SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Product name : Uran® (Nitrogen Fertilizer Solution)
Formula : CO(NH$_2$)$_2$ + NH$_4$NO$_3$
Product code : URAN, URAN0S, URAN28, URAN30, URAN32
Other means of identification : Nitrogen Fertilizer Solution, Urea Ammonium Nitrate Solution, UAN

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

Use of the substance/mixture : Agricultural chemical
: Fertilizer

1.3. Details of the supplier of the safety data sheet

PCS Sales (USA), Inc.
1101 Skokie Blvd.
Suite 400
Northbrook, IL 60062
T 800-241-6908 / 847-849-4200

Suite 500
122 1st Avenue South
Saskatoon, Saskatchewan Canada S7K7G3
T 800-667-0403 (Canada) / 800-667-3930 (USA)

SDS@PotashCorp.com - www.PotashCorp.com

1.4. Emergency telephone number

Emergency number : 800-424-9300
: CHEMTREC

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Not Classified
This product as a mixture is not classified.

2.2. Label elements

GHS-US labelling
Not Classified
This product as a mixture is not classified.

2.3. Other hazards

Other hazards not contributing to the classification : Hazardous to the aquatic environment - Acute Hazard Category 3. Harmful to aquatic life.
SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen (Uran®)</td>
<td>(CAS No.) 15978-77-5</td>
<td>27.8 – 32.2</td>
<td>Skin Irrit. 2, H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td>Urea</td>
<td>(CAS No.) 57-13-6</td>
<td>28.8 - 36.8</td>
<td>Ox. Sol. 3, H272</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2B, H320</td>
</tr>
<tr>
<td>Ammonium nitrate</td>
<td>(CAS No.) 6484-52-2</td>
<td>37.0 – 47.6</td>
<td>STOT SE 3, H335</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 2, H371</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td>20.1 -30.0</td>
<td></td>
</tr>
<tr>
<td>Alkalinity (as Ammonia)</td>
<td></td>
<td>0.5</td>
<td></td>
</tr>
</tbody>
</table>

(1) Health & Environmental Safety Data Summary Document - Nitrogen Solutions (UAN) [CAS# 15978-77-5] Prepared For: The Fertilizer Institute, October 7, 2002

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : If medical advice is needed, have product container or label at hand.

First-aid measures after inhalation : If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing.

First-aid measures after skin contact : Wash skin thoroughly with mild soap and water. Obtain medical attention if irritation develops or persists.

First-aid measures after eye contact : Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Obtain medical attention if irritation develops or persists.

First-aid measures after ingestion : Do not induce vomiting. Seek medical attention if a large amount is swallowed. Get medical advice and attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Irritation to eyes, skin and respiratory tract.

Symptoms/injuries after inhalation : Overexposure may be irritating to the respiratory system.

Symptoms/injuries after skin contact : May cause skin irritation.

Symptoms/injuries after eye contact : May cause eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed
If medical advice is needed, have product container or label at hand. Symptoms may be delayed.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media : Not flammable. Use extinguishing media appropriate for surrounding fire. Water spray.

5.2. Special hazards arising from the substance or mixture
Fire hazard : May cause or intensify fire; oxidizer. Under conditions of fire this material may produce: Nitrogen oxides; Ammonia.
Explosion hazard : Cool closed containers exposed to fire with water spray.
Reactivity : Stable at ambient temperature and under normal conditions of use.

5.3. Advice for firefighters
Firefighting instructions : Keep upwind. Under conditions of fire this material may produce: Nitrogen oxides; Ammonia.
Protection during firefighting : Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).
Other information : Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment : Equip clean-up crew with proper protection.
Emergency procedures : Ventilate area. Evacuate unnecessary personnel.

6.2. Environmental precautions
If spill could potentially enter any waterway, including intermittent dry creeks, contact the U.S. COAST GUARD NATIONAL RESPONSE CENTER at 800-424-8802. In case of accident or road spill notify CHEMTREC at 800-424-9300 (in USA) or CANUTEC at 613-996-6666 (in Canada). In other countries call CHEMTREC at (International code) +1-703-527-3887.

6.3. Methods and material for containment and cleaning up
For containment : Contain any spills with dikes or inert absorbents to prevent migration and entry into sewers or streams. Do not allow into drains or water courses or dispose of where ground or surface waters may be affected.
Methods for cleaning up: Clean up any spills as soon as possible, using an inert absorbent material to collect it. Collect absorbed material and place into a sealed, labelled container to be disposed at an appropriate disposal facility according to current applicable laws and regulations and product characteristics at time of disposal.

Practice good housekeeping - spillage can be slippery on smooth surface either wet or dry.

6.4. Reference to other sections
No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Additional hazards when processed: When heated, material emits irritating fumes.
Precautions for safe handling: Avoid all eyes and skin contact and do not breathe vapour and mist. Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Welding or hot work on equipment or plant which may have contained fertilizer should not be done without first washing thoroughly to remove all fertilizer. Do not evaporate in closed spaces. Avoid containers, piping, or fittings made of brass, bronze, or copper containing alloys or galvanized metals. Do not run pumps with the discharge or suction valves closed; pump must be on circulation. If material is evaporated to dryness, special hazards are involved and special fire fighting precautions and methods are recommended.

Hygiene measures: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Do not store on wooden floor.

Special rules on packaging: Keep container closed when not in use.

7.3. Specific end use(s)
Agricultural chemical. Fertilizer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No exposure limits were found.

8.2. Exposure controls
Appropriate engineering controls: Ensure adequate ventilation, especially in confined areas.
Uran® (Nitrogen Fertilizer Solution)
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Personal protective equipment: Gloves. Safety glasses. Protective clothing.

Hand protection: Rubber gloves.
Eye protection: Chemical safety goggles. Do not wear contact lenses.
Skin and body protection: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Wear suitable protective clothing. Wash contaminated clothing before reuse. Handle in accordance with good industrial hygiene and safety practice. Wash clothing frequently.
Respiratory protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.
Environmental exposure controls: Ensure adequate ventilation, especially in confined areas.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Liquid
Appearance: Clear
Colour: Colorless or golden
Odour: Slight ammonia
Odour threshold: No data available
pH: 6.3 – 7.2
Relative evaporation rate (butyl acetate=1): No data available
Melting point: URAN®32 -2 °C (29 °F)
URAN®30 -9 °C (15 °F)
URAN®28 -17 °C (1 °F)
Freezing point: No data available
Boiling point: 110 - 125 °C (230 - 257 °F)
117°C (242.5 °F) FOR 60% SOLUTION
Flash point: No data available
Self ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): No data available
Vapour pressure: No data available
Relative vapour density at 20 °C: No data available
Relative density: 1.28 - 1.33 at 60°F
Density: 10.7 - 11.1 lb/gal at 60°F
Solubility: Miscible
Log Pow: No data available
**Uran® (Nitrogen Fertilizer Solution)**

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**Molecular Weight**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Nitrate</td>
<td>80.05</td>
</tr>
<tr>
<td>Urea</td>
<td>60.07</td>
</tr>
</tbody>
</table>

**Log Kow**

- No data available

**Viscosity**

- URAN®32: 5.5 cP
- URAN®28: 3.4 cP

**Explosive properties**

- None known

**Oxidising properties**

This material contains an oxidizer. It will contribute to the intensity of a fire by supplying oxygen and it will promote combustion of surrounding materials.

**Explosive limits**

- No data available

---

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Stable at ambient temperature and under normal conditions of use.

**10.2. Chemical stability**

Stable at standard temperature and pressure.

**10.3. Possibility of hazardous reactions**

Hazardous polymerization will not occur.

**10.4. Conditions to avoid**

Keep away from heat. Avoid welding on pipes or tanks which have contained Uran® solution until they have been thoroughly washed out with water. Avoid containers, piping, or fittings made of brass, bronze, or other copper containing alloys or galvanized metals.

**10.5. Incompatible materials**


**10.6. Hazardous decomposition products**

Under conditions of fire this material may produce: Nitrogen oxides. Ammonia.

---

**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

**Acute toxicity**

- Not classified

#### Ammonium nitrate (6484-52-2)

<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>2217 mg/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat</td>
<td>&gt; 88.8 mg/l (Exposure time: 4 h)</td>
</tr>
</tbody>
</table>

#### Urea (57-13-6)

<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>8471 mg/kg</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**

- Not classified

**Serious eye damage/irritation**

- Not classified
**Uran® (Nitrogen Fertilizer Solution)**

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| Aspiration hazard | Not classified |
| Germ cell mutagenicity | Not classified |
| Reproductive toxicity | Not classified |
| Specific target organ toxicity (single exposure) | Not classified |
| Specific target organ toxicity (repeated exposure) | Not classified |
| Aspiration hazard | Not classified |

**SECTION 12: Ecological information**

12.1. **Toxicity**

<table>
<thead>
<tr>
<th>Ecotoxicity</th>
<th>EPA Ecological Toxicity rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity to Fish:</td>
<td>Ammonium Nitrate: (Cyprinus carpio L): 48-h: LC50 = 1.15 – 1.72 mg NH3/L; (Chinook Salmon, rainbow trout, bluegill) 96-h: LC50 = 420 – 1360 mg NO3/L; Urea: 96-h LC50 &gt; 9,100 mg/L. UAN : (Onchorhynchus mykiss): 96 hr: LC50&gt;103mg/L (Pimephales promelas): 96 hr: LC50 between 100 anal 500 mg/L</td>
</tr>
<tr>
<td>Chronic Toxicity to Fish:</td>
<td>No data available.</td>
</tr>
<tr>
<td>Acute Toxicity to Aquatic Invertebrates:</td>
<td>Ammonium Nitrate: (Daphnia magna) EC24 = 555 mg/L, Urea: (Daphnia magna) 24-h EC50 &gt; 10,000</td>
</tr>
<tr>
<td>Chronic Toxicity to Aquatic Invertebrates:</td>
<td>Ammonium Nitrate: (Bullia digitalis) Up to 7 days: NOEC = 300 mg/L.</td>
</tr>
<tr>
<td>Acute Toxicity to Aquatic Plants:</td>
<td>Urea: (Scenedesmus quadricauda) 192 hr cell multiplication inhibition test – TT&gt; 10,000 mg/L.</td>
</tr>
<tr>
<td>Toxicity to Soil Dwelling Organisms:</td>
<td>Toxicity to Other Non-Mammalian Terrestrial Species: (Pigeon) – Subcutaneous – LD50 = 16,000 mg/kg.</td>
</tr>
<tr>
<td>Toxicity to Terrestrial Plants:</td>
<td>No data available.</td>
</tr>
</tbody>
</table>

**Environmental Fate:**

| Stability in Soil: | Ammonium Nitrate: Stability in Soil: Ammonium ions bind to clay particles and leach slowly or not at all to ground water, whereas the nitrate can leach significantly. Monitoring Data: NH4 background: 0.01 |
| Transport and Distribution: | Ammonium Nitrate: Transport: Worldwide loss after application 0.004 - 1.2 Tg/yr. Distribution: 0.251% to air; 45.4% to water; 54.2% to soil; 0.0757% to sediment Urea: Stability in water: T1/2> 1 year. Transport: 0.16% in air; 99.84% in water |

**Toxicity:**

No known toxicity.

**Degradation Products:**

| Biodegradation: | No degradation products known. |
| Photodegradation: | No data available |
SECTION 13: Disposal considerations

13.1. Waste treatment methods

Sewage disposal recommendations: Do not flush into surface water or sewer system.
Waste disposal recommendations: Place in an appropriate container and dispose of the contaminated material at a licensed site.
Additional information: Dispose of waste material in accordance with all local, regional, national, and international regulations.
Ecology - waste materials: This material is highly water soluble. Landfills receiving this material should be equipped to contain leachate.

SECTION 14: Transport information

In accordance with DOT / TDG / ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number
Not applicable

14.2. UN proper shipping name
Not applicable

14.3. Additional information
Other information: No supplementary information available.

Overland transport
No additional information available

Transport by sea

Uran® (Nitrogen Fertilizer Solution) does not contain free ammonia and is therefore not regulated under DOT or the USCG.

Air transport
No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>Uran® (Nitrogen Fertilizer Solution)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SARA Section 311/312 Hazard Classes</td>
<td>Immediate (acute) health hazard</td>
</tr>
<tr>
<td>SARA Section 313 - Emission Reporting</td>
<td>Ammonium nitrate is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 as water dissociable nitrate compounds and ammonia in aqueous solutions.</td>
</tr>
</tbody>
</table>

Ammonium nitrate (6484-52-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on SARA Section 313 (water dissociable aqueous ammonia and nitrate compounds)

Urea (57-13-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
15.2. US State regulations

The following states have an OSH program approved by OSHA. If you are located in any of these states you may be under state jurisdiction rather than federal jurisdiction and your state may have more stringent requirements than OSHA. You should consult your state regulations to ensure compliance.

Alaska    Indiana    Minnesota    North Carolina    Utah
Arizona   Iowa       Nevada       Oregon       Vermont
California Kentucky New Mexico Puerto Rico *Virgin Islands
*Connecticut Maryland *New Jersey South Carolina Virginia
Hawaii    Michigan  *New York  Tennessee Washington
*Illinois

*The state plans in these states apply only to public sector employers. In these states private sector employers are subject to USOL – OSHA jurisdiction. All other state plans apply to both public and private sector employers.

<table>
<thead>
<tr>
<th>Ammonium nitrate (6484-52-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California - Toxic Air Contaminant List (AB 1807, AB 2728)</td>
</tr>
<tr>
<td>U.S. - Delaware - Accidental Release Prevention Regulations - Sufficient Quantities</td>
</tr>
<tr>
<td>U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities</td>
</tr>
<tr>
<td>U.S. - Massachusetts - Oil &amp; Hazardous Material List - Groundwater Reportable Conc. - Reporting Category 1</td>
</tr>
<tr>
<td>U.S. - Massachusetts - Oil &amp; Hazardous Material List - Groundwater Reportable Conc. - Reporting Category 2</td>
</tr>
<tr>
<td>U.S. - Massachusetts - Oil &amp; Hazardous Material List - Reportable Quantity</td>
</tr>
<tr>
<td>U.S. - Massachusetts - Oil &amp; Hazardous Material List - Soil Reportable Concentration - Reporting Category 1</td>
</tr>
<tr>
<td>U.S. - Massachusetts - Oil &amp; Hazardous Material List - Soil Reportable Concentration - Reporting Category 2</td>
</tr>
<tr>
<td>U.S. - Massachusetts - Right To Know List</td>
</tr>
<tr>
<td>U.S. - New Jersey - Right to Know Hazardous Substance List</td>
</tr>
<tr>
<td>U.S. - New Jersey - Special Health Hazards Substances List</td>
</tr>
<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List</td>
</tr>
<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
<tr>
<td>U.S. - Texas - Effects Screening Levels - Long Term</td>
</tr>
<tr>
<td>U.S. - Texas - Effects Screening Levels - Short Term</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Urea (57-13-6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - Minnesota - Hazardous Substance List</td>
</tr>
<tr>
<td>U.S. - Texas - Effects Screening Levels - Long Term</td>
</tr>
<tr>
<td>U.S. - Texas - Effects Screening Levels - Short Term</td>
</tr>
</tbody>
</table>

15.3. Canadian regulations

<table>
<thead>
<tr>
<th>Uran® (Nitrogen Fertilizer Solution)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHMIS Classification</td>
</tr>
<tr>
<td>Class D Division 2 Subdivision A - Very toxic material causing other toxic effects</td>
</tr>
<tr>
<td>Class D Division 2 Subdivision B - Toxic material causing other toxic effects</td>
</tr>
<tr>
<td>Class C - Oxidizing Material</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ammonium nitrate (6484-52-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the Canadian DSL (Domestic Substances List) inventory.</td>
</tr>
<tr>
<td>WHMIS Classification</td>
</tr>
<tr>
<td>Class C - Oxidizing Material</td>
</tr>
</tbody>
</table>
Uran® (Nitrogen Fertilizer Solution)
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**Urea (57-13-6)**

Listed on the Canadian DSL (Domestic Sustances List) inventory.

| WHMIS Classification | Uncontrolled product according to WHMIS classification criteria |

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

### SECTION 16: Other information

<table>
<thead>
<tr>
<th>NFPA health hazard</th>
<th>1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA fire hazard</td>
<td>0 - Materials that will not burn.</td>
</tr>
<tr>
<td>NFPA reactivity</td>
<td>0 – Materials that in themselves are normally stable, even under fire conditions</td>
</tr>
<tr>
<td>NFPA specific hazard</td>
<td></td>
</tr>
</tbody>
</table>

**Full text of H-phrases:**

<table>
<thead>
<tr>
<th>Eye Irrit. 2A</th>
<th>Serious eye damage/eye irritation Category 2A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Irrit. 2B</td>
<td>Serious eye damage/eye irritation Category 2B</td>
</tr>
<tr>
<td>Ox. Liq. 3</td>
<td>Oxidising liquids Category 3</td>
</tr>
<tr>
<td>Ox. Sol. 3</td>
<td>Oxidising solids Category 3</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation Category 2</td>
</tr>
<tr>
<td>STOT SE 2</td>
<td>Specific target organ toxicity (single exposure) Category 2</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>Specific target organ toxicity (single exposure) Category 3</td>
</tr>
<tr>
<td>H272</td>
<td>May intensify fire; oxidizer</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
<tr>
<td>H371</td>
<td>May cause damage to organs</td>
</tr>
</tbody>
</table>

**Previous PotashCorp MSDS Number**: MSDS 35- URAN

**Updates**: Section 14 – Transport Information; Section 15 -Regulatory Information

**Logo Change**: No other information changes; kept same date

SDS US (GHS HazCom 2012)

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