SAFETY DATA SHEET

Revision Date: 09/30/2013
Issue Date: 09/30/2013
Version: 1.0

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY UNDERTAKING

IDENTIFICATION OF THE PRODUCT

- **Product name:** **Ludigol**
- **Relevant identified use of the substance/mixture and advised against**
  Industrial use only
- **Manufacturer/supplier identification**

Rupert, Gibbon, &Spider
1147 Healdsburg Avenue
Healdsburg CA 95448
707-433-9577
service@jacquardproducts.com

Emergency telephone: In USA call CHEMTREC: 1 800 262-8200

Outside the USA, including ships at sea, call CHEMTREC's international and maritime telephone number (collect calls accepted): +1 (703) 741-5500

In Canada call CANUTEC: 1 613 996 6666

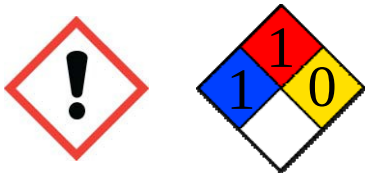
General Information: +1 800 244 6169 (Worldwide)

2. HAZARDS IDENTIFICATION

- **Emergency Overview**

OSHA Hazards
Irritant
GHS Classification
No classification

GHS Label elements, including precautionary statements
Pictogram



NFPA 704

NFPA: Health - 1 Fire – 1 Reactivity - 0
HMIS: Health - 1 Fire – 1 Reactivity - 0

Signal word Warning
Hazard Statement (s)
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary Statement(s)

P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash skin thoroughly after use.
P271	Use in a well ventilated area.
P273	Avoid release to environment.

P280	Wear protective gloves/eye protection/face protection.
P302 + P352+P313	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340+P313	IF INHALED: Remove victim to fresh air and keep at rest in.
P337 + P338+P313	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to accomplish. Continue rinsing.

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3. INFORMATION ON THE INGREDIENTS

Formula	%	CAS No.	EC Number
Sodium M-Nitrobenzene Sulfonate	>99	127-68-4	204-857-3
Sodium Sulfate	>0.3	7757-82-6	231-820-9

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4. FIRST-AID MEASURES

- **General Advice**
  Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of the dangerous area

Ingestion Rinse mouth with water. Give several glasses of water. Do Not Induce vomiting. Seek medical advice.

Skin Wash with mild soap and water. Seek medical advice.

Eyes Flush with water for at least 15 minutes. Seek medical advice.

Inhalation Remove to fresh air. Seek medical attention.

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5. FIRE-FIGHTING MEASURES

- **Extinguishing media**
  Small fires: Carbon dioxide, dry chemical, water, alcohol resistant foam

- **Special Protective equipment for fire-fighters**
  Fire fighters should wear an approved self-contained breathing apparatus and full protective clothing.

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6. ACCIDENTAL RELEASE OF MATERIALS

- **Personal precautions**
  Use protective equipment and emergency procedures. Avoid breathing vapors. Ensure adequate ventilation

- **Environmental Precautions**
  Prevent leakage of product into water-courses or drainage system by diking with sand or other absorbent materials. Pump large spillage to appropriate containment vessel. Contact authorities, and waste-water treatment plant as appropriate if significant contamination occurs.

- **Methods and material for containment and cleaning up**
  Stop the source of leak or release. Apply inert absorbent material to spill. Clean up spill as soon as possible. Place spilled material in suitable container for disposal in accordance with local and national regulations. Wash contaminated surfaces with water, and collect washings for safe disposal. Follow prescribed procedures for responding to large spills and reporting to appropriate authorities.

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7. HANDLING AND STORAGE

- **Precautions for safe handling**
  Avoid excessive contact with eyes, skin, and inhalation of vapor/mist/dust. Wear protective clothing as in Section 8. Good general ventilation is recommended.

- **Conditions for safe storage, including incompatibilities**
  Keep only in the original container. Store in a cool and dry location. Keep away from direct sunlight. Keep container closed when not in use. Protect from freeze.

- **Specific end uses**
  Industrial use

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8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Contains no substance with occupational exposure limit values

Personal protective equipment

Respiratory protection

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respiratory. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand Protection

Handle with gloves. Gloves must be inspected prior to use. Use proper gloves.

Eye Protection

Safety goggles, (US 29 CFR 1910.133) or (EU EN 166), Chemical goggles

Skin and Body Protection

Impervious clothing

Hygiene measures

Handle in accordance with good industrial hygiene and safety practices. Wash hands after handling material.

9. PHYSICAL AND CHEMICAL PROPERTIES

- **Information on basic physical and chemical properties**

Appearance/Form	White Powder
Odor	Mild
pH	7.0 –9.0 @ 10% (soln)
Freeze/ Melting point (˚C)	No data available
Flash point (˚C)	>93.3°C
Flammability (solids and gases)	Can burn
Upper/lower flammability or explosive limits	Not established
Specific Gravity (@ ˚C)	No data available
Density	No data available
Solubility: in water	>25% @ 25°C

10. STABILITY AND REACTIVITY

- **Chemical stability** — Stable under normal storage and handling conditions.
- **Conditions to avoid** — Minimum storage temp / 1°C
  Maximum Storage temp 288°C
  Sparks, flame, sources of ignition
- **Incompatible materials** — Strong oxidizing agents, sulfur or nitrogen
- **Hazardous decomposition products** — Oxides of carbon

11. TOXICOLOGICAL INFORMATION.

Acute toxicity	No data available
Skin corrosion/irritation	No data available
Serious Eye damage/eye irritation	No data available
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No component present at levels ≥ 0.1% is identified as a human carcinogen, IARC, NTP, OSHA, CA. Prop 65 Not applicable
Reproductive toxicity	No data available
Specific target organ toxicity-single exposure	Inhalation – May cause respiratory irritation (GHS)
Aspiration hazard	No data available
Specific target organ toxicity-repeated exposure	No data available
Potential health effects	
Inhalation	May be harmful if inhaled. May cause respiratory irritation.
Ingestion	May be harmful if swallowed.
Skin	May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects No data available

Additional Information

RTECS: No data available

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12. ECOLOGICAL INFORMATION

- **Toxicity to fish** No data available
- **Persistence/degradability** No data available
- **Bioaccumulative potential** No data available
- **Mobility in soil** No data available
- **Results of PBT and vPvB assessment** No data available
- **Other adverse effects** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

- **German (WGK)** No data available

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13. DISPOSAL CONSIDERATIONS

- **Product**

  This product should not be disposed of via drains, sewers or natural waterways. Disposal must be in accordance with current national and local regulations. We recommend that you contact either the authorities or approved waste disposal companies who will advise you in how to dispose of waste. Do not release untreated in natural waters.

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14. TRANSPORTATION INFORMATION

This product is not classified as hazardous (dangerous) by applicable Land, Sea, or Air transport regulations.

- **DOT (US)** Not Dangerous Goods
- **IMDG** Not Dangerous Goods
- **IATA** Not Dangerous Goods

15. REGULATORY INFORMATION

OSHA Hazards	Irritant
Sara 302 Components	No chemicals are subject to reporting requirements of Title III, Sec. 302
Sara 313 Components	No hazard
Sara 311/312 Hazards	Acute
EC #:	Mixture

16. OTHER INFORMATION

All information and data appearing on this Safety Data Sheet are believed to be reliable and accurate. However, it is the user's responsibility to determine the safety, toxicity, and suitability for own use of the product described. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Rupert, Gibbon & Spider, Inc. User assumes all responsibility.

Jacquard
Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/24/15 Reviewed on 07/24/15

1 Identification

Product identifier

Trade name: Soda Ash

Product number/code: 007
CAS Number:
497-19-8
Index number:
011-005-00-2
Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Application of the substance / the mixture Industrial uses/pH modification.

Details of the supplier of the Safety Data Sheet
Manufacturer/Supplier:
Rupert, Gibbon, & Spider inc
1147 Healdsburg ave
Healdsburg ca 95448

telephone number:
707-433-9577

2 Hazard(s) identification

Classification of the substance or mixture

GHS07

Eye Irrit. 2A H319 Causes serious eye irritation.
Additional information:
There are no other hazards not otherwise classified that have been identified.

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 1)

0 percent of the mixture consists of ingredient(s) of unknown toxicity.

Label elements
GHS label elements
The substance is classified and labeled according to the Globally Harmonized System (GHS).
Hazard pictograms

GHS07

Signal word Warning
Hazard statements
H319 Causes serious eye irritation.
Precautionary statements

P280	Wear eye protection / face protection.
P264	Wash thoroughly after handling.
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/attention.

Hazard description:
Classification system:

HMIS Long Term Health Hazard Substances
Substance is not listed.

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances
CAS No. Description
497-19-8 sodium carbonate
Identification number(s)
EC number: 207-838-8

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 2)

Index number: 011-005-00-2

4 First-aid measures

Description of first aid measures
General information: No special measures required.
After inhalation: Supply fresh air; consult doctor in case of complaints.
After skin contact:
Brush off loose particles from skin.
Immediately rinse with water.
If skin irritation continues, consult a doctor.
After eye contact:
Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After swallowing:
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.
Information for doctor:
Most important symptoms and effects, both acute and delayed
Slight irritant effect on skin and mucous membranes.
Irritant to eyes.
Gastric or intestinal disorders when ingested.
Coughing
Danger No further relevant information available.
Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents: Use fire fighting measures that suit the environment.
For safety reasons unsuitable extinguishing agents: None.
Special hazards arising from the substance or mixture
Formation of toxic gases is possible during heating or in case of fire.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 3)

Advice for firefighters
Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.
Additional information No further relevant information available.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Use respiratory protective device against the effects of fumes/dust/aerosol.
Ensure adequate ventilation.
Wear protective equipment. Keep unprotected persons away.
Environmental precautions:
Do not allow to enter sewers/ surface or ground water.
Damp down dust with water spray.
Methods and material for containment and cleaning up:
Pick up mechanically.
Dispose contaminated material as waste according to item 13.
Send for recovery or disposal in suitable receptacles.
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling:
Precautions for safe handling
Prevent formation of dust.
Any deposit of dust which cannot be avoided must be regularly removed.
Information about protection against explosions and fires: The product is not flammable.

Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: Protect from humidity and water.
Information about storage in one common storage facility:
Store away from foodstuffs.

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 4)

Do not store together with acids.
Further information about storage conditions: Store in cool, dry conditions in well sealed receptacles.
Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Control parameters
Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
Additional information: The lists that were valid during the creation were used as basis.

Exposure controls
Personal protective equipment:
General protective and hygienic measures:
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Avoid contact with the eyes.
Avoid close or long term contact with the skin.
Do not inhale dust / smoke / mist.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Engineering controls: No further relevant information available.
Breathing equipment:
Not required under normal conditions of use.
Use suitable respiratory protective device in case of insufficient ventilation.
For spills, respiratory protection may be advisable.
Protection of hands:


Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 5)

Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
Eye protection:


Safety glasses

Body protection:
Not required under normal conditions of use.
Protection may be required for spills.
Limitation and supervision of exposure into the environment No further relevant information available.

9 Physical and chemical properties

Information on basic physical and chemical properties	
General Information	
Appearance:	
Form:	Granulate
Color:	White
Odor:	Odorless
Odor threshold:	Not determined.
pH-value at 20 °C (68 °F):	11.3 - 11.6 (1% solution)
Change in condition	
Melting point/Melting range:	851.1 °C (1564 °F)
Boiling point/Boiling range:	Undetermined.
Flash point:	Not applicable.
Flammability (solid, gaseous):	Product is not flammable.
Auto-ignition temperature:	Not determined.

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 6)

Decomposition temperature:	Not determined.
Auto igniting:	Not determined.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure:	Not applicable.
Density at 20 °C (68 °F):	2.53 g/cm³ (21.113 lbs/gal)
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with	
Water:	Soluble.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
Other information	No further relevant information available.

10 Stability and reactivity

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided:
No decomposition if used and stored according to specifications.
Possibility of hazardous reactions
Strong exothermic reaction with acids.
Reacts with halogenated compounds.
Conditions to avoid Avoid acids.
Incompatible materials: No further relevant information available.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 7)

Hazardous decomposition products: Carbon monoxide and carbon dioxide

11 Toxicological information

Information on toxicological effects
Acute toxicity:

LD/LC50 values that are relevant for classification:		
497-19-8 sodium carbonate		
Oral	LD50	4090 mg/kg (rat)

Primary irritant effect:
on the skin: Slight irritant effect on skin and mucous membranes.
on the eye: Irritating effect.
Sensitization: No sensitizing effects known.
Subacute to chronic toxicity: No further relevant information available.
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

Carcinogenic categories

IARC (International Agency for Research on Cancer)
Substance is not listed.

NTP (National Toxicology Program)
Substance is not listed.

OSHA-Ca (Occupational Safety & Health Administration)
Substance is not listed.

Probable Routes of Exposure
Inhalation.
Eye contact.
Skin contact.
Acute effects (acute toxicity, irritation and corrosivity): Irritating to eyes.
Repeated Dose Toxicity: No further relevant information available.

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 8)

12 Ecological information

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability No further relevant information available.
Behavior in environmental systems:
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.
Ecotoxical effects:
Remark: After neutralization a reduction of the harming action may be recognized
Additional ecological information:
General notes:
Water hazard class 1 (Assessment by list): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation:
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

(Contd. on page 10)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 9)

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14 Transport information

UN-Number	
DOT, ADN, IMDG, IATA	Not Regulated
UN proper shipping name	
DOT, ADN, IMDG, IATA	Not Regulated
Transport hazard class(es)	
DOT, ADR, ADN, IMDG, IATA	
Class	Not Regulated
Packing group	
DOT, IMDG, IATA	Not Regulated
Environmental hazards:	
Marine pollutant:	No
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
UN "Model Regulation":	-

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
United States (USA)
SARA

Section 355 (extremely hazardous substances):
Substance is not listed.

(Contd. on page 11)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 10)

Section 313 (Specific toxic chemical listings):

Substance is not listed.

TSCA (Toxic Substances Control Act):

Substance is listed. **Proposition 65**

(California) Chemicals known to cause cancer:

Substance is not listed.

Chemicals known to cause reproductive toxicity for females:

Substance is not listed.

Chemicals known to cause reproductive toxicity for males:

Substance is not listed.

Chemicals known to cause developmental toxicity:

Substance is not listed.

Carcinogenic categories

EPA (Environmental Protection Agency)

Substance is not listed.

IARC (International Agency for Research on Cancer)

Substance is not listed.

TLV (Threshold Limit Value established by ACGIH)

Substance is not listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

Substance is not listed.

Other regulations, limitations and prohibitive regulations

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

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

(Contd. on page 12)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 03/23/2015 Reviewed on 03/23/2015

Trade name: Soda Ash Dense

(Contd. of page 11)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Date of preparation / last revision 7/24/15

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists EINECS:
European Inventory of Existing Commercial Chemical Substances CAS:
Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A

SAFETY DATA SHEET

Urea

Section 1. Identification

GHS product identifier : Urea

Chemical name : Jacquard's Urea

Other means of identification : Product code: 510-14055; 2508-14055; 2527-14055
Historic MSDS #:16008

Product type : Solid.

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

Identified uses	
Fertilizer. Manufacture of specialty fertilizers. Manufacture of chemical products. Humectant	
Uses advised against	**Reason**
None known.	Chemical Safety Assessment

Supplier's details :

Rupert, Gibbon, &Spider
1147 Healdsburg Avenue
Healdsburg CA 95448
707-433-9577
service@jacquardproducts.com

Emergency telephone number (with hours of operation): In USA call CHEMTREC: 1 800 262-8200

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 Applicable.

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.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : Urea

CAS number/other identifiers

CAS number : Not applicable.

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, 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 : No specific data. May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.

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)

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".

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.

Section 7. Handling and storage

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 controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Urea	**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)

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.

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.

Skin protection : The personal protective equipment required varies, depending upon your risk assessment.

Hand protection : No special protective clothing is required.

Body protection

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed.

Respiratory protection : 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 : [Product does not sustain combustion.]

Evaporation rate : Not available.

Section 9. Physical and chemical properties

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.

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 LD50 Oral LD50 Oral	Mouse - Male Rat - Male Rat - Male	11 g/kg 8471 mg/kg 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

Section 11. Toxicological information

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)

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 : No specific data. May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.

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.

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

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

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

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)	-	-	-	-	-	-
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

Not listed.

Section 15. Regulatory information

International regulations

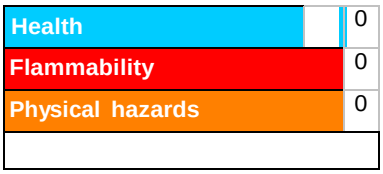
International lists

National inventory

Australia	:	This material is listed or exempted.
Canada	:	This material is listed or exempted.
China	:	This material is listed or exempted.
Europe	:	This material is listed or exempted.
Japan	:	This material is listed or exempted.
Malaysia	:	Not determined.
New Zealand	:	This material is listed or exempted.
Philippines	:	This material is listed or exempted.
Republic of Korea	:	This material is listed or exempted.
Taiwan	:	This material is listed or exempted.

Section 16. Other information

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



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).

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

History

Date of issue/Date of revision	:	3/30/2015.
Date of previous issue	:	2/9/2015.
Version	:	1.1
Key to abbreviations	:	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labeling 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 73/78 = 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.

Section 16. Other information

Notice to reader

The information and recommendations contained in this Safety Data Sheet ("SDS") relate only to the specific material referred to herein (the "Material") and do not relate to the use of such Material in combination with any other material or process. The information and recommendations contained herein are believed to be current and correct as of the date of this SDS. HOWEVER, THE INFORMATION AND RECOMMENDATIONS ARE PRESENTED WITHOUT WARRANTY, REPRESENTATION OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THEIR ACCURACY, CORRECTNESS OR COMPLETENESS, AND THE SELLER, SUPPLIER AND MANUFACTURER OF THE MATERIAL AND THEIR RESPECTIVE AFFILIATES (COLLECTIVELY, THE "SUPPLIER") DISCLAIM ALL LIABILITY FOR RELIANCE ON SUCH INFORMATION AND RECOMMENDATIONS. This SDS is not a guarantee of safety. A buyer or user of the Material (a "Recipient") is responsible for ensuring that it has all current information necessary to safely use the Material for its specific purpose. FURTHERMORE, THE RECIPIENT ASSUMES ALL RISK IN CONNECTION WITH THE USE OF THE MATERIAL. THE RECIPIENT ASSUMES ALL RESPONSIBILITY FOR ENSURING THE MATERIAL IS USED IN A SAFE MANNER IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL, HEALTH, SAFETY AND SECURITY LAWS, POLICIES AND GUIDELINES. THE SUPPLIER DOES NOT WARRANT THE MERCHANTABILITY OF THE MATERIAL OR THE FITNESS OF THE MATERIAL FOR ANY PARTICULAR USE AND ASSUMES NO RESPONSIBILITY FOR INJURY OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY OR RELATED TO THE USE OF THE MATERIAL.