Urea Liquor, 70%: Product Identification

Trade Name: Urea Liquor, 70%
Synonyms: Urea, 46-0-0, Carbamide; Carbonyldiamide; Aquadrate; Ureaphil; Ureophil
Chemical Family: Aqueous organic amide solution
Chemical I.D. No.: STCC # 2818146
Chemical Formula: CO(NH\(_2\))^2
DOT Hazard Class: None
Label Required: Hot

Urea Liquor, 70%: Composition

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS Number</th>
<th>Wt%</th>
<th>OSHA PEL(^1)</th>
<th>ACGIH STEL(^2)</th>
<th>NIOSH IDLH(^3)</th>
<th>ACGIH TLV</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>57-13-6</td>
<td>70.0%</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>ppm</td>
</tr>
<tr>
<td>Ammonia</td>
<td>7664-41-7</td>
<td>&lt; 0.5%</td>
<td>50</td>
<td>35</td>
<td>300</td>
<td>25</td>
<td>ppm</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>30.0%</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>ppm</td>
</tr>
</tbody>
</table>

1 = Permissible Exposure Limit (8-Hr. Time Weighted Average).
2 = Short Term Exposure Limit (15 Minute Exposure).
3 = Immediately Dangerous to Life and Health.
N.A. = Not Available

Urea Liquor, 70%: NFPA Code

2 Health Hazard (Blue):
Can cause injury. Requires prompt treatment. (>140°F Liquid)

0 Flammability Hazard (Red):
Will not burn.

0 Reactivity Hazard (Yellow):
Normally stable. Not reactive with water.

NONE Special Notice (White):
None listed.
Urea Liquor, 70%: Physical and Chemical Properties

- Melting Point: 271°F (133°C) for pure urea
- Crystallization Temperature: 115°F (46°C)
- Solubility in H₂O: 100%
- Specific Gravity: 9.73 lb/gal @ 130°F (54°C) (1.17 g/cc)
- pH: 7.0-9.0
- Odor: Slight Ammonia Odor
- Appearance: Colorless Liquid

Urea Liquor, 70%: Fire and Explosion Data

- Flash Point: N.A.
- Flammable Limits in Air %/Vol.: N.A.
- Autoignition Temperature: N.A.
- Extinguishing Media: N.A.

Special Fire Fighting Procedure: Fire-fighters should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire or Explosion Data: Aqueous solutions of Urea will not burn or support combustion but will decompose into noxious, poisonous gas when exposed to the high temperatures of a fire.

Urea Liquor, 70%: Reactivity Data

- Stability: Stable unless heated to decomposition.
- Hazardous Polymerization: Will not occur
- Conditions to avoid / Incompatibility: Nitric Acid, gallium, perchlorate, strong oxidizing agents, caustics and alkalis.
- Hazardous Decomposition Products: Carbon Dioxide, and Ammonia (Ammonia oxidizes further to Nitric Oxide and Nitrogen Dioxide).
Urea Liquor, 70%: Health Hazard Data

<table>
<thead>
<tr>
<th>Carcinogenicity:</th>
<th>NTP</th>
<th>IARC Monographs</th>
<th>OSHA Regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Ammonia</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Occupational Exposure Limits:**

**OSHA Permissible Exposure Limit (PEL):**
- Urea = None established
- Ammonia = 50 ppm for an 8 hour Time Weighted Average

**ACGIH Short-term Exposure Limit (STEL):**
- Urea = None established
- Ammonia = 35 ppm for 15 minutes Short Term Exposure Limit

**NIOSH Immediately Dangerous to Life and Health (IDLH):**
- Urea = None established
- Ammonia = 300 ppm is immediately dangerous.

**ACGIH Threshold Limit Value (TLV):**
- Urea = None established
- Ammonia = 25 ppm for an 8 hour Time Weighted Average

**Effects of Overexposure:**

**Acute:**

**Eyes:** Dried Urea dust or solution may cause eye irritation. High temperature of liquid product will cause thermal tissue damage.

**Skin:** Dried Urea dust or solution may irritate skin resulting in reddening of the skin and possible dermatitis. High temperature of liquid product will cause thermal tissue damage.

**Inhalation:** Excessive inhalation of dried Urea dust or atomized solution may cause sore throat, coughing and irritation of mucous membranes and the respiratory tract.

**Ingestion:** Dried Urea dust or solution may cause abdominal pain, nausea, vomiting and gastrointestinal irritation. (Urea is a protein to ruminants, animals with the enzyme Urease in their digestive systems, but is toxic to humans). High temperature of liquid product will cause thermal tissue damage.

**Chronic:** None known for Urea.

**Additional Medical and Toxicological Information**

The smell of ammonia, in the vapor space above the liquid, may aggravate respiratory conditions.
Urea Liquor, 70%: Emergency First Aid Procedures

**Eye contact:** Immediately flush with large amounts of water, including under the eyelids. Cool burned area with ice. Contact a physician immediately, preferably an Ophthalmologist. Speed and thoroughness in rinsing eyes are important to avoid permanent injury.

**Skin Contact:** Stop thermal damage with water rinse. Immediately remove contaminated clothing and shoes. Flush chemical from affected area with large amounts of water. Cool burned tissue with ice. Get medical attention.

**Inhalation:** Remove to fresh air. If breathing has stopped, apply artificial respiration. Keep warm and at rest. Get immediate medical attention.

**Ingestion:** Do not induce vomiting. If vomiting occurs, keep head below hips to help prevent aspiration. Get immediate medical attention.

Urea Liquor, 70%: Special Protection Information

**Eye Protection:** Hot aqueous solution (>140°F, 60°C) will damage mucosal membrane (eyes). Wear chemical goggles or face shield where contact with liquid may occur.

**Skin Protection:** Hot aqueous solution (>140°F, 60°C) will cause tissue damage. Wearing of non-porous clothing: pants, sleeves, footwear, and insulated gloves, is the minimum recommended protection against thermal hazard.

**Inhalation:** Dried Urea residue is water-soluble and will dissolve with mucosal membrane contact (lungs). Use approved respiratory protective equipment for cleaning large spills or upon entry into large tanks, vessels, and other designated confined space areas or in any situations where airborne concentrations of dried amide may exceed occupational exposure limits (15 mg/m³, dust).

**Ventilation:** Provide adequate general and local exhaust ventilation to avoid exceeding occupational exposure limits, particularly in a confined space area.

Urea Liquor, 70%: Spill or Leak

**Spill Procedures:** Contain spills and allow to solidify. Shovel spilled material into containers for disposal. Do not flush to surface water. Spilled chemical can be used as fertilizer (46% N).

Urea Liquor, 70%: Waste Disposal

**Procedure:** Dispose through a licensed waste disposal company. Follow federal, state and local regulations.

Urea Liquor, 70%: Special Precautions and Comments

**Storage Precautions:** Store away from incompatible materials or sources of heat. Empty containers may contain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flames, sparks or other sources of ignition; they may evolve noxious fumes.

**Comment:** Never combine with Nitric Acid
**Urea Liquor, 70%: EPA SARA Title III Information**

**EPCRA Section 311/312 Hazard Categorization:**

<table>
<thead>
<tr>
<th></th>
<th>Acute</th>
<th>Chronic</th>
<th>Fire</th>
<th>Pressure</th>
<th>Reactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**EPCRA & CAA Hazardous Substances:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No.</th>
<th>% / wt.</th>
<th>CAA 112(r)</th>
<th>302 TPQ lb.</th>
<th>304 RQ lb.</th>
<th>313 TRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Key:  
- **CAA 112(r)** = Toxic Substance with potential for airborne release  
- **Sec. 302 TPQ** = Extremely Hazardous Substances (EHS) Threshold Planning Quantity  
- **Sec. 304 RQ** = EHS and CERCLA Reportable Quantity if spilled  
- **Sec. 313 TRI** = Toxic Chemicals to be reported on Toxic Release Inventory if spilled  
- **NA** = Not Applicable

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