revision Date	30 Dec 2022
Reason for Issue	Updated SDS
Key/Legend	< Less Than > Greater Than AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number)

cm² Square Centimetres

CO₂ Carbon Dioxide

COD Chemical Oxygen Demand

deg C (°C) Degrees Celcius

EPA (New Zealand) Environmental Protection Authority of New Zealand

deg F (°F) Degrees Farenheit

g Grams

g/cm³ Grams per Cubic Centimetre

g/l Grams per Litre

HSNO Hazardous Substance and New Organism

IDLH Immediately Dangerous to Life and Health

immiscible Liquids are insoluable in each other.

inHg Inch of Mercury

inH₂O Inch of Water

K Kelvin

kg Kilogram

kg/m³ Kilograms per Cubic Metre

lb Pound

LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

ltr or L Litre

m³ Cubic Metre

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre

Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH₂O Millimetres of Water

mPa.s Millipascals per Second

N/A Not Applicable

NIOSH National Institute for Occupational Safety and Health

NOHSC National Occupational Heath and Safety Commission

OECD Organisation for Economic Co-operation and Development

Oz Ounce

PEL Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion

ppm Parts per Million

ppm/2h Parts per Million per 2 Hours

ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

R Rankine

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight