SECTION 1: IDENTIFICATION

Product Name: Urea Technical Grade
Other Means of identification: Product code: 510-14055; 2508-14055; 2527-14055
Historic MSDS #: 16008
CAS no: Not Applicable
Brand: Dharma Trading Co.
Recommended use of the chemical and restrictions on use: Fertilizer. Manufacture of specialty fertilizers. Manufacture of chemical products.

Manufacturer’s Name: Dharma Trading Co.
Address: 1805 S. McDowell Blvd. Ext. Petaluma, CA 94954
Telephone Number: 1-800-542-5227
Emergency Phone Number: 1-800-451-8346

SECTION 2: HAZARD IDENTIFICATION

GHS Classification: Not Classified

Pictograms: None

Signal Word: None

Hazard statements:
No known significant effects or critical hazards.

Precautionary statements - Prevention:
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.
Response: Not applicable.
Storage: Not applicable.
Disposal: Not applicable
SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

Substance/mixture: Substance
Chemical Name: Urea
CAS number: Not Applicable
Occupational exposure limits, if available, are listed in Section 8

SECTION 4: FIRST AID AND 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**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>No known significant effects or critical hazards</td>
</tr>
<tr>
<td>Inhalation</td>
<td>No known significant effects or critical hazards</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No known significant effects or critical hazards</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No known significant effects or critical hazards</td>
</tr>
</tbody>
</table>

**Over-exposure signs/symptoms**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>No specific data. May cause irritation due to mechanical action.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>No specific data. Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No specific data. Inorganic salt. Prolonged or repeated exposure may dry the skin, causing irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No specific data. May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.</td>
</tr>
</tbody>
</table>

SECTION 5: FIRE-FIGHTING MEASURES
SAFETY DATA SHEET

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.

Specific treatments: No specific treatment. Treat symptomatically.

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

See toxicological information (Section 11)

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

Hazardous thermal decomposition products: Not considered to be flammable. No specific fire or explosion hazard.

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. 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

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".

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 environmental pollution (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. 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). Incompatible with halogens, hydrogen peroxide, chlorinated hydrocarbons, fluorine, nitric acid, oxidizing agents and sulfuric acid. 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 CONTROL/PERSONAL PROTECTION

Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>AIHA WEEL (United States, 10/2011). TWA: 10 mg/m³ 8 hours. OSHA PEL: Particulates not otherwise regulated (PNOR) Total dust: 15 mg/m³ TWA (8 hours), Respirable fraction: 5 mg/m³ TWA (8 hours)</td>
</tr>
</tbody>
</table>

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

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: 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.

Hygiene measures:
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
Other skin protection
: No special protective clothing required.
: 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. [Granular solid.]

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
: Not available.

Evaporation rate
: [Product does not sustain combustion.]

Flammability (solid, gas)

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: oil, water and ethanol.

Partition coefficient: n-octanol/water
: 1080 g/l

Auto-ignition temperature
: Not applicable.

Decomposition temperature
: 135°C (275°F)

Viscosity
: Not available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity:
Incompatible with halogens, hydrogen peroxide, chlorinated hydrocarbons, fluorine, nitric acid, oxidizing agents and sulfuric acid.
SAFETY DATA SHEET

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Date of Creation: 9/7/2017

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 data

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>LD50 Oral Mouse - Male</td>
<td>11 g/kg</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50 Oral Rat - Male</td>
<td>8471 mg/kg</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50 Oral Rat - Male</td>
<td>14300 mg/kg</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion/Summary: Non-hazardous substance.

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>Non-irritating to the skin</td>
<td>Human</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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
## SAFETY DATA SHEET

**Urea OECD 471 Bacterial Reverse Mutation Test**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Experiment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>OECD 471 Bacterial Reverse Mutation Test</td>
<td>Experiment: In vitro</td>
<td>Negative</td>
</tr>
</tbody>
</table>

**Subject:** Bacteria

**Cell:** Somatic

**Metabolic activation:** With and without

### Carcinogenicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>Negative - Oral - TC</td>
<td>Rat - Male, Female</td>
<td>2250 mg/kg</td>
<td>Continuous</td>
</tr>
</tbody>
</table>

### 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)

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target or gans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No known significant effects or critical hazards.

### Specific target organ toxicity (repeated exposure)

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target or gans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No known significant effects or critical hazards.

### Aspiration hazard

<table>
<thead>
<tr>
<th>Name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Not applicable.

### Information on the likely routes of exposure

<table>
<thead>
<tr>
<th>Potential acute health effects</th>
</tr>
</thead>
</table>

Routes of entry anticipated: Oral, Inhalation.

Routes of entry not anticipated: Dermal.

### Symptoms related to the physical, chemical and toxicological characteristics

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>No specific data. May cause irritation due to mechanical action.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>No specific data. Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No specific data. Inorganic salt. Prolonged or repeated exposure may dry the skin, causing irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No specific data. May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.</td>
</tr>
</tbody>
</table>
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: No known significant effects or critical hazards.

**Long term exposure**
- Potential immediate effects: No known significant effects or critical hazards.

### SECTION 11: TOXICOLOGICAL INFORMATION

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

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>Chronic NOAEL Oral</td>
<td>Rat - Male, Female</td>
<td>2250 mg/kg Continuous</td>
<td>12 months Continuous</td>
</tr>
</tbody>
</table>

**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: Not available.

### SECTION 12: ECOLOGICAL INFORMATION

**Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>Acute EC50 6573.1 mg/l Fresh water</td>
<td>Crustaceans - Ceriodaphnia dubia - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 3910000 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 &gt;1000 mg/l Marine water</td>
<td>Crustaceans - Chaetogammarus marinus - Young</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 5000 µg/l Fresh water</td>
<td>Fish - Colisa fascia - Fingerling</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 22500 mg/l Fresh water</td>
<td>Fish - Oreochromis mossambicus - Young</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 2 g/L Fresh water</td>
<td>Fish - Heteropeustes fossilis</td>
<td>30 days</td>
</tr>
</tbody>
</table>

**Conclusion/Summary**: Practically non-toxic to aquatic organisms.
SAFETY DATA SHEET

Persistence and degradability

Conclusion/Summary: Readily biodegradable

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Aquatic half-life</th>
<th>Photolysis</th>
<th>Biodegradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>-</td>
<td>-</td>
<td>Readily</td>
</tr>
</tbody>
</table>

Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP ow</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>&lt;1.73</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

Mobility in soil

Soil/water partition coefficient (Koc): 0.037

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: Not regulated
TDG Classification: Not regulated
Mexico: Not regulated
Classification: Not regulated
ADR/RID: Not regulated
IMDG: Not regulated
IATA: Not regulated

Special precautions for use: 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

National Inventory

<table>
<thead>
<tr>
<th>Australia</th>
<th>Listed/Exempt</th>
<th>Malaysia</th>
<th>Listed/Exempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Listed/Exempt</td>
<td>New Zealand</td>
<td>Listed/Exempt</td>
</tr>
<tr>
<td>China</td>
<td>Listed/Exempt</td>
<td>Philippines</td>
<td>Listed/Exempt</td>
</tr>
<tr>
<td>Europe</td>
<td>Listed/Exempt</td>
<td>Republic of Korea</td>
<td>Listed/Exempt</td>
</tr>
<tr>
<td>Japan</td>
<td>Listed/Exempt</td>
<td>Taiwan</td>
<td>Listed/Exempt</td>
</tr>
</tbody>
</table>

ISO 9001:2008 Registered
SECTION 16: OTHER INFORMATION

Hazardous Material Information System (U.S.A.)

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>0</td>
</tr>
<tr>
<td>Flammability</td>
<td>0</td>
</tr>
<tr>
<td>Physical hazards</td>
<td>0</td>
</tr>
</tbody>
</table>

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA).

Preparation Date: 9/7/2017
Revision Date: 9/7/2017
Prepared by: Kenneth Dunn

Disclaimer: The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

End of Safety Data Sheet