30 January 2018

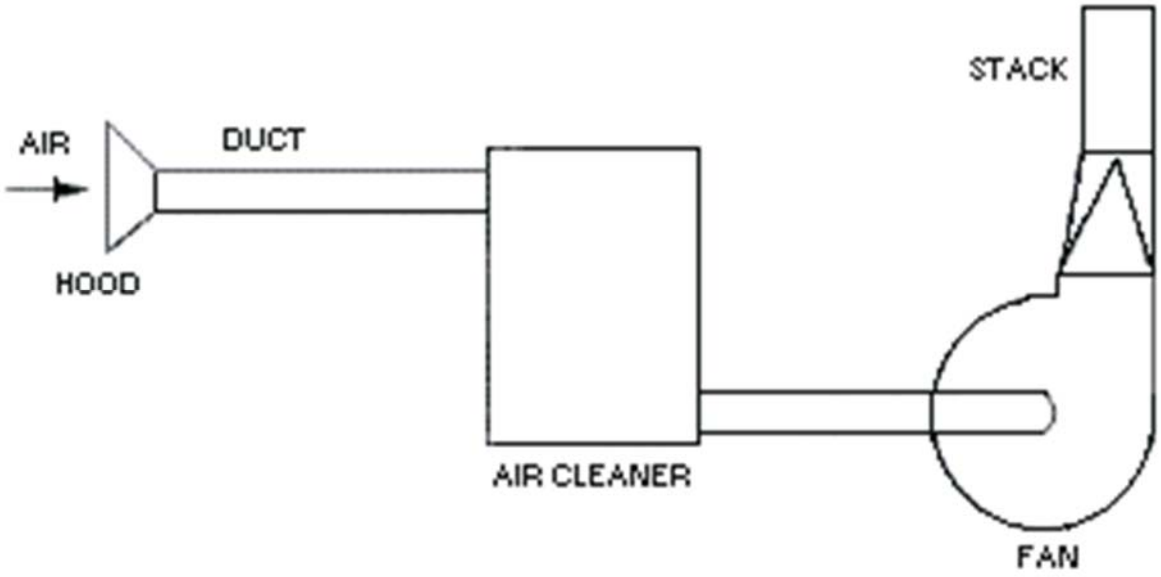
Eshetu Beshada, PhD, P.Eng.
Municipal and Industrial Section
Environmental Approvals Branch
Manitoba Sustainable Development
123 Main Street
Winnipeg, MB R3C 1A5

Dear Eshetu Beshada,

This is in response to your message dated 08 January 2018. I hope that you find it in good order.

1. EXHAUST SYSTEM

   There are four exhaust fans installed to maintain air quality in the facility. The system sucks out fumes, particulates and volatile compounds. Emissions from operation of fork lift and pressure washers, particulate from powders, and fumes from solvents are taken out of the building by the exhaust system.



2. WASTEWATER

There are two kinds of wastewater generated in the facility. One is from general everyday regular use of water such as washing and the other is from the refuse of water purification system.

2.1. Regular Wastewater

This wastewater is generated from washing of equipment and cleaning of production areas; flushing from toilets and sinks. It contains soaps, detergents and degreasers; soils from equipment and premises; human wastes; food debris and other remains.

The regular wastewater is collected through the drainage system into the dedicated septic tank.

2.2. Refuse From Water Purification System

These wastewaters are from the cation exchangers and reverse osmosis system of the company. It contains minerals from the well water primarily as calcium and magnesium and sodium chloride. The wastewater is collected into a holding tank, which is later used for manufacture of products. Excess water from the holding tank is drained into the septic tank

3. WASTEWATER HOLDING TANK

3.1. Septic Tank

It is made of concrete with fiberglass lining, cylindrical shape, installed below ground level with top cover on ground level for access to collection of wastewater by contract service provider. It was installed when the building was constructed in 2009.

The septic tank can hold up to 6000 liters of wastewater.

3.2. Water Tank

The tank is a cylinder with man hole on top. It is made of high density polyethylene plastic. It was installed in

the building on January 2017. It can store up to 12000 litres of water.

4. WASTEWATER FROM WATER PURIFICATION SYSTEM

   The refuse from water purification system contains minerals such as calcium and magnesium, and other dissolved solids from the well water and sodium chloride added and used for cation exchange.

5. MSDS
   (Please see the provided copies)

6. BACKFLOW PREVENTION OF THE WELL

   A backflow prevention device is installed in the well. It is fitted with an immersion pump to facilitate suction of water. It has a valve that opens up when water is needed or when the pump is on. The valve closes when pump is off thereby preventing back flow of water.

7. DRAWING OF THE LOCATION OF THE WELL

   The well is located 1.5 metres beside the north side of the building and 3.0 metres from the east corner of the building. (*Please see attached copy*)


Building 60'x100'
Total 6000 Square Feet
60'0"
Dock Bay
Loading
70'0"
Leased Building
315'0"
Building One
70' by 150'
10,500 sq ft
150'0"
150'0"
WELL
600 Amp 200 Vol
Service Panel Located
on Second Floor
10'0"
Block
Block
Block

Material Safety Data Sheet

LA11626
VANQUEST 100

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA11626
Product Name: VANQUEST 100
Synonyms: None
Chemical Family: None Known
Application: Chelating agent.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 14 March 2011
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Water 7732-18-5	30-60	Oral LD50 (Rat) >90 mL/kg
Tetrasodium ethylene diamine tetraacetate 64-02-8	15-40	Oral LD50 (Rat) = 10 g/kg
Sodium and compounds	1-5	Oral LDLo (Rabbit) : 500mg/kg
Sodium Salt	0.1-1	Oral LD50 (Rat) = 920 mg/kg Inhalation LC50 (Rat) > 5 mg/L 4 h

Note: The concentration of remaining ingredients is below the Ingredient Disclosure List. Under the Hazardous Materials Information Review Act, a claim for exemption was filed for this product on March 18, 2011 and was assigned registry number 8140.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:

3. HAZARDS IDENTIFICATION

Eye Contact: May cause severe eye irritation. May cause corneal injury. Liquid can cause severe, permanent damage and loss of vision. May cause eye burns. Vapours or mists may cause eye irritation.
Skin Contact: Prolonged contact may cause skin irritation with local redness. May cause more severe response if confined to skin or skin is abraded (scratched or cut). Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling and tissue damage. Mist may irritate skin. A single exposure is not likely to result in the material being absorbed through the skin in harmful amounts.
Inhalation: Single exposure to vapors is not expected to pose a hazard; vapors are primarily water. Mists may cause irritation of upper respiratory tract.
Ingestion: Single dose oral toxicity is low. Ingestion may cause gastrointestinal irritation or ulceration. Ingestion may cause burns of the mouth and throat. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

4. FIRST AID MEASURES

Eye Contact: Wash eyes with water for a minimum of 30 minutes or until no evidence of the chemical remains. Remove contact lenses, if present, after the first five minutes, then continue rinsing. Obtain medical attention without delay, preferably from an ophthalmologist.
Skin Contact: Flush with copious amounts of water.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do not induce vomiting. Do not give anything by mouth to an unconscious person. Seek immediate medical attention.
Notes to Physician: There is no specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. In case of massive exposure, victim should be observed for several days for delayed effects.Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower GI tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Pensky-Martens Closed Cup
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Isolate and restrict area access. This material will not burn until the water has evaporated. Residue can burn.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of nitrogen. Oxides of carbon. Ammonia. The smoke may contain unidentified toxic and/or irritating compounds.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: Not Available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed.
Procedure for Clean Up: Isolate hazard area and restrict access. Try to work upwind of spill. Ventilate area. Prevent spilled material from entering sewers, confined spaces, drains, or waterways. Absorb with an inert dry material and place in an appropriate waste disposal container. Clean up residual with absorbent material and wash with water.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Use with adequate ventilation.

7. HANDLING AND STORAGE

Storage: Do not store in aluminum, carbon steel, copper, copper alloys, zinc or nickel containers. Store between 0 and 120 °F.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

General (mechanical) room ventilation is expected to be satisfactory. Local exhaust ventilation may be necessary for some operations.

Respiratory Protection: In misty atmospheres, use an approved mist respirator.

Gloves:

Impervious gloves.

Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Water	Not available.	Not available.	Not Available.
Tetrasodium ethylene diamine tetraacetate	Not available.	Not available.	Not Available.
Sodium and compounds	2 mg/m^3 Ceiling	2 mg/m^3 Ceiling	10 mg/m^3
Sodium Salt	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.
Colour: Light red
Odour: Amine
pH 10.5-12.5
Specific Gravity: 1.31@ 25 °C
Boiling Point: 106°C /223°F
Freezing/Melting Point: -25°C / -13°F
Vapour Pressure: same as water.
Vapour Density: same as water.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Miscible in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: Not Available.
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Excessive heat.
Materials to Avoid: Oxidizing materials. Avoid contact with metals such as zinc, aluminum, carbon steel, copper, copper alloys, galvanized metals, nickel. Flammable hydrogen may be generated from contact with metals such as aluminum.
Hazardous Decomposition Products: Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Single dose oral toxicity is low. Ingestion may cause gastrointestinal irritation or ulceration. Ingestion may cause burns of the mouth and throat. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

Skin Contact: Prolonged contact may cause skin irritation with local redness. May cause more severe response if confined to skin or skin is abraded (scratched or cut). Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling and tissue damage. Mist may irritate skin. A single exposure is not likely to result in the material being absorbed through the skin in harmful amounts.

Inhalation: Single exposure to vapors is not expected to pose a hazard; vapors are primarily water. Mists may cause irritation of upper respiratory tract.

Eye Contact: May cause severe eye irritation. May cause corneal injury. Liquid can cause severe, permanent damage and loss of vision. May cause eye burns. Vapours or mists may cause eye irritation.

Additional Information: None known.

Acute Test of Product:

Acute Oral LD50: Oral LD50 Rat: 3030 mg/kg

Acute Dermal LD50: LD50 Dermal Rabbit: >5000 mg/kg

Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Water	Not listed.	Not listed.
Tetrasodium ethylene diamine tetraacetate	Not listed.	Not listed.
Sodium and compounds	Not listed.	Not listed.
Sodium Salt	Group 2B	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Water	Not Available.	Not Available.	Not Available.
Tetrasodium ethylene diamine tetraacetate	LC50 96 h (Lepomis macrochirus) 41 mg/L static LC50 96 h (Pimephales promelas) 59.8 mg/L static	Not Available.	EC50 72 h Desmodesmus subspicatus 1.01 mg/L
Sodium and compounds	LC50 (Rainbow Trout) 1149 mg/l LC50 (Chinook Salmon) 152 mg/l	Not Available.	Not Available.
Sodium Salt	LC50 96 h (Pimephales promelas) 93-170 mg/L flow-through LC50 96 h (Lepomis macrochirus) 175-225 mg/L static LC50 96 h (Lepomis macrochirus) 252 mg/L LC50 96 h (Pimephales promelas) 470 mg/L static LC50 96 h (Oryzias latipes) 560-1000 mg/L LC50 96 h (Oryzias latipes) 560-1000 mg/L semi-static LC50 96 h (Oncorhynchus mykiss) 72-133 mg/L static LC50 96 h (Poecilia reticulata) 560-1000 mg/L semi-static LC50 96 h (Pimephales promelas) 114 mg/L	Not Available.	EC50 96 h Chlorella vulgaris 560 - 1000 mg/L

Other Information:
Material is practically non-toxic to fish on an acute basis.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (ETHYLENEDIAMINETETRAACTIC ACID, TETRASODIUM SALT)
DOT Hazardous Class 8
DOT UN Number: UN3267
DOT Packing Group: II
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):

14. TRANSPORT INFORMATION

TDG Shipping Name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (ETHYLENEDIAMINETETRAACTIC ACID, TETRASODIUM SALT)
Hazard Class: 8
UN Number: UN3267
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Water	Not Listed.	Not Listed.	Not Listed.
Tetrasodium ethylene diamine tetraacetate	Not Listed.	Not Listed.	Not Listed.
Sodium and compounds	Not Listed.	Listed	Not Listed.
Sodium Salt	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:
D2A VERY TOXIC MATERIALS
D2B TOXIC MATERIALS
E CORROSIVE MATERIAL

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

NOTICE TO READER:
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All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA6694
Trisodium Phosphate FG Crystalline

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA6694
Product Name: Trisodium Phosphate FG Crystalline
Synonyms: Sodium Orthophosphate Dodecahydrate
Chemical Family: Phosphate Salts.
Application: Industrial chemical. Textiles. Water treatment.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 04 April 2005
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Trisodium Phosphate Dodecahydrate 10101-89-0	60-100	Oral LD50 (Rat) 7400 mg/kg

Note: Trisodium Phosphate Dodecahydrate is the hydrated form of Phosphoric acid, trisodium salt (cas no. 7601-54-9). Trisodium phosphate dodecahyrate is not on the DSL but it's anhydrous form is. Trisodium phosphate dodecahydrate contains Sodium Hydroxide <2.0%, (cas no. 1310-73-2) as part of it's composition.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause burns, irritation, permanent damage to the cornea.
Skin Contact: May cause burns, irritation, irritation is likely to be more severe if the skin is moist or wet.
Inhalation: Material is irritating to mucous membrane and upper respiratory tract. Exposure can cause coughing, chest pains and difficulty in breathing.
Ingestion: May cause burns of the mouth, throat and stomach. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

4. FIRST AID MEASURES

Eye Contact: Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention immediately. Have an opthamologist make an evaluation of eye injury.
Skin Contact: Wash contaminated skin with mild soap and water for 15 minutes. Obtain medical attention immediately.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Get medical attention immediately.
Ingestion: Do not induce vomiting. Do not give anything by mouth to an unconscious person. Get immediate medical attention.
Notes to Physician: Treat symptomatically. Ingestion of large quantities of phosphate salts (over 1.0 grams for an adult) may cause an osmotic catharsis resulting in diarrhea and probable abdominal cramps. Larger doses such as 4-8 grams will almost certainly cause these effects in everyone. In healthy individuals most of the ingested salt will be excreted in the feces with the diarrhea and, thus, not cause any systemic toxicity. Doses greater than 10 grams hypothetically may cause systemic toxicity. Treatment should take into consideration both anionic and caution portion of the molecule. The following treatments should be considered for the specific group(s) of phosphate salts found in this product:

--All phosphate salts, except calcium salts, have a hypothetical risk of hypocalcemia, so calcium levels should be monitored.

--Ammonium salts have a hypothetical risk of ammonia toxicity. In addition to calcium levels, ammonia and phosphate levels should be monitored.

--Potassium salts have a hypothetical risk of hyperkalemia which can cause cardiac arrhythmia. In addition to calcium levels, potassium and phosphate levels should be monitored. Also consider continuous EKG monitoring to detect hyperkalemia.

--Sodium salts have a hypothetical risk of hypernatremia. In addition to calcium levels, sodium and phosphate levels should be monitored.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not Available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Does not burn. Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Not Available.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of sodium. Oxides of phosphorus.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 0, REACTIVITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 0, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering sewers, waterways or low areas.
Procedure for Clean Up: Scoop up or vacuum up and place in an appropriate closed container. Flush area with water to remove trace residue.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Avoid breathing in dust. Use with adequate ventilation. Wash thoroughly after handling. Potentially deadly carbon monoxide gas can form in enclosed area or tanks when alkaline products contain materials that contain sugars. Do not enter such areas until they have been well ventilated and carbon monoxide and oxygen levels have been determined safe. Continue to monitor atmosphere while personnel are in enclosure. Empty containers may contain hazardous product residues.
Storage: Store in a cool, dry, well ventilated area. Keep containers tightly closed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.
Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator.
Gloves: Impervious gloves.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Safety glasses with side shields or chemical goggles.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Trisodium Phosphate Dodecahydrate	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid. Granular
Colour: White
Odour: Odourless
pH 11.8 @ 1 Wt/Wt%
Specific Gravity: Not Available.
Boiling Point: Not Available.
Freezing/Melting Point: 75 °C / 167 °F
Vapour Pressure: Not Available.
Vapour Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Soluble.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 380.13

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Moisture. Avoid conditions that generate dust.
Materials to Avoid: Magnesium metal. Strong acids.
Hazardous Decomposition Products: Oxides of phosphorus. Oxides of sodium. Decomposition temperature: 77°C / 171 °F
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May cause burns of the mouth, throat and stomach. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.
Skin Contact: May cause burns, irritation, irritation is likely to be more severe if the skin is moist or wet.
Inhalation: Material is irritating to mucous membrane and upper respiratory tract. Exposure can cause coughing, chest pains and difficulty in breathing.
Eye Contact: May cause burns, irritation, permanent damage to the cornea.

Additional Information:
Acute Test of Product:
Acute Oral LD50: Oral LD50 : 7400mg/kg (rat)

Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Trisodium Phosphate Dodecahydrate	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Trisodium Phosphate Dodecahydrate	EC50 151 mg/l/96hr (Mosquitofish)	Not Available.	Not Available.

Other Information:
No specific biodegradation test data located. While the alkalinity of this material is readily reduced in natural waters, the resulting phosphate may persist indefinitely or incorporate into biological systems.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TRISODIUM PHOSPHATE, DODECAHYDRATE)
DOT Hazardous Class 9
DOT UN Number: UN3077
DOT Packing Group: III
DOT Reportable Quantity (lbs): Not Applicable.
Note: This product is regulated for transportation because it contains a reportable quantity of a hazardous substance found in Appendix A - 49 CRF 172.101. Depending on the amount of the hazardous substance present, certain package sizes may be exempt from the transportation regulations.
Marine Pollutant: No.

ICAO/IATA:
IATA Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TRISODIUM PHOSPHATE, DODECAHYDRATE)
IATA Hazard Class: 9
UN Number: UN3077
Packing Group: III
IATA Label: Environmentally Hazardous.
IATA Remarks: No additional remark.

IMDG:
IMDG Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TRISODIUM PHOSPHATE, DODECAHYDRATE)
Hazard Class: 9

UN Number: UN3077
Packing Group: III
Marine Pollutant: No.
IMDG Label: Environmentally Hazardous.
Remarks: No additional remark.

TDG (Canada):
TDG Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TRISODIUM PHOSPHATE, DODECAHYDRATE)
Hazard Class: 9
UN Number: UN3077
Packing Group: III
Note: Only regulated for TDG under class 9 if intended for disposal.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on theToxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Trisodium Phosphate Dodecahydrate	Not Listed.	LISTED	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:
E CORROSIVE MATERIAL

16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA2254
Triethanolamine 85% USP

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA2254
Product Name: Triethanolamine 85% USP
Synonyms: Trolamine 85%; TEA 85%
Chemical Family: Alkanolamines
Application: Not Available.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 03 March 2005
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Triethanolamine 102-71-6	60-100	Oral LD50 (Rat) 4190 mg/kg Dermal LD50 (Rabbit) 2000 mg/kg
Diethanolamine 111-42-2	10-30	Oral LD50 (Rat) 620 µL/kg Dermal LD50 (Rabbit) 7640 µL/kg

Note: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Causes moderate to severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva. May cause corneal injury.
Skin Contact: Brief contact may cause slight irritation. Prolonged contact may cause more severe irritation, with discomfort or pain, local redness and swelling, and possible tissue destruction.
Inhalation: Causes irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain and coughing.

Ingestion: Moderately toxic. May cause burns of mouth and throat, abdominal pain, nausea, vomiting, diarrhea, dizziness, weakness, thirst, collapse and possible coma. The nature and severity of these signs and symptoms will be dependent on the amount swallowed. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with water for at least 15 minutes while holding eyelids open. Obtain medical attention.
Skin Contact: Wash with soap and water. If irritation persists or signs of toxicity occur, seek medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Ingestion: If patient is fully conscious, give two glasses of milk or water at once. Do NOT induce vomiting unless directed to do so by medical personnel. Seek medical attention.
Notes to Physician: Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flash Point: 194.4 °C / 382 °F
Flash Point Method: Pensky-Martens Closed Cup
Autoignition Temperature: Not Available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Do not direct a solid stream of water or foam into burning molten material; this may cause spattering and spread the fire.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of carbon.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 1, REACTIVITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 1, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering sewers, waterways or low areas.
Procedure for Clean Up: Isolate hazard area and restrict access. Contain spill by diking. Absorb with an inert dry material and place in an appropriate waste disposal container. Flush area with water to remove trace residue.

7. HANDLING AND STORAGE

Handling: Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Do not swallow. Keep the containers closed when not in use. Use with adequate ventilation. Wash thoroughly after handling.
Storage: May segregate or freeze below 16 °C. Thaw and mix before sampling or using.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use good housekeeping and industrial engineering practices.
Respiratory Protection: Use self-contained breathing apparatus in high vapor concentrations.
Gloves: Butyl rubber gloves. Polyvinylchloride gloves.
Skin Protection: Chemical apron.
Eyes: Monogoggles.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Triethanolamine	5 mg/m³ TLV-TWA	Not available.	Not Available.
Diethanolamine	2 mg/m³ TLV-TWA	15 mg/m³ TWA 3 ppm TWA	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Colour: Clear amber - colourless.
Odour: Ammonia odour
pH Not Available.
Specific Gravity: 1.126
Boiling Point: 310.3 °C / 590.5 °F
Freezing/Melting Point: 15.8 °C / 60.4 °F
Vapour Pressure: Not Available.
Vapour Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Soluble.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Temperatures above 250 °C.
Materials to Avoid: Strong acids. Strong alkalis. Strong oxidizing agents. Aldehydes. Ketones. Acrylates. Anhydrides. Organic halides.
Hazardous Decomposition Products: Oxides of carbon. Oxides of nitrogen.
Additional Information:

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Moderately toxic. May cause burns of mouth and throat, abdominal pain, nausea, vomiting, diarrhea, dizziness, weakness, thirst, collapse and possible coma. The nature and severity of these signs and symptoms will be dependent on the amount swallowed. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.
Skin Contact: Brief contact may cause slight irritation. Prolonged contact may cause more severe irritation, with discomfort or pain, local redness and swelling, and possible tissue destruction.
Inhalation: Causes irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain and coughing.
Eye Contact: Causes moderate to severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva. May cause corneal injury.

Additional Information: Skin contact may cause sensitization and an allergic skin reaction in a small proportion of individuals. Repeated overexposure may cause liver and kidney effects.
Acute Test of Product:
Acute Oral LD50: Oral LD50 : 3.58 - 6.78 ml/kg (Rat - Female), 5.8 - 12.7 ml/kg (Rat - Male)
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Triethanolamine	Group 3	Not listed.
Diethanolamine	Group 3	Not listed.

Carcinogenicity Comment: Carcinogenicity Comment: Do not use SODIUM NITRITE or other NITROSATING AGENTS in formulations containing this product. Suspected carcinogenic NITROSAMINES could be formed.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Triethanolamine	LC50 (fathead minnow) 11800 mg/L LC50 (goldfish) 5000 mg/L	Not Available.	Not Available.
Diethanolamine	LC50 (fathead minnow) 4710 mg/L LC50 (goldfish) 800 mg/L	Not Available.	Not Available.

Other Information:
No additional remark.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Incineration recommended in approved incinerator according to federal, state, and local regulations. Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: Not Regulated.
DOT Hazardous Class Not Applicable.
DOT UN Number: Not Applicable.
DOT Packing Group: Not Applicable.
DOT Reportable Quantity (lbs): Not Applicable.
Note: No additional remark.
Marine Pollutant: No.

ICAO/IATA:
IATA Proper Shipping Name: Not Regulated.
IATA Hazard Class: Not Applicable.
UN Number: Not Applicable.
Packing Group: Not Applicable.
IATA Label: Not Applicable.
IATA Remarks: No additional remark.

IMDG:
IMDG Proper Shipping Name: Not Regulated.
Hazard Class: Not Applicable.
UN Number: Not Applicable.
Packing Group: Not Applicable.
Marine Pollutant: No.
IMDG Label: Not Applicable.
Remarks: No additional remark.

TDG (Canada):
TDG Proper Shipping Name: Not Regulated.
Hazard Class: Not Applicable.
UN Number: Not Applicable.
Packing Group: Not Applicable.
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on theToxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Triethanolamine	Not Listed.	Not Listed.	Not Listed.
Diethanolamine	Not Listed.	LISTED	LISTED

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:
D2B TOXIC MATERIALS

16. OTHER INFORMATION

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

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All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA6467
TOLUENE ANTI-STATIC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA6467
Product Name: TOLUENE ANTI-STATIC
Synonyms: Methylbenzene, Toluol
Chemical Family: Aromatic Hydrocarbon.
Application: Organic solvent.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 22/Jun/2015
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Vapors are moderately irritating to the eyes.
Skin Contact: Causes moderate skin irritation. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.
Inhalation: Vapors are moderately irritating to the respiratory passages. The liquid when accidently aspirated into the lungs can cause severe inflammation of the lung. May cause nervous system depression characterized by the following progressive steps: headache, dizziness, nausea, staggering gait, confusion, unconsciousness. Reports have associated repeated and prolonged overexposure to solvents will permanent brain and nervous system damage.
Ingestion: May be harmful if swallowed. Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Toluene 108-88-3	100	Dermal LD50 (Rabbit) 14100 uL/kg Inhalation LC50 (Mouse) 400 ppm/24H Inhalation LC50 (Rat) 49 gm/m^3/4H Inhalation LC50 (Female Rat) 19mg/l/4H Oral LD50 (Rat) 636 mg/kg

Note: This product contains STADIS 450 Conductivity Improver. The typical concentration is < 15 ppm.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs, get medical assistance.
Skin Contact: Flush with copious amounts of water for at least 15 minutes. Get medical attention if irritation persists.
Inhalation: If symptoms are experienced, remove source of contamination or move victim to fresh air. If symptoms persist, get medical attention. If breathing has stopped, trained personnel should begin artificial respiration (AR) immediately. If breathing is difficult, give oxygen. In situations where administering oxygen is appropriate, first aiders must be trained in the safe use and handling of oxygen. It is preferable to administer oxygen under a doctor's supervision or advice. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Immediate medical assistance is required.
Ingestion: Seek immediate medical attention. Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. If breathing has stopped, trained personnel should begin artificial respiration (AR) immediately. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately.
Notes to Physician: The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

5. FIRE FIGHTING MEASURES

Flash Point: >=4 °C / >39.2 °F
Flash Point Method: ASTM D56
Autoignition Temperature: >500°C />932°F
Flammable Limits in Air (%): Lower: 1.3% Upper: 6.7%
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Flammable Liquid. Isolate and restrict area access. Stop leak only if safe to do so. Move containers from fire area if you can do it without risk. Fight fire from a safe distance and from a protected location. Use flooding quantities of water for fire and water spray or fog for vapors. Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure build-up which could result in container rupture. This material may produce a floating fire hazard in extreme fire conditions. This product can produce flammable vapors which may travel to a source of ignition and flash back. Do not allow runoff to enter waterways or sewer.
Hazardous Decomposition/Combustion Materials (under fire conditions): Toxic fumes. Smoke. Carbon monoxide. Carbon dioxide.
Special Protective Equipment: Fire fighters must wear full face, positive pressure, self-contained breathing apparatus and appropriate protective clothing.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 3, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 3, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities.
Procedure for Clean Up: Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Warn other shipping. Allow liquid to evaporate from the surface. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

7. HANDLING AND STORAGE

Handling: Flammable. For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. DO NOT handle or store near an open flame, heat, or other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Handling Temperature: Ambient. Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semi conductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semi conductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Use explosion-proof ventilation to prevent vapor accumulation. Prevent electrostatic charge buildup by using common bonding and grounding techniques. Store at ambient temperature. Store in accordance with good industrial practices. Suitable Containers/Packing: Drums; Barges; Tank Cars; Tank Trucks
Suitable Materials and Coatings: Carbon steel; Teflon; Stainless steel;
Unsuitable Materials and Coatings: Polystyrene; Natural rubber; Butyl rubber; Ethylene-propylene-diene monomer (EPDM)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Electrical and mechanical equipment should be explosion proof. Firewater monitors and deluge systems are recommended.
Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator. For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.
Gloves:

Appropriate chemical resistant gloves should be worn.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance. Oil resistant apron.
Eyes: Chemical safety glasses with side shields or splash proof goggles.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Toluene	20 ppm TLV-TWA	100 ppm TWA 375 mg/m^3 TWA 150 ppm STEL 560 mg/m^3 STEL	500 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Clear Colorless.
Odor: Aromatic
pH Not Available.
Specific Gravity: 0.87
Boiling Point: 110-111°C / 230-232°F
Freezing/Melting Point: -95°C / -139°F
Vapor Pressure: 7 kPa (52.5 mm Hg) @ 38°C
Vapor Density: >1 @ 101 kPa

9. PHYSICAL AND CHEMICAL PROPERTIES

% Volatile by Volume: 100%
Evaporation Rate: 2.4
Solubility: Negligible in water.
VOCs: 7.26 lbs /gal
Viscosity: 0.65 cSt @ 25°C
Molecular Weight: 92.13
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid excessive heat, open flames and all ignition sources.
Materials to Avoid: Oxidizing agents. Avoid natural, butyl and neoprene rubbers. Avoid prolonged contact with nitrile rubber and PVC (Toluene).
Hazardous Decomposition Products: Material does not decompose at ambient temperatures.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May be harmful if swallowed. Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).
Skin Contact: Causes moderate skin irritation. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.
Inhalation: Vapors are moderately irritating to the respiratory passages. The liquid when accidently aspirated into the lungs can cause severe inflammation of the lung. May cause nervous system depression characterized by the following progressive steps: headache, dizziness, nausea, staggering gait, confusion, unconsciousness. Reports have associated repeated and prolonged overexposure to solvents will permanent brain and nervous system damage.
Eye Contact: Vapors are moderately irritating to the eyes.

Additional Information: Prolonged exposures to high vapor concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression. Prolonged and repeated contact with the skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis.Toluene is a moderate skin irritant, based on animal evidence. Prolonged contact is more irritating due to the defatting action of this solvent and dermatitis (dry, red skin) may result. Liquid toluene is absorbed through the skin slowly. Toluene is a mild eye irritant, based on animal evidence. The main effect of inhaling toluene vapor is on the central nervous system (CNS). Symptoms are related to exposure concentration. Symptoms may include slight drowsiness, headache, irritation of the nose, throat and respiratory tract, fatigue, dizziness, drunkenness (giddiness), numbness, mild nausea, mental confusion, incoordination, unconsciousness and death. Toluene is readily absorbed following ingestion producing CNS depression. Symptoms will be similar to those described for inhalation. Acute oral exposure to toluene in rats has been reported to cause temporary visual dysfunction, urinary bladder effects and altered immune function. Toluene may be aspirated, which is the inhalation of a chemical into the lungs, during ingestion or vomiting. Severe lung irritation, damage to the lung tissues and death may result. Most studies reporting kidney damage in people result from solvent abuse (for example, glue-sniffing). There is some evidence to suggest that long-term exposure to toluene may affect hearing. The effect of toluene on hearing loss is potentiated by acetylsalicylic acid and n-hexane to produce irreversible auditory damage. Chronic inhalation causes color vision impairment in humans. Exposure to other solvents such as benzene, xylene and ethanol (alcohol) slows the rate of clearance of toluene from the body, thereby enhancing the toxicity of toluene.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Toluene	Group 3	A4

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: TOLUENE:Prolonged and repeated exposure of pregnant animals (> 1500 ppm) have been reported to cause adverse fetal developmental effects.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Toluene	11.0 - 15.0 mg/L LC50 (Lepomis macrochirus) 96 h static 14.1 - 17.16 mg/L LC50 (Oncorhynchus mykiss) 96 h static 15.22 - 19.05 mg/L LC50 (Pimephales promelas) 96 h flow-through 5.89 - 7.81 mg/L LC50 (Oncorhynchus mykiss) 96 h flow-through 50.87 - 70.34 mg/L LC50 (Poecilia reticulata) 96 h static 12.6 mg/L LC50 (Pimephales promelas) 96 h static 28.2 mg/L LC50 (Poecilia reticulata) 96 h semi-static 5.8 mg/L LC50 (Oncorhynchus mykiss) 96 h semi-static 54 mg/L LC50 (Oryzias latipes) 96 h static	Not Available.	12.5 mg/L EC50 Pseudokirchneriella subcapitata 72 h static 433 mg/L EC50 Pseudokirchneriella subcapitata 96 h

Other Information:
Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams or public waterways. Block off drains and ditches. Spill areas must be cleaned and restored to original condition or to the satisfaction of authorities. May be harmful to aquatic life. Low potential to bioaccumulate.Material is readily biodegradable. Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility. Empty containers retain product residue (liquid and/or vapor) and can be dangerous.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: TOLUENE
DOT Hazardous Class 3
DOT UN Number: UN1294
DOT Packing Group: II
DOT Reportable Quantity (lbs): 1,000 lb
Note: No additional remark.
Marine Pollutant: No.

14. TRANSPORT INFORMATION

TDG (Canada):
TDG Shipping Name: TOLUENE
Hazard Class: 3
UN Number: UN1294
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Toluene	Not Listed.	Listed	Listed

California Proposition 65: Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
B2 FLAMMABLE LIQUIDS
D2B TOXIC MATERIALS

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

NOTICE TO READER:
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All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA11947
SULFURIC ACID 71%-75%

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA11947
Product Name: SULFURIC ACID 71%-75%
Synonyms: Sulphuric Acid, Hydrogen Sulphate, Oil of Vitriol, Battery Acid.
Chemical Family: Inorganic acid.
Application: Water treatment. Metal pickling. Petroleum processing. Manufacture of fertilizers, explosives and other acids.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 06 July 2011
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Sulphuric Acid 7664-93-9	70-78	Oral LD50 (Rat) 2140 mg/kg Inhalation LC50 (Rat) 510 mg/m^3 (2-hour exposure) LC50 (Rat): 255 mg/m^3 (equivalent 4-hour exposure) LC50 (Mouse): 160 mg/m^3 (equivalent 4-hour exposure).

Note: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Corrosive to eye tissue and may cause severe damage and blindness. Inflammation of the eye is characterized by redness, watering, and itching.
Skin Contact: Corrosive! Effects on the skin may be delayed and damage may occur without the onset of pain. Causes burns, and brownish or yellow stains. Concentrated solutions may cause second or third degree burns with severe necrosis and may cause permanent scarring. Prolonged and repeated exposure to dilute solutions often causes irritation, redness, pain and drying and cracking of the skin.
Inhalation: Inhalation of the mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. May be fatal if inhaled.

3. HAZARDS IDENTIFICATION

Ingestion: Harmful if swallowed. Causes burns to the mouth, throat and stomach.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with copious quantities of water for at least 20 minutes holding lids apart to ensure flushing of the entire surface. Seek immediate medical attention. Do not transport victim until the recommended flushing period is completed, unless flushing can be continued during transport.
Skin Contact: Flush affected skin with gently flowing water for 20-60 minutes and remove contaminated clothing while rinsing. Obtain medical attention immediately. Do not transport victim until the recommended flushing period is completed, unless flushing can be continued during transport. Remove contaminated clothing and discard. Remove contaminated shoes and discard.
Inhalation: If symptoms are experienced, remove source of contamination or move victim to fresh air. If symptoms persist, get medical attention. If the affected person is not breathing, apply artificial respiration. If breathing is difficult, give oxygen. In situations where administering oxygen is appropriate, first aiders must be trained in the safe use and handling of oxygen. It is preferable to administer oxygen under a doctor's supervision or advice. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Immediate medical assistance is required.
Ingestion: If conscious, wash out mouth with water. Seek immediate medical attention. Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Administer artificial respiration if breathing has stopped. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately.
Notes to Physician: Aspiration may cause severe lung damage. Evacuate stomach in a way which avoids aspiration. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Following exposure the patient should be kept under medical review for at least 48 hours as delayed pneumonitis may occur. DO NOT attempt to neutralize the acid with weak bases since the reaction will produce heat that may extend the corrosive injury.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire. If water is used, care should be taken, since it can generate heat and cause spattering if applied directly to sulphuric acid.
Special Exposure Hazards: Strong dehydrating agent, which may cause ignition of finely divided combustible materials on contact. Reacts violently with water with the evolution of heat. It can react explosively with organic materials. Reacts with metals to generate flammable hydrogen gas. Reacts violently with water with the evolution of heat. It can react explosively with organic materials. Reacts with many metals to liberate hydrogen gas that can form explosive mixtures with air. Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside drums, or any types of steel containers or tanks upon storage.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of sulphur.
Special Protective Equipment: Fire fighters must wear full face, positive pressure, self-contained breathing apparatus and appropriate protective clothing.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, INSTABILITY 2
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, REACTIVITY 2

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Restrict access to unprotected personnel. Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Consult local authorities.
Procedure for Clean Up: Isolate hazard area and restrict access. Stop leak only if safe to do so. Eliminate all ignition sources. Handling equipment must be grounded. Ventilate area. Contain spill with sand or other inert materials. Neutralize with lime slurry, limestone, or soda ash. Absorb with an inert dry material and place in an appropriate waste disposal container.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Use extreme care when diluting with water. ALWAYS ADD ACID TO WATER. Use with adequate ventilation. CAUTION: Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside drums, or any type of steel containers or tanks upon storage. Carbon steel storage tanks must be vented. Use corrosion-resistant transfer equipment when transferring acid.

Storage: Store above freezing point. Elevated temperatures will increase the corrosion rate of most metals as well as cause build-up of pressure due to sulfur dioxide generation. Store packaged acid in a dry, well-ventilated location. Avoid storage with incompatible materials. Storage tanks should be protected from water getting in, be well ventilated, and maintained structurally in a safe and reliable condition. Sulfuric acid will attack some forms of plastics and coatings. Always add acid to water - not water to acid. If kept in upper floors of building, floors should be acid proof with drains to a recovery tank. Store between 10°C - 27°C.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Electrical installations should be protected against the corrosive action of acid vapors.

Respiratory Protection: A NIOSH/MSHA approved air-purifying respirator equipped with acid gas/fume, dust, mist cartridges for concentrations up to 10 mg/m^3. An air-supplied respirator if concentrations are higher or unknown.

Gloves:

Neoprene gloves. PVC gloves.

Skin Protection: Impervious boots. Butyl rubber acid suit.

Eyes: Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Sulphuric Acid	0.2 mg/m^3 TLV-TWA	1 mg/m^3 TWA	15 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid. (Oily).
Colour: Brown
Odour: Odourless A pungent odour may exist if certain impurities are present in the acid.
pH 0.3
Specific Gravity: 1.7059 - 1.8437
Boiling Point: Not Available.
Freezing/Melting Point: -40 to -1.1°C / -40 to 30°F
Vapour Pressure: 1.2 to 0.002 mm Hg
Vapour Density: 3.4
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Miscible in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 98.08 g/mole
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid excessive heat, open flames and all ignition sources. Water.

10. STABILITY AND REACTIVITY

Materials to Avoid: Contact with organic materials (such as alcohol, acrylonitrile, chlorates, carbides, epichlorohydrin, fulminates, isoprene, nitrates and picrates) may cause fire and explosions. Contact with metals may produce flammable hydrogen gas. Reducing agents. Alkalis. Moisture.
Hazardous Decomposition Products: Toxic fumes. Sulfuric acid. Oxides of sulphur. Sulfuric acid vapors may be released upon heating and sulfur dioxide and sulfur trioxide may be released upon decomposition.
Additional Information:

When diluting, add acid to water. DO NOT add water to the acid. Sulfuric acid can be corrosive to most metals, depending on such factors as acid concentration, temperature and impurities. Concentrated sulfuric acid (containing more than 90% H2SO4) can be safely handled using carbon steel, cast iron, and certain stainless steel alloys. The resistance of alloys to sulfuric acid corrosion generally increases with increasing chromium, molydbenum, copper and silicon content.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Harmful if swallowed. Causes burns to the mouth, throat and stomach.
Skin Contact: Corrosive! Effects on the skin may be delayed and damage may occur without the onset of pain. Causes burns, and brownish or yellow stains. Concentrated solutions may cause second or third degree burns with severe necrosis and may cause permanent scarring. Prolonged and repeated exposure to dilute solutions often causes irritation, redness, pain and drying and cracking of the skin.
Inhalation: Inhalation of the mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. May be fatal if inhaled.
Eye Contact: Corrosive to eye tissue and may cause severe damage and blindness. Inflammation of the eye is characterized by redness, watering, and itching.

Additional Information: Repeated exposure may produce erosion and discoloration of teeth.
Acute Test of Product:
Acute Oral LD50: 2140 mg/kg (Rat)
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: 510 mg/m^3 (2-hour exposure) (Rat)
255 mg/m^3 (equivalent 4-hour exposure) (Rat)
160 mg/m^3 (equivalent 4-hour exposure) (Mouse)

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Sulphuric Acid	Group 1	A2

Carcinogenicity Comment: WHO and IARC have concluded that occupation exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to man, (Group 1) causing cancer of the larynx and, to a lesser extent, the lung. Exposure to any mist or aerosol during the use of this product should be avoided and, in any case, keep exposure below the occupational exposure limit for sulfuric acid. IARC's classification is for inorganic acid mists containing sulfuric acid only and does not apply to sulfuric acid or sulfuric acid solutions.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Sulphuric Acid	LC50 (Brachydanio rerio) 500 mg/L LC50 (Oncorhynchus mykiss) 2.8 ug/L (96hr)	Not Available.	Not Available.

Other Information:
Harmful to aquatic life at low concentrations.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: SULFURIC ACID
DOT Hazardous Class 8
DOT UN Number: UN1830
DOT Packing Group: II
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: SULPHURIC ACID
Hazard Class: 8
UN Number: UN1830
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Sulphuric Acid	Listed	Listed	Listed

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:
D1A VERY TOXIC MATERIALS
D2A VERY TOXIC MATERIALS
E CORROSIVE MATERIAL

16. OTHER INFORMATION

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

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*****END OF MSDS*****

Material Safety Data Sheet

LA6005
SODIUM TRIPOLYPHOSPHATE TECH GRAN LD

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA6005
Product Name: SODIUM TRIPOLYPHOSPHATE TECH GRAN LD
Synonyms: STP; STPP; POLYSORB®
Chemical Family: Phosphate Salts.
Application: Food ingredient. Cleaning compound.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 11 March 2009
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Sodium Tripolyphosphate 7758-29-4	60-100	Oral LD50 (Rat) = 3100 mg/kg Dermal LD50 (Rabbit) > 7940 mg/kg
Tetrasodium Pyrophosphate 7722-88-5	1-5	Oral LD50 (Rat) 4000 mg/kg Oral LD50 (Mouse) 2980 mg/kg Oral LD50 (Rat, male) 2150 mg/kg Oral LD50 (Rat, female) 1825 mg/kg
Sodium Trimetaphosphate 7785-84-4	1-5	Oral LD50 (Mouse) = 10300 mg/kg Dermal LD50 (Rabbit) > 4640 mg/kg

Note: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause tearing, redness, irritation.
Skin Contact: May cause skin irritation. May cause redness and itching. Unlikely to be absorbed through skin.
Inhalation: Dust may be irritating to the respiratory tract.
Ingestion: No more than slightly toxic if swallowed. Swallowing larger amounts may cause gastrointestinal symptoms.

4. FIRST AID MEASURES

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin Contact: Remove contaminated clothing and launder before reuse. Immediately wash with plenty of soap and water for at least 5 minutes. Get medical attention if irritation persists.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Ingestion of large quantities of phosphate salts (> 1.0 gram for an adult) may cause an osmotic catharsis resulting in diarrhea and probable abdominal cramps. Larger doses such as 4-8 grams will almost certainly cause these effects in everyone. In healthy individuals most of the ingested salt will be excreted in the feces with the diarrhea and, thus not cause any systemic toxicity. Doses greather than 10 grams hypothetically may cause systemic toxicity. Treatment should take into consideration both anionic and cation portion of the molecule.The following treatments should be considered for the specific group(s) of phosphate salts found in the product:

-All phosphate salts, except calcium salts, have a hypothetical risk of hypocalcemia, so calcium levels should be monitored.
- Ammonium salts have a hypothetical risk of ammonia toxicity. In addition to calcium levels, ammonia and phosphate levels should be monitored.
-Potassium salts have a hypothetical risk of hyperkalemia which can cause cardiac arrhythmia. In addition to calium levels, potassium and phosphate levels should be monitored. Also consider continuous EKG monitoring to detect hyperkalemia.

-Sodium salts have a hypothetical risk of hypernatremia. In addition to calcium levels, sodium and phosphate levels should be monitored.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Do not allow runoff to enter waterways or sewer. Contain fire control water for later disposal. Not flammable.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of sodium. Oxides of phosphorus.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 0, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 0, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities.
Procedure for Clean Up: Avoid raising dust. Scoop up or vacuum up and place in an appropriate closed container. Clean up residual material by washing area with water and detergent. Collect the residues for proper disposal. Decontaminate tools and equipment following cleanup.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Avoid dust generation.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Store in accordance with good industrial practices. This product is hygroscopic and tends to cake on storage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use local ventilation at product handling and transfer points.
Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator. In case of spill or leak resulting in unknown concentration, use a NIOSH approved supplied air respirator.
Gloves:

Appropriate chemical resistant gloves should be worn.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Sodium Tripolyphosphate	Not available.	Not available.	Not Available.
Tetrasodium Pyrophosphate	Not available.	5 mg/m³ TLV-TWA	Not Available.
Sodium Trimetaphosphate	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Granular or Powder.
Colour: White
Odour: Odourless
pH 9.5 - 10.3 at 1% wt/wt
Specific Gravity: Not Available.
Boiling Point: Not Available.
Freezing/Melting Point: 622°C / 1152°F
Vapour Pressure: Not Available.
Vapour Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Water: 13% @ 25°C
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 367.86
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of handling, use and transportation.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid conditions that generate dust. Extreme heat. Extreme humidity.
Materials to Avoid: Strong acids. Strong oxidizing agents.
Hazardous Decomposition Products: Not available.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: No more than slightly toxic if swallowed. Swallowing larger amounts may cause gastrointestinal symptoms.
Skin Contact: May cause skin irritation. May cause redness and itching. Unlikely to be absorbed through skin.
Inhalation: Dust may be irritating to the respiratory tract.
Eye Contact: May cause tearing, redness, irritation.

Additional Information: No additional information available.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Sodium Tripolyphosphate	Not listed.	Not listed.
Tetrasodium Pyrophosphate	Not listed.	Not listed.
Sodium Trimetaphosphate	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Sodium Tripolyphosphate	h (Leuciscus idus) LC50 48	Not Available.	Not Available.
Tetrasodium Pyrophosphate	Not Available.	Not Available.	Not Available.
Sodium Trimetaphosphate	Not Available.	Not Available.	Not Available.

Other Information:
No specific biodegradation test data located. While the alkalinity of this material is readily reduced in natural waters, the resulting phosphate may persist indefinitely or incorporate into biological systems.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: Not Regulated.
DOT Hazardous Class Not Applicable.
DOT UN Number: Not Applicable.
DOT Packing Group: Not Applicable.
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (Sodium Phosphate, Tribasic)

14. TRANSPORT INFORMATION

Hazard Class: 9
UN Number: UN3077
Packing Group: III
Note: Only regulated for TDG under class 9 if intended for disposal.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Sodium Tripolyphosphate	Not Listed.	Listed	Not Listed.
Tetrasodium Pyrophosphate	Not Listed.	Not Listed.	Not Listed.
Sodium Trimetaphosphate	Not Listed.	Listed	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:
D2B TOXIC MATERIALS

16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
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All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

SAFETY DATA SHEET

1. Identification

Product identifier **STEPANATE SXS**

Other means of identification

Product code 2115

Recommended use Surfactant

Recommended restrictions For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Stepan Company

Address 22 West Frontage Road
Northfield, IL 60093
USA

Telephone General 1-847-446-7500

E-mail Not available.

Emergency phone number Medical 1-800-228-5635
Chemtrec 1-800-424-9300
Chemtrec Int'l +1 703-527-3887

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Serious eye damage/eye irritation Category 2A

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Warning

Hazard statement Causes serious eye irritation.

Precautionary statement

Prevention Wear eye/face protection. Wash thoroughly after handling.

Response If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Water		7732-18-5	50 - < 60
Sodium xylenesulphonate (SXS)		1300-72-7	40 - < 50
Sodium sulfate		7757-82-6	1 - < 3
Other components below reportable levels			< 0.2

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Avoid contact with eyes. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Ensure adequate ventilation, especially in confined areas. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).

Skin protection	
Hand protection	For prolonged or repeated skin contact use suitable protective gloves.
Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Clear.
Odor	Not available.
Odor threshold	Not available.
pH	7.5 - 9 (as is)
Melting point/freezing point	50 °F (10 °C)
Initial boiling point and boiling range	Not available.
Flash point	> 201.0 °F (> 93.9 °C) Pensky-Martens Closed Cup
Evaporation rate	Estimated slower than ethyl ether
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not determined or unknown
Vapor density	Estimated lighter than air
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	7 cP @ 25C
Other information	
Pour point	55.4 °F (13 °C)
Specific gravity	1.15 - 1.2 @ 25C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product may yield sulfur dioxide and oxides of sulfur.

11. Toxicological information

Information on likely routes of exposure

Inhalation	No adverse effects due to inhalation are expected.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
STEPANATE SXS		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Rat	7200 mg/kg

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not applicable.
Specific target organ toxicity - repeated exposure	Not applicable.
Aspiration hazard	Not applicable.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
STEPANATE SXS			
Aquatic			
Algae	EC50	Algae	>= 230 mg/kg, 72 hours
Crustacea	EC50	Daphnia	>= 1000 mg/l, 48 hours
Fish	LC50	Fish	>= 1000 mg/l, 96 hours

Persistence and degradability	Readily biodegradable.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Sodium sulfate (CAS 7757-82-6)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Sodium sulfate (CAS 7757-82-6)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium sulfate (CAS 7757-82-6)

US. Rhode Island RTK

Not regulated.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 05-23-2014

Revision date 03-20-2017

Version # 03

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Revision information Hazard(s) identification: Prevention
Regulatory information: California Prop 65
GHS: Classification

SAFETY DATA SHEET

1. Identification

Product identifier **STEOL CS-460**

Other means of identification

Product code 1808

Recommended use Surfactant

Recommended restrictions For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Stepan Company	
Address	22 West Frontage Road Northfield, IL 60093 USA	
Telephone	General	1-847-446-7500
E-mail	Not available.	
Emergency phone number	Medical	1-800-228-5635
	Chemtrec	1-800-424-9300
	Chemtrec Int'l	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 3

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Flammable liquid and vapor. Causes skin irritation. Causes serious eye damage. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Keep container tightly closed. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Avoid release to the environment. Wear protective gloves/eye protection/face protection.

Response If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment (see this label). If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.

Storage Store in a well-ventilated place. Keep cool.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
_Sodium laureth (n=>3) sulfate		9004-82-4	58 - < 61
Water		7732-18-5	23 - < 27
Ethanol		64-17-5	13 - < 16
Alcohols (c12-15 Ln. Saturated) Ethoxylate		68131-39-5	0 - 3
Other components below reportable levels			< 1

4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. Get medical attention if symptoms occur. Do not induce vomiting without advice from poison control center.

Most important symptoms/effects, acute and delayed
Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

General information
Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media
Alcohol resistant foam. Water fog. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling

Vapors may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not smoke. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Avoid spark promoters. Eliminate sources of ignition. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Refrigeration recommended. Store away from incompatible materials (see Section 10 of the SDS). Keep in an area equipped with sprinklers.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethanol (CAS 64-17-5)	PEL	1900 mg/m3 1000 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Ethanol (CAS 64-17-5)	TWA	1900 mg/m3 1000 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Clear.
Physical state	Liquid.
Form	Liquid.
Color	Not available.
Odor	Not available.
Odor threshold	Not available.
pH	7.5 - 9 (10% in water)
Melting point/freezing point	25 °F (-3.89 °C)
Initial boiling point and boiling range	190 °F (87.78 °C)
Flash point	78.0 °F (25.6 °C) Pensky-Martens Closed Cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	19 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	55 cP @ 25C
Other information	
Pour point	30 °F (-1.11 °C)
Specific gravity	1.03 @ 25C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product may yield sulfur dioxide and oxides of sulfur.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Not available.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
STEOL CS-460		
Acute		
Dermal		
Liquid		
LD50	Rabbit	2000 - 5000 mg/kg
Oral		
Liquid		
LD50	Rat	> 2000 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	Contains no ingredient listed as toxic to reproduction
Specific target organ toxicity - single exposure	Not applicable.
Specific target organ toxicity - repeated exposure	Not applicable.
Aspiration hazard	Not applicable.

12. Ecological information

Ecotoxicity Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Product		Species	Test Results
STEOL CS-460			
Aquatic			
Acute			
Algae	EC50	Algae	> 56 ppm, 72 hours
Crustacea	EC50	Daphnia	> 13 ppm, 48 hours
Fish	LC50	Fish	2.3 mg/l, 96 hours

Persistence and degradability Readily biodegradable.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

Ethanol	-0.31

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

- **UN number** UN1170
- **UN proper shipping name** Ethanol Solution
- **Transport hazard class(es)**
  - **Class** 3
  - **Subsidiary risk** -
- **Packing group** III
- **Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

IATA

- **UN number** UN1170
- **UN proper shipping name** Ethanol Solution
- **Transport hazard class(es)**
  - **Class** 3
  - **Subsidiary risk** -
- **Packing group** III
- **Environmental hazards** No.
- **Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

IMDG

- **UN number** UN1170
- **UN proper shipping name** Ethanol Solution
- **Transport hazard class(es)**
  - **Class** 3
  - **Subsidiary risk** -
- **Packing group** III
- **Environmental hazards**
  - **Marine pollutant** No.
- **EmS** Not available.
- **Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

DOT

IATA; IMDG

15. Regulatory information

Polymer Polymer exempt in the following countries: Europe

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

Ethanol (CAS 64-17-5) Low priority

US state regulations

US - New Jersey RTK - Substances: Listed substance

Ethanol (CAS 64-17-5)

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Ethanol (CAS 64-17-5)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Ethanol (CAS 64-17-5)

US. Pennsylvania Worker and Community Right-to-Know Law

Ethanol (CAS 64-17-5)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

WARNING: This product may contain a chemical known to the State of California to cause cancer and birth defects or other reproductive harm: ethylene oxide (75-21-8).

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

1,4-dioxane (CAS 123-91-1) Listed: January 1, 1988

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 06-27-2014

Revision date 08-09-2016

Version # 04

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Revision information Product and Company Identification: Product and Company Identification
Hazard(s) identification: Prevention
Physical and chemical properties: Appearance
Disposal considerations: Disposal instructions
Transport Information: Material Transportation Information
Regulatory information: US state regulations
Index: Regulatory Ratings
GHS: Classification

SAFETY DATA SHEET

Issuing Date 25-Mar-2015 **Revision Date** 25-Mar-2015 **Revision Number** 2

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

Product identifier

Product Name **Sodium Sulfate, Anhydrous**

Other means of identification

Synonyms Disodium Sulfate, Anhydrous

Recommended use of the chemical and restrictions on use

Recommended Use Industrial Use Only

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name Saltex, LLC
Supplier Address 7755 Bellaire South
Fort Worth, TX 76132

Supplier Phone Number Phone: 877-872-5839

Supplier Email
Emergency telephone number

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS Label elements, including precautionary statements

Warning Irritant

Emergency Overview

The product contains no substances which at their given concentration, are considered to be hazardous to health

Appearance White **Physical State** Solid/Powder Solid **Odor** None

Precautionary Statements - Prevention
Obtain special instructions before use

Precautionary Statements - Response
None

Precautionary Statements - Storage
None

Precautionary Statements - Disposal
None

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity
100% of the mixture consists of ingredient(s) of unknown toxicity

Other information

May cause slight eye irritation

Interactions with Other Chemicals
No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

The product contains no substances which at their given concentration, are considered to be hazardous to health.

4. FIRST AID MEASURES

First aid measures

Eye Contact	Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.
Skin Contact	Wash with soap and water.
Inhalation	Remove to fresh air.
Ingestion	Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects	No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical
No information available.

Hazardous Combustion Products
Sulfur oxides.

Explosion Data
Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with eyes.

Environmental Precautions

Environmental Precautions Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.
Methods for cleaning up Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection No special protective equipment required.

Skin and Body Protection No special protective equipment required.

Respiratory Protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State	Solid/Powder, Solid		
Appearance	White	**Odor**	None
Color	No information available	**Odor Threshold**	No information available

Property	Values	Remarks Method
pH	6-10	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	No data available	None known
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		
Upper flammability limit	No data available	

Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	No data available	None known
Water Solubility	Appreciable	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	No data available	
Oxidizing Properties	No data available	

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	

10. STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to avoid
None known based on information supplied.

Incompatible materials
None known based on information supplied.

Hazardous Decomposition Products
Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Specific test data for the substance or mixture is not available.
Eye Contact	Specific test data for the substance or mixture is not available.
Skin Contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

Component Information

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Mutagenic Effects No information available.

Carcinogenicity Contains no ingredient listed as a carcinogen.

Reproductive Toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Chronic Toxicity No known effect based on information supplied.

Target Organ Effects None known.

Aspiration Hazard No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document
Not applicable

12. ECOLOGICAL INFORMATION

Ecotoxicity
The environmental impact of this product has not been fully investigated.

Persistence and Degradability
No information available.

Bioaccumulation
No information available

Other adverse effects
No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal methods This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging Dispose of contents/containers in accordance with local regulations.

14. TRANSPORT INFORMATION

DOT	NOT REGULATED
TDG	Not regulated
MEX	Not regulated
ICAO	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated
RID	Not regulated
ADR	Not regulated
ADN	Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No

Reactive Hazard No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

.

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Sodium sulfate 7757-82-6		X	X		

International Regulations

Canada
WHMIS Hazard Class
Non-controlled

16. OTHER INFORMATION

NFPA	**Health Hazards** 1	**Flammability** 0	**Instability** 0	**Physical and Chemical Hazards** -
HMIS	**Health Hazards** 1	**Flammability** 0	**Physical Hazard** 0	**Personal Protection** X

Prepared By Mark A. Shand
Issuing Date 25-Mar-2015
Revision Date 25-Mar-2015
Revision Note No information available

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End of Safety Data Sheet

Material Safety Data Sheet

LA2058
Sodium Nitrate 99.0% Tech

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA2058
Product Name: Sodium Nitrate 99.0% Tech
Synonyms: Nitratine;nitric acid, sodium salt; sodium saltpeter; sodium nitrate, crystal.
Chemical Family: Sodium and compounds / inorganic sodium compound /sodium salt / nitrate
Application: For industrial use. Intermediate.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 27/Jan/2016
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause irritation, symptoms including redness, itching, and pain.
Skin Contact: Contact with wet skin may cause irritation.
Inhalation: Inhalation of dust irritates the respiratory tract. Symptoms may include coughing, shortness of breath.
Ingestion: May be harmful if swallowed.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Sodium Nitrate 7631-99-4	>95	Oral LD50 Rat = 1267 mg/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with gently flowing water for at least 15 minutes or until the chemical is removed, while holding the eyelid(s) open. Take care not to rinse the contaminated water into the unaffected eye or face. Seek immediate medical attention.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Does not burn. Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Sodium nitrate is an oxidizer - it will enhance the burning rate and may cause spontaneous ignition of combustible materials. Move containers from fire area if you can do it without risk. Use fine water spray or fog to control fire spread and cool adjacent structures or containers.
Hazardous Decomposition/Combustion Materials (under fire conditions): Nitrous oxides. Sodium oxide.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1 FLAMMABILITY 0 INSTABILITY 0 SPECIAL Oxidizer
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1 FLAMMABILITY 0 REACTIVITY 0 SPECIAL Oxidizer

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment. Avoid creating and breathing dust.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Consult local authorities.
Procedure for Clean Up: Isolate hazard area and restrict access. Eliminate all ignition sources. Ventilate area. Remove by mechanical means and place in appropriate containers for disposal. Do not use combustible materials such as sawdust as an absorbent.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Keep away from sources of ignition. Use caution when handling any chemical substance. Avoid breathing in dust. Control dust formation. Do not consume food, drink or smoke while handling this material.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Store in accordance with good industrial practices. Keep containers tightly closed. Do not store near combustible materials. Keep away from reducing agents. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.
Respiratory Protection: For dusty or misty conditions, wear NIOSH-approved dust or mist respirator. In case of spill or leak resulting in unknown concentration, use NIOSH approved supplied air respirator.
Gloves:

Appropriate chemical resistant gloves should be worn. Nitrile gloves. Break through time >8 hours.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Sodium Nitrate	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid Prills or Crystalline
Color: White
Odor: Odorless
pH 8-10 (5% Aqueous solution)
Specific Gravity: 2.26 @ 20°C
Boiling Point: Not Available.
Freezing/Melting Point: 307°C / 584°F
Vapor Pressure: Negligible
Vapor Density: Not Available.
% Volatile by Volume: 0%
Evaporation Rate: Not Available.
Solubility: Soluble in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: Not Available.
Other: Decomposition : >600 °C/ 1112 °F

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Keep away from heat, sparks and flame. Incompatible materials. Avoid friction.
Materials to Avoid: Reducing agents. Combustible materials. Flammables.
Hazardous Decomposition Products: Oxides of nitrogen. Oxides of sodium. Sodium nitrite.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May be harmful if swallowed.
Skin Contact: Contact with wet skin may cause irritation.
Inhalation: Inhalation of dust irritates the respiratory tract. Symptoms may include coughing, shortness of breath.
Eye Contact: May cause irritation, symptoms including redness, itching, and pain.

Additional Information:
Acute Test of Product:
Acute Oral LD50: > 2000 mg/kg bw (Rat) OECD Guideline 425 (Data obtained by analogy conclusion)
Acute Dermal LD50: > 5000 mg/kg bw (Rat) OECD Guideline 402 (Data obtained by analogy conclusion)

Acute Inhalation LC50: > 0.527 mg/L (4h) (Rat) OECD Guideline 403, maximum achievable concentration (Data obtained by analogy conclusion)

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Sodium Nitrate	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Sodium Nitrate	994.4 - 1107 mg/L LC50 (Oncorhynchus mykiss) 96 h static 2000 mg/L LC50 (Lepomis macrochirus) 96 h static	Not Available.	Not Available.

Other Information: Material is practically non-toxic to aquatic organisms on an acute basis.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: Sodium Nitrate
DOT Hazardous Class 5.1
DOT UN Number: UN1498
DOT Packing Group: III
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: Sodium Nitrate
Hazard Class: 5.1
UN Number: UN1498
Packing Group: III
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Sodium Nitrate	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
C OXIDIZING MATERIALS
D2B TOXIC MATERIALS

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

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*****END OF MSDS*****

Material Safety Data Sheet

LA11705
SODIUM HYDROXIDE 50% SOLUTION

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA11705
Product Name: SODIUM HYDROXIDE 50% SOLUTION
Synonyms: None
Chemical Family: None Known
Application: Pulp and paper industry (pulping and bleaching, de-inking waste paper, water treatment). Textile industry (fiber processing and dyeing). Soaps and detergents industry (saponification of fats and oils, anionic surfactant manufacturing). Bleach manufacturing. Petroleum exploration and processing. Aluminum production. Chemical processing. Waste neutralization. Acid gas scrubbing. Metal finishing. Cleaning. Processing aid.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 08/Sep/2014
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Causes severe eye burns. Small quantities can result in permanent damage and/or loss of vision. Damage can range from severe irritation and mild scarring to blistering, disintegration, ulceration, severe scarring and clouding. Conditions that affect vision such as glaucoma and cataracts are possible late developments. In severe cases, there is progressive ulceration and clouding of eye tissue, which may lead to permanent blindness.
Skin Contact: Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness, swelling and tissue damage. Corrosive action causes burns and frequently deep ulcerations with subsequent scarring. Prolonged contact destroys tissue. May cause dermatitis. Sodium hydroxide can penetrate to deeper layers of skin and corrosion will continue until removed. Burns may not be immediately painful; onset of pain may be delayed minutes to hours.
Inhalation: Inhalation of dusts or mists can cause damage to the upper respiratory tract and to the lung tissue depending on severity of exposure. Effects can range from mild irritation of mucous membranes, severe pneumonitis and destruction of lung tissue. Due to its corrosive nature, exposure to high concentrations of sodium hydroxide aerosol could cause a potentially fatal build-up of fluid in the lungs (pulmonary edema). Symptoms of pulmonary edema (tightness in the chest and shortness of breath) can develop up to 48 hours after exposure and are aggravated by physical exertion.

Ingestion: Can cause severe burns to mouth, esophagus and stomach. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Water 7732-18-5	Balance	Oral LD50 (Rat) >90 mL/kg
Sodium Hydroxide 1310-73-2	30-60	Oral LDLo (Rabbit) : 500mg/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with gently flowing water for at least 30 minutes or until the chemical is removed, while holding the eyelid(s) open. Take care not to rinse the contaminated water into the unaffected eye or face. Seek immediate medical attention. You may have 10 seconds or less to avoid serious permanent damage.
Skin Contact: Immediate continued and thorough washing in flowing water for at least 30 minutes is imperative while removing contaminated clothing. Remove contaminated clothing and launder before reuse. Discard contaminated leather articles such as shoes and belt. Obtain medical attention immediately.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Give victim a glass of water or milk. Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower GI tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection).

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Does not burn. Use extinguishing media appropriate for surrounding fire. Water is not recommended, but may be applied in large quantities as a fine spray when other extinguishing agents are not available.
Special Exposure Hazards: Isolate and restrict area access. Product reacts with water. Reaction may produce heat and/or gases. This reaction may be violent. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Contact with some metals (particularly magnesium, aluminum and galvanized zinc) can rapidly generate hydrogen.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of sodium.
Special Protective Equipment: Fire fighters must wear full face, positive pressure, self-contained breathing apparatus and appropriate protective clothing.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, INSTABILITY 1
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, REACTIVITY 1

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities.
Procedure for Clean Up: Isolate hazard area and restrict access. If the material has been mixed with water or any other liquid, then dike area to contain spill. Contain spill and recover if possible. Dilute spill with large amounts of water and neutralize with dilute acid. Neutralize the residue with a dilute solution of acetic acid. Use vacuum truck to pick up neutralized material for proper disposal. Flush area with water to remove trace residue. This material is alkaline and may raise the pH of surface waters with low buffering capacity.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. SPECIAL PRECAUTIONS FOR DILUTING CAUSTIC SODA:
1. ALWAYS add caustic soda to water with constant agitation. NEVER add water to the caustic soda.
2. The water should be lukewarm (80 - 100°F). NEVER start with hot or cold water.
The addition of caustic soda to liquid will cause a rise in temperature. If caustic soda becomes concentrated in one area, is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in DANGEROUS mists, boiling or spattering which can cause an immediate VIOLENT ERUPTION.
Avoid contact with organic materials and concentrated acids- may cause violent reactions. Caustic soda reacts with magnesium, aluminum, zinc (galvanized), tin, chromium, brass and bronze, generating hydrogen which is explosive. Caustic soda may react with various sugars to generate carbon monoxide. Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed vessels and can cause death.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Store in accordance with good industrial practices. Product has a shelf life of 24 months. Storage Temperature: >16°C (>60.8°F).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.
Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use an approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. In misty atmospheres, use an approved organic vapor respirator in combination with a dust/mist filter. Particulate filter.
Gloves:

Use gloves chemically resistant to this material, examples of preferred glove barrier materials include: Polyethylene gloves. Neoprene gloves. Natural rubber gloves.
NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials as well as the instructions/specifications provided by the glove supplier.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance. Neoprene coated apron or chemical resistant clothing.
Eyes: Close fitting chemical safety goggles with faceshield.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Water	Not available.	Not available.	Not Available.
Sodium Hydroxide	2 mg/m^3 Ceiling	2 mg/m^3 Ceiling	10 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Colorless
Odor: Odorless
pH 12 (0.05% solution); 13 (0.5% solution); 14 (5% solution)
Specific Gravity: 1.52
Boiling Point: 145°C /293°F
Freezing/Melting Point: 14°C / 57.2°F
Vapor Pressure: 1.5 mmHg @ 20°C
Vapor Density: Not Available.
% Volatile by Volume: 50%
Evaporation Rate: Not Available.
Solubility: Completely soluble.

9. PHYSICAL AND CHEMICAL PROPERTIES

VOCs: Not Available.
Viscosity: 0.35 St @ 25°C
Molecular Weight: Not Available.
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Water. Moisture.
Materials to Avoid: Acids. Glycols. Heat is generated when mixed with water. Spattering and boiling can occur. Flammable hydrogen may be generated from contact with metals such as: aluminum, brass, tin, zinc. Avoid contact with acids, halogenated organics, organic nitro compounds, glycols. Caustic soda solution reacts readily with various reducing sugars (i.e. fructose, galactose, maltose, dry whey solids) to produce carbon monoxide. Precautions should be taken including monitoring the tank atmosphere for carbon monoxide to ensure safety of personnel. Organic materials. Nitro organic compounds.
Hazardous Decomposition Products: Oxides of sodium.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Can cause severe burns to mouth, esophagus and stomach. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.
Skin Contact: Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness, swelling and tissue damage. Corrosive action causes burns and frequently deep ulcerations with subsequent scarring. Prolonged contact destroys tissue. May cause dermatitis. Sodium hydroxide can penetrate to deeper layers of skin and corrosion will continue until removed. Burns may not be immediately painful; onset of pain may be delayed minutes to hours.
Inhalation: Inhalation of dusts or mists can cause damage to the upper respiratory tract and to the lung tissue depending on severity of exposure. Effects can range from mild irritation of mucous membranes, severe pneumonitis and destruction of lung tissue. Due to its corrosive nature, exposure to high concentrations of sodium hydroxide aerosol could cause a potentially fatal build-up of fluid in the lungs (pulmonary edema). Symptoms of pulmonary edema (tightness in the chest and shortness of breath) can develop up to 48 hours after exposure and are aggravated by physical exertion.

Eye Contact: Causes severe eye burns. Small quantities can result in permanent damage and/or loss of vision. Damage can range from severe irritation and mild scarring to blistering, disintegration, ulceration, severe scarring and clouding. Conditions that affect vision such as glaucoma and cataracts are possible late developments. In severe cases, there is progressive ulceration and clouding of eye tissue, which may lead to permanent blindness.

Additional Information: No additional information available.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Water	Not listed.	Not listed.
Sodium Hydroxide	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Water	Not Available.	Not Available.	Not Available.
Sodium Hydroxide	LC50 (Rainbow Trout) 1149 mg/l LC50 (Chinook Salmon) 152 mg/l	Not Available.	Not Available.

Other Information:
Toxic to aquatic life.May increase pH of waterways and adversely effect aquatic life.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations. Properly neutralized liquid residues (pH 6 to 9) may be disposed of in waste water treatment facilities which allow the discharge of neutral salt solutions.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: SODIUM HYDROXIDE SOLUTION
DOT Hazardous Class 8
DOT UN Number: UN1824
DOT Packing Group: II
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: SODIUM HYDROXIDE, SOLUTION
Hazard Class: 8
UN Number: UN1824
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Water	Not Listed.	Not Listed.	Not Listed.
Sodium Hydroxide	Not Listed.	Listed	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
E CORROSIVE MATERIAL

16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

SAFETY DATA SHEET

(REACH Regulation (EC) Nº 1907/2006 – Nº 453/2010)

SODIUM GLUCONATE

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

1.1. Product Identifier

Product Name:	Sodium Gluconate
REACH Registered Name:	Sodium Gluconate
REACH registered number:	Exemption under Annex V
CAS #:	527-07-1
EC#	208-407-7
Product Code:	71111,71112, 71115, 71120
Synonyms:	Sodium Salt of gluconic acid, Sodium 2,3,4,5,6, pentahydroxy-hexanoate
INCI Name:	Sodium Gluconate

1.2. Relevant Identified Uses of the Substance/Mixture and Uses Advised Against

Chelating agent in foods, cleaning applications, electroplating, concrete admixtures

1.3. Details of the Supplier of the Safety Data Sheet

Company Name**:** PMP Fermentation Products, Inc.
900 NE Adams Street
Peoria, Illinois 61603, USA

Telephone: 1-309-637-0400 8 am – 4 pm CST M-F
Fax: 1-309-637-9302
E mail: sales@pmpinc.com

1.4. Emergency Contact

Chemtrec: 1-(800) 424-9300

Section 2: Hazards Identification

2.1. Classification of the Substance or Mixture

Classification under CLP: This product has no classification under CLP

2.2. Label Elements

Label elements: This product has no label elements

2.3. Other Hazards

PBT: This product is not identified as a PBT substance

Section 3: Composition/Information on Ingredients

3.1. Substances

Chemical Identity: Sodium Gluconate

Section 4: First Aid Measures

4.1. Description of First Aid Measures

Skin: Wash thoroughly with soap and water.

Eyes: Flush immediately with water or physiological saline for 15 minutes. Get prompt medical attention.

Ingestion: Get medical attention if adverse effects occur.

Inhalation: If adverse effects occur, get medical attention.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed

Skin: May cause irritation and redness for susceptible individuals.

Eyes: May cause mild irritation. Eyes may water profusely.

Ingestion: May cause irritation if large amounts are swallowed. Nausea and stomach pain may occur. There may be vomiting and diarrhea.

Inhalation: May cause respiratory irritation in susceptible individuals. May cause shortness of breath, sneezing and coughing.

Delayed/Immediate effects: Long-term inhalation of excessive dust may cause delayed lung injury.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Need

Immediate/Special Treatment: Eye wash stations should be available

Section 5: Fire Fighting Measures

5.1. Extinguishing Media

Extinguishing Media: Water, carbon dioxide, foam, halogen

5.2. Special Hazards Arising from the Substance or Mixture

Exposure Hazards: In combustion, emits toxic fumes of carbon dioxide/carbon monoxide. Dust in air can be an explosion hazard.

5.3. Advice for Fire Fighters

Advice for Fire Fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental Release Measures

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions: Wear suitable protective clothing. Refer to section 8. Do not create dust.

6.2. Environmental Precautions

Environmental Precautions: Do not discharge into drains or rivers.

6.3. Methods and Material for Containment and Cleaning up

Clean-Up Procedures: Collect as much as possible for use or disposal in a properly labeled container. Flush remainder into normal drainage with copious amounts of water.

6.4. Reference to Other Sections

Reference to Other Sections: Refer to sections 8 and 13

Section 7: Handling and Storage

7.1. Precautions for Safe Handling

Handling Requirements: Wear suitable protective clothing. Ensure there is sufficient ventilation in the area. Avoid generating dust.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Store in a cool, well-ventilated area. Keep away from direct sunlight. Avoid contact with water and humidity.

Suitable Packaging: Paper, plastic or poly lined bags or drums.

7.3. Specific End Use(s)

Specific End Use(s): No special requirement

Section 8: Exposure Controls/Personal Protection

8.1. Control Parameters

Workplace Exposure Limits: Respirable Dust

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
UK	-	-	4 mg/m^3	-
USA			5 mg/m^3	

8.2. Exposure Controls

Engineering measures: Provide sufficient ventilation of the area
Respiratory protection: Respirator with particle filter
Hand protection: Protective gloves
Eye protection: Safety goggles. Provide eye wash stations
Skin protection: Protective clothing. Provide safety shower
Environmental: No special requirement

Section 9: Physical and Chemical Properties

9.1. Information on Basic Physical and Chemical Properties

State:	Granular powder
Color:	White to tan
Odor:	Odorless
pH:	6.8 – 7.2 (10% aq. Solution)
Melting Point/Range:	192 – 202ºC
Boiling Point:	Not applicable
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability:	Not applicable
Upper Explosion Limit:	Not applicable
Lower Explosion Limit:	Not applicable
Vapor Pressure:	7.23×10^{-18} mmHg/ 1×10^{-18} kPa @ 25ºC
Vapor Density:	unknown
Relative Density:	945 kg/m^3 granular; 705 kg/m^3 powder
Solubility in Water:	Highly soluble, 5.9×10^5 mg/L @ 25ºC
Auto-Ignition Temperature:	Not applicable
Decomposition Temperature:	> 210ºC
Viscosity:	Not applicable
Oxidizing:	Non-oxidizing
Molecular Weight:	218.13

9.2. Other Information

Other Information: Not applicable

Section 10: Stability and Reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport and storage conditions

10.2. Chemical Stability

Chemical Stability: Stable under normal conditions

10.3. Possibility of Hazardous Reactions

Hazardous Reactions: Hazardous reactions will not occur under normal conditions

10.4. Conditions to Avoid

Conditions to Avoid: Direct sunlight, moist air and humidity

10.5. Incompatible Materials

Materials to Avoid: Strong Oxidizers

10.6. Hazardous Decomposition Products

Hazardous Decomposition Products: In combustion, emits toxic fumes of carbon dioxide/carbon monoxide.

Section 11: Toxicological Information

11.1. Information of Toxicological Effects

Toxicity Values:

Route	Species	Test	Value	Units
Oral	Rat	LD50	>2000	mg/kg
Intravenous	Rabbit	LD50	7630	mg/kg

Symptoms/Routes of Exposure

Skin Contact: May cause irritation and redness for susceptible individuals.

Eyes: May cause mild irritation. Eyes may water profusely.

Ingestion: May cause irritation if large amounts are swallowed. Nausea and stomach pain may occur. There may be vomiting and diarrhea.

Inhalation: May cause respiratory irritation in susceptible individuals. May cause shortness of breath, sneezing and coughing.

Delayed/Immediate effects: Long-term inhalation of excessive dust may cause delayed lung injury.

Carcinogenicity: Not applicable
Mutagenicity: Not applicable
Teratogenicity: Not applicable
Reproductive Toxicity: Not applicable

Section 12: Ecological Information

12.1. Toxicity

Ecotoxicity Values:

Species	Test	Value	Units
Fish	96H LC50	> 1000.0	mg/L
Daphnid	48H LC50	> 1000.0	mg/L
Green Algal	96H EC50	> 1000.0	mg/L
Fish	ChV*	> 100.0	mg/L
Daphnid	ChV	> 100.0	mg/L
Algal	ChV	> 100.0	mg/L
Bacteria	EC50	> 5000.0	mg/L

- Chronic Value

12.2. Persistence and Degradability

Persistence and Degradability: Readily and rapidly biodegradable

12.3. Bioaccumulative Potential

Bioaccumulative Potential: Product does not bioaccumulate

12.4. Mobility in Soil

Mobility: Soluble in water

12.5. Results of PBT and vPvB Assessment

PBT Identification: This substance is not identified as a PBT substance.

12.6. Other Adverse Effects

Other Adverse Effects: Not expected to cause significant environmental impact.

Section 13: Disposal Considerations

13.1. Waste Treatment Methods

Disposal Operations: In accordance with applicable regulations. Normally can be flushed down sewers.

Recovery Operations: No information available
Disposal of Packaging: Contaminated containers must not be treated as household waste. Where practical, containers and packaging should be recycled by a licensed contractor.

Section 14: Transport Information

Transport Class: This product does not require a classification for transport. This product is not dangerous, not hazardous, and not restricted for transport by air

Section 15: Regulatory Information

15.1. Safety, Health and Environmental Regulations/Legislation Specific for the Substance/Mixture

Specific Regulations: Exemption from registration under REACH in accordance with Annex V. Commission Decision 96/335/EC establishing an inventory and a common nomenclature of ingredients employed in cosmetic products (INCI). Council Directive 76/768/EEC on the approximation of the laws of Member States relating to cosmetic products. Regulation (EC) No 1223/2009 of the European Parliament and of the Council on cosmetic products.

Directive 96/82/EC does not apply

Europe Risk Phrases *not classified in Europe*

Europe Safety Phrases *not classified in Europe*

15.2. Chemical Safety Assessment

Chemical Safety Assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other Information

Other Information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010

There are no exposure levels set for the specific product. The following levels should be adhered to based on US regulations:

Total inhalable dust (8 hour TWA): 15 mg/m^3

Legal Disclaimer: The information herein has been compiled from sources believed to be reliable and is accurate to the best of our knowledge. However, PMP Fermentation Products, Inc. cannot give any guarantees regarding information from other sources, and expressly does not make any warranties, nor assumes any liability, for its use.

Revision Date: 11/07/14

Material Safety Data Sheet

LA2024
Sodium Metasilicate Metso 66

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA2024
Product Name: Sodium Metasilicate Metso 66
Synonyms: None
Chemical Family: None Known
Application: Concrete floor cleaner

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 09/Jan/2015
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Corrosive. Causes eye burns. Symptoms include pain, redness and tearing.
Skin Contact: Corrosive. May cause skin burns.
Inhalation: Corrosive to the respiratory passage.
Ingestion: Corrosive. Harmful if swallowed. Causes burns to the mouth, throat and stomach.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Disodium Metasilicate 6834-92-0	~98	RTEC Oral LD50 Rat : 1153 mg/kg Oral LD50 Mouse : 770 mg/kg
Nonylphenol ethoxylate 9016-45-9	~1	Oral LD50 Rat : 1310 mg/kg Oral LD50 Mouse : >50 gm/kg Dermal LD50 Rabbit : 2 mL/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: None - does not burn.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Not Available.
Hazardous Decomposition/Combustion Materials (under fire conditions): Hydrogen.
Special Protective Equipment: The following protective equipment for fire fighters is recommended when this material is present in the area of a fire: chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots.
NFPA RATINGS FOR THIS PRODUCT ARE: Not Available.
HMIS RATINGS FOR THIS PRODUCT ARE: Not Available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed.
Procedure for Clean Up: Isolate hazard area and restrict access. Do not touch or walk through spilled material. Contain spill by diking. Use a method that does not generate dust. Stop leak only if safe to do so. Scoop up or vacuum up and place in an appropriate closed container. Neutralize contamination area and flush with large quantities of water. Prevent spilled material from entering sewers, confined spaces, drains, or waterways. Avoid raising dust.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Avoid breathing vapors, mist, fume or dust. Wash thoroughly after handling. Keep the containers closed when not in use. Launder contaminated clothing prior to reuse.
Storage: Store in clean stainless steel or plastic containers. Separate from acids, reactive metals and ammonium salts. Do not store in aluminum, carbon steel, copper, copper alloys, zinc or nickel containers. In case of high humidity or storage for extended periods of time, use plastic bags to enclose product containers to avoid caking. This product can absorb water from the air. Use first in, first out storage system.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

A well ventilated area to control dust levels.
Respiratory Protection: If dusty conditions are encountered, use a NIOSH approved dust respirator.
Gloves:

Rubber gloves.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Safety glasses with side shields or chemical goggles.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Disodium Metasilicate	Not available.	Not available.	Not Available.
Nonylphenol ethoxylate	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Granular Powder
Color: Tan
Odor: Pine.
pH 14
Specific Gravity: 55 lbs/ft3
Boiling Point: Not Available.
Freezing/Melting Point: Not Available.
Vapor Pressure: Not Available.
Vapor Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Soluble in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: Not Available.
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur
Conditions to Avoid: None known.
Materials to Avoid: Generates heat when mixed with acid. May react with ammonium salt solutions resulting in evolution of ammonia gas. Flammable hydrogen gas may be produced on contact with aluminum, tin, lead, and zinc. Carbon monoxide gas may be produced on contact with reducing sugars.
Hazardous Decomposition Products: Hydrogen.
Additional Information:

Can etch glass if not promptly removed.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Corrosive. Harmful if swallowed. Causes burns to the mouth, throat and stomach.
Skin Contact: Corrosive. May cause skin burns.
Inhalation: Corrosive to the respiratory passage.
Eye Contact: Corrosive. Causes eye burns. Symptoms include pain, redness and tearing.

Additional Information: This material has not been tested for primary eye irritation potential. However, on the basis of its high degree of alkalinity, it is regarded as corrosive to the eyes. When this material was tested for skin corrosion / irritation potential according to OECD Guidelines Section 404, it produced dermal corrosion. The acute oral toxicity of this product has not been tested. When sodium silicates were tested on a 100% solids basis, their single dose acute oral LD50 in rats ranged from 1500 mg/kg to 3200 mg/kg. The acute oral lethality resulted from nonspecific causes. Subchronic Data: In a study of rats fed sodium silicate in drinking water for three months, at 200, 600 and 1800 ppm, changes were reported in the blood chemistry of some animals, but no specific changes to the organs of the animals due to sodium silicate administration were observed in any of the dosage groups. Another study reported adverse effects to the kidneys of dogs fed sodium silicate in their diet at 2.4g/kg/day for 4 weeks, whereas rats fed the same dosage did not develop any treatment-related effects. Decreased numbers of births and survival to weaning was reported for rats fed sodium silicate in their drinking water at 600 and 1200 ppm. Frequent ingestion over extended periods of time of gram quantities of silicates is associated with the formation kidney stones and other siliceous urinary calculi in humans.
Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Disodium Metasilicate	Not listed.	Not listed.
Nonylphenol ethoxylate	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Negative in mutagenicity assays.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Disodium Metasilicate	210 mg/L LC50 (Brachydanio rerio) 96 h 210 mg/L LC50 (Brachydanio rerio) 96 h semi-static	Not Available.	Not Available.
Nonylphenol ethoxylate	Not Available.	Not Available.	Not Available.

Other Information:
This material is not persistent in aquatic systems, but its high pH when undiluted or unneutralized is acutely harmful to aquatic life. Diluted material yields dissolved silica in a form that is indistinguishable from natural dissolved silica. It does not contribute to BOD. This material does not bioaccumulate except in species that use silica as a structural material such as diatoms and siliceous sponges. Where abnormally low natural silica concentrations exist (less than 0.1 ppm), dissolved silica may be a limiting nutrient for diatoms and a few other aquatic algal species. However, the addition of excess dissolved silica over the limiting concentration will not stimulate the growth of diatom populations; their growth rate is independent of silica concentration once the limiting concentration is exceeded. Neither silica nor sodium will appreciably bioconcentrate up the food chain.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Neutralize or form a solid and dispose according to local, provincial and federal legislation.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: CORROSIVE SOLID, BASIC, INORGANIC N.O.S. (disodium trioxosilicate, pentahydrate)
DOT Hazardous Class 8
DOT UN Number: UN3262

14. TRANSPORT INFORMATION

DOT Packing Group: II
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: CORROSIVE SOLID, BASIC, INORGANIC N.O.S. (disodium trioxosilicate, pentahydrate)
Hazard Class: 8
UN Number: UN3262
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Disodium Metasilicate	Not Listed.	Not Listed.	Not Listed.
Nonylphenol ethoxylate	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
E CORROSIVE MATERIAL

16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
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Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

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*****END OF MSDS*****

Material Safety Data Sheet

LA14360
SODA ASH 58% LIGHT

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA14360
Product Name: SODA ASH 58% LIGHT
Synonyms: Carbonic acid, disodium salt; Disodium carbonate; Soda ash
Chemical Family: Sodium salts.
Application: Laboratory reagent. Manufacture of glass. Manufacture of soaps and detergents. Pulp and paper. Brine treatment. pH adjustment. Water treatment.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 02/Dec/2014
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Causes severe eye irritation. May be corrosive to the eye. May cause conjunctivitis, corneal burns and permanent damage.
Skin Contact: May cause moderate skin irritation. Prolonged contact may cause more severe irritation, with discomfort or pain, local redness and swelling, and possible tissue destruction. Prolonged or repeated contact may cause skin sensitization.
Inhalation: May cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, coughing, and possibly accompanied by chest pain. Prolonged exposure may cause injury to the respiratory tract.
Ingestion: Large doses may be corrosive to the gastrointestinal tract where symptoms may include severe abdominal pain, vomiting, diarrhea, collapse and death.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Sodium Carbonate 497-19-8	99-100	Dermal LD50 Mouse = 2210 mg/kg Inhalation LC50 Rat = 2300 mg/m^3 2 h Oral LD50 Rat = 4090 mg/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with water and continue washing for at least 15 minutes. Seek immediate medical attention.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient. Consider endoscopy in all suspected cases of sodium carbonate poisoning. Perform blood analysis to determine if dehydration, acidosis or other electrolyte imbalances occurred.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Sodium Carbonate may explode when applied to red hot aluminum.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of carbon. Sodium oxide.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 0, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 0, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Spills or releases should be reported, if required to the appropriate municipal, provincial and federal agencies.
Procedure for Clean Up: Ventilate area. Scoop up or vacuum up and place in an appropriate closed container. Use a method that does not generate dust.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Avoid breathing in dust. Keep the containers closed when not in use. Empty containers may contain hazardous product residues. Handle and open containers with care. Protect against physical damage.
Storage: Store in a cool, dry, well ventilated area. Keep containers tightly closed. Protect against physical damage. Prolonged storage may cause product to cake and become damp from atmospheric moisture. Store in accordance with good industrial practices.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.
Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. Air-purifying (half-mask/full-face) respirator with cartridges/canister approved for use against dusts, mists and fumes. Under conditions immediately dangerous to life or health, or emergency conditions with unknown concentrations, use a full-face positive pressure air-supplied respirator equipped with an emergency escape air supply unit or use a self-contained breathing apparatus unit. Warning: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.
Gloves:

Appropriate chemical resistant gloves should be worn.
Skin Protection: As a minimum, wear long-sleeve shirts, trousers, and gloves for routine product use.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Sodium Carbonate	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid Powder or Granules
Color: White
Odor: Odorless
pH 11.4 - 11.7 (25°c) Aqueous solution
Specific Gravity: 2.533
Boiling Point: Decomposes. Decomposition at 400°C / 752°F
Freezing/Melting Point: 851°C / 1564°F
Vapor Pressure: Not Available.
Vapor Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Soluble in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 105.99
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable. Hygroscopic.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Moisture. Heat. Avoid conditions that generate dust.
Materials to Avoid: Strong oxidizing agents. Strong acids. Fluorine. Aluminum. Phosphorus pentoxide. Sulfuric Acid. Zinc. Lithium. Moisture. Calcium hydroxide. 2,4,6-trinitrotoluene. Acids. Soda Ash is corrosive to aluminum, lead, and zinc and zinc brasses when in solution and to aluminum when high humidity is present.
Hazardous Decomposition Products: Oxides of carbon. Sodium oxide.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Large doses may be corrosive to the gastrointestinal tract where symptoms may include severe abdominal pain, vomiting, diarrhea, collapse and death.
Skin Contact: May cause moderate skin irritation. Prolonged contact may cause more severe irritation, with discomfort or pain, local redness and swelling, and possible tissue destruction. Prolonged or repeated contact may cause skin sensitization.

11. TOXICOLOGICAL INFORMATION

Inhalation: May cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, coughing, and possibly accompanied by chest pain. Prolonged exposure may cause injury to the respiratory tract.
Eye Contact: Causes severe eye irritation. May be corrosive to the eye. May cause conjunctivitis, corneal burns and permanent damage.

Additional Information: Excessive contact may produce "soda ulcers" on hands and perforation of the nasal septum. Sensitivity reactions may occur from prolonged and repeated exposure.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Sodium Carbonate	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Sodium Carbonate	310 - 1220 mg/L LC50 (Pimephales promelas) 96 h static 300 mg/L LC50 (Lepomis macrochirus) 96 h static	Not Available.	EC50 (Nitzschia) 242 mg/L LC50 (Daphnia Magna) 347 mg/L (24hr) LC50 (Daphnia Magna) 565 mg/L (96hr)

Other Information: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Material is readily biodegradable. Does not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: Not Regulated.
DOT Hazardous Class Not Applicable.
DOT UN Number: Not Applicable.
DOT Packing Group: Not Applicable.
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: Not Regulated.
Hazard Class: Not Applicable.

14. TRANSPORT INFORMATION

UN Number: Not Applicable.
Packing Group: Not Applicable.
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Sodium Carbonate	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
D2B TOXIC MATERIALS
E CORROSIVE MATERIAL

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA13904
SODA ASH 58% DENSE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA13904
Product Name: SODA ASH 58% DENSE
Synonyms: Carbonic acid, disodium salt; Disodium carbonate; Soda ash Sodium carbonate, anhydrous.
Chemical Family: Sodium and compounds / inorganic sodium compound / sodium salt / inorganic carbon compound / inorganic carbonic acid salt / inorganic carbonate.
Application: Soda salts. Manufacture of glass. Soap. Cleaners and water softeners. Pulp and paper. Photographical agent. Water treatment. pH adjustment.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 03/Dec/2015
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause severe eye irritation. Effects may include pain, marked redness and swelling.
Skin Contact: Symptoms include redness, swelling, itching and pain.
Inhalation: Material is irritating to mucous membrane and upper respiratory tract. Exposure can cause coughing, chest pains and difficulty in breathing
Ingestion: May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Sodium Carbonate 497-19-8	99.8	Dermal LD50 Mouse = 2210 mg/kg Inhalation LC50 Rat = 2300 mg/m^3 2 h Oral LD50 Rat = 4090 mg/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with water and continue washing for at least 15 minutes. Seek immediate medical attention.
Skin Contact: Immediately wash with plenty of soap and water for at least 5 minutes. Remove contaminated clothing and launder before reuse. If irritation persists or signs of toxicity occur, seek medical attention.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Get medical attention immediately.
Ingestion: Do not induce vomiting. Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing. Seek medical attention.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Does not burn. Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Not flammable.
Hazardous Decomposition/Combustion Materials (under fire conditions): Carbon dioxide.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 0, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 0, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Spills or releases should be reported, if required to the appropriate municipal, provincial and federal agencies.
Procedure for Clean Up: Scoop up or vacuum up and place in an appropriate closed container. Avoid raising dust. Cautiously spray residue with plenty of water. Prevent spilled material from entering sewers, confined spaces, drains, or waterways.

7. HANDLING AND STORAGE

Handling: Avoid breathing in dust. Avoid prolonged contact with eyes or prolonged skin contact. Use good personal hygiene. When dissolving, add to water cautiously while stirring; solutions can get hot.
Storage: Store in a cool, dry, well ventilated area. Store away from acids. Prolonged storage may cause product to cake and become damp from atmospheric moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.
Respiratory Protection: For dusty or misty conditions, wear NIOSH-approved dust or mist respirator.
Gloves:

Cotton gloves permitted for dry product, impervious gloves when handling solutions.
Skin Protection: As a minimum, wear long-sleeve shirts, trousers, and gloves for routine product use.
Eyes: Safety glasses with side shields or chemical goggles.
Other Personal Protection Data: Long sleeves. Wear saranex coveralls if contact may occur. Hard hat. Do not wear contact lenses. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Sodium Carbonate	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: White
Odor: Odorless
pH 11.3-11.4 (1% solution), 11.6 (5% solution), 11.7 (10% solution) @ 20°C
Specific Gravity: 2.533 @ 20°C
Boiling Point: Not Available.
Freezing/Melting Point: 854°C / 1569.2°F
Vapor Pressure: Not Available.
Vapor Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: 17% by Wt @ 20°C
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 105.99
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Hygroscopic (absorbs moisture from the air). Simultaneous exposure to soda ash and lime dusts (CaO). In the presence of moisture (i.e. perspiration) the two materials combine to form corrosive caustic soda (NaOH) which may cause burns.
Materials to Avoid: Acids. Soda Ash is corrosive to aluminum, lead, and zinc and zinc brasses when in solution and to aluminum when high humidity is present.
Hazardous Decomposition Products: Carbon dioxide. Decomposition temperature: 400°C / 752 °F.
Additional Information:

Contact with acids will release carbon dioxide gas. Can react violently with red hot aluminum metal; fluorine gas; lithium; and 2,4,6-trinitrotoluene.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Skin Contact: Symptoms include redness, swelling, itching and pain.
Inhalation: Material is irritating to mucous membrane and upper respiratory tract. Exposure can cause coughing, chest pains and difficulty in breathing
Eye Contact: May cause severe eye irritation. Effects may include pain, marked redness and swelling.

Additional Information: Excessive contact may produce "soda ulcers" on hands and perforation of the nasal septum. Sensitivity reactions may occur from prolonged and repeated exposure.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Sodium Carbonate	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Sodium Carbonate	310 - 1220 mg/L LC50 (Pimephales promelas) 96 h static 300 mg/L LC50 (Lepomis macrochirus) 96 h static	Not Available.	EC50 (Nitzschia) 242 mg/L LC50 (Daphnia Magna) 347 mg/L (24hr) LC50 (Daphnia Magna) 565 mg/L (96hr)

Other Information:
No additional remark.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: Not Regulated.
DOT Hazardous Class Not Applicable.
DOT UN Number: Not Applicable.
DOT Packing Group: Not Applicable.
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: Not Regulated.
Hazard Class: Not Applicable.
UN Number: Not Applicable.
Packing Group: Not Applicable.
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Sodium Carbonate	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

Additional Notes: NOTE: Only products bearing the NSF Mark on the product, product packaging, and/or documentation shipped with the product are Certified. Maximum use of potable water 150 mg/L.

WHMIS Hazardous Class:
D2B TOXIC MATERIALS
E CORROSIVE MATERIAL

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

NOTICE TO READER:
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*****END OF MSDS*****

Material Safety Data Sheet

NR02460
Propylene Glycol

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: NR02460
Product Name: Propylene Glycol
Synonyms: None
Chemical Family: None Known
Application: Not Available.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 12/Mar/2015
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause slight transient (temporary) eye irritation. Vapors or mists may cause eye irritation.
Skin Contact: Prolonged contact is essentially non irritating to skin. Repeated contact may cause flaking and softening of skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: At room temperature, exposures to vapors are minimal due to physical properties; higher temperatures may generate vapor levels sufficient to cause irritation.
Ingestion: Single dose oral toxicity is low. No adverse health effects are expected from swallowing.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Propylene glycol 57-55-6	99	Oral LD50 Rat = 20000 mg/kg Dermal LD50 Rabbit = 20800 mg/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with plenty amounts of water.
Skin Contact: Flush with copious amounts of water for at least 15 minutes.
Inhalation: Move person to fresh air. Remove to fresh air if effects occur. Consult a physician.
Ingestion: No first aid should be needed.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: 103 °C / 217 °F
Flash Point Method: Pensky-Martens Closed Cup
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Do not use water except as a fog. Isolate and restrict area access.
Hazardous Decomposition/Combustion Materials (under fire conditions): Carbon monoxide. Aldehydes.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 0, FLAMMABILITY 1, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 0, FLAMMABILITY 1, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities.
Procedure for Clean Up: Isolate hazard area and restrict access. Absorb with an inert dry material and place in an appropriate waste disposal container. Avoid direct contact with material.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment.
Storage: Keep containers tightly closed. Recommended container material: Stainless steel.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.
Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator. In case of spill or leak resulting in unknown concentration, use a NIOSH approved supplied air respirator.
Gloves:

Impervious gloves.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Propylene glycol	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Colorless

9. PHYSICAL AND CHEMICAL PROPERTIES

Odor: Odorless
pH Not Available.
Specific Gravity: 1.038
Boiling Point: 187.6°C /369.7°F
Freezing/Melting Point: -60°C / -76°F
Vapor Pressure: 0.08 mm Hg @ 20°C (68°F)
Vapor Density: 2.62
% Volatile by Volume: Not Available.
Evaporation Rate: 0.01
Solubility: Completely soluble.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 76.10
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Product can decompose at elevated temperatures.
Materials to Avoid: Oxidizing materials.
Hazardous Decomposition Products: None.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Single dose oral toxicity is low. No adverse health effects are expected from swallowing.
Skin Contact: Prolonged contact is essentially non irritating to skin. Repeated contact may cause flaking and softening of skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: At room temperature, exposures to vapors are minimal due to physical properties; higher temperatures may generate vapor levels sufficient to cause irritation.
Eye Contact: May cause slight transient (temporary) eye irritation. Vapors or mists may cause eye irritation.

Additional Information: No additional information available.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Propylene glycol	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Propylene glycol	41 - 47 mL/L LC50 (Oncorhynchus mykiss) 96 h static 51400 mg/L LC50 (Pimephales promelas) 96 h static 51600 mg/L LC50 (Oncorhynchus mykiss) 96 h static 710 mg/L LC50 (Pimephales promelas) 96 h	Not Available.	19000 mg/L EC50 Pseudokirchneriella subcapitata 96 h

Other Information:
No additional remark.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: Not Regulated.
DOT Hazardous Class Not Applicable.
DOT UN Number: Not Applicable.
DOT Packing Group: Not Applicable.
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: Not Regulated.
Hazard Class: Not Applicable.
UN Number: Not Applicable.
Packing Group: Not Applicable.
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Propylene glycol	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
NON-CONTROLLED

16. OTHER INFORMATION

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

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*****END OF MSDS*****

Material Safety Data Sheet

LA1927
Phosphoric Acid 75% Tech

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA1927
Product Name: Phosphoric Acid 75% Tech
Synonyms: Orthophosphoric acid; white phosphoric acid.
Chemical Family: Acid
Application: Agricultural. Industrial manufacturing. Water treatment. Crosslinker. Manufacture of glass. Plastics. Pharmaceutical. Food industry.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 02/Jun/2016
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Corrosive to eye tissue and may cause severe damage and blindness. May cause adverse eye effects such as conjunctivitis or corneal damage.
Skin Contact: Corrosive. Contact with the skin may cause severe irritation, burns or tissue destruction. Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Inhalation: Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Can cause chemical bronchitis. Coughing, shortness of breath, headaches and confusion may occur. Vapors may cause pulmonary edema.
Ingestion: Corrosive! May cause severe pain in the mouth, chest and abdomen, leading to cough, vomiting and collapse. Causes vomiting, nausea, and diarrhea. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Phosphoric Acid 7664-38-2	75-85	Oral LD50 Rat = 1530 mg/kg Dermal LD50 Rabbit = 2730 mg/kg Inhalation LC50 Rat > 850 mg/m^3 1 h
Water 7732-18-5	15-25	Oral LD50 (Rat) >90 mL/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with copious quantities of water for at least 20 minutes holding lids apart to ensure flushing of the entire surface. Obtain medical attention without delay, preferably from an ophthalmologist. Continue flushing for an additional 20 minutes if a physician is not immediately available. If it is necessary to transport the patient to a physician and the eye needs to be bandaged, use a dry sterile cloth pad and cover both eyes.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention. Remove contaminated clothing and launder before reuse. Wash with soap and water. Remove contaminated clothing and launder before reuse.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Isolate and restrict area access. Use flooding quantities of water. Use water spray to cool fire-exposed containers and structures. Persons who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of phosphorus.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Consult local authorities.
Procedure for Clean Up: Isolate hazard area and restrict access. Try to work upwind of spill. Do not touch or walk through spilled material. Neutralize with lime slurry, limestone, or soda ash. Neutralize contamination area and flush with large quantities of water. Absorb with an inert dry material and place in an appropriate waste disposal container.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Do not ingest. Protect from freezing. This product reacts violently with bases liberating heat and causing spattering. Use extreme care when diluting with water. ALWAYS ADD ACID TO WATER. Addition to water releases heat which can result in violent boiling and spattering. Never use hot water. Empty containers may contain hazardous product residues. All label warnings and precautions must be observed.
Storage: Store in a cool, dry, well ventilated area. Place away from incompatible materials. Store in accordance with good industrial practices.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.
Respiratory Protection: Up to 25 mg/m^3: supplied air respirator. Operated in continuous flow mode. Up to 50 mg/m^3: wear a NIOSH approved air-purifying respirator with N100, R100, or P100 filter(s), wear a NIOSH approved self-contained breathing apparatus (SCBA) or supplied air respirator. Up to 1000 mg/m^3: wear a NIOSH approved self-contained breathing apparatus (SCBA) or supplied air respirator. ESCAPE: wear a full facepiece NIOSH approved air-purifying respirator with an appropriate cartridge. Warning: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.
Gloves:

Use gloves chemically resistant to this material, examples of preferred glove barrier materials include: Butyl rubber gloves. Nitrile gloves. Neoprene gloves. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials as well as the instructions/specifications provided by the glove supplier.
Skin Protection: Apron, coveralls and/or other resistant protective clothing. Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Phosphoric Acid	3 mg/m^3 STEL 1 mg/m^3 TLV-TWA	1 mg/m^3 TWA 3 mg/m^3 STEL	1000 mg/m^3
Water	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Viscous liquid
Color: Colorless
Odor: Odorless
pH <1 @ 1 wt/wt%
Specific Gravity: >1.573 @ 25°C
Boiling Point: 158°C /316°F
Freezing/Melting Point: -17 - (21)°C/ 1 - (70)°F
Vapor Pressure: 5.65 - 2.16 mmHg @ 20°C
Vapor Density: 3.4
% Volatile by Volume: 100%
Evaporation Rate: Not Available.
Solubility: Miscible in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 98
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Incompatible materials.
Materials to Avoid: Strong oxidizing agents. Strong reducing agents. Bases. Certain metals.
Hazardous Decomposition Products: Oxides of phosphorous.
Additional Information:

Substance can supercool without crystallizing.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Corrosive! May cause severe pain in the mouth, chest and abdomen, leading to cough, vomiting and collapse. Causes vomiting, nausea, and diarrhea. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.
Skin Contact: Corrosive. Contact with the skin may cause severe irritation, burns or tissue destruction. Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Inhalation: Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Can cause chemical bronchitis. Coughing, shortness of breath, headaches and confusion may occur. Vapors may cause pulmonary edema.
Eye Contact: Corrosive to eye tissue and may cause severe damage and blindness. May cause adverse eye effects such as conjunctivitis or corneal damage.

Additional Information: Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.
Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Phosphoric Acid	Not listed.	Not listed.
Water	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Phosphoric Acid	3 - 3.5 mg/L LC50 (Gambusia affinis) 96 h	Not Available.	Not Available.
Water	Not Available.	Not Available.	Not Available.

Other Information:
No additional remark.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: PHOSPHORIC ACID SOLUTION
DOT Hazardous Class 8
DOT UN Number: UN1805
DOT Packing Group: III
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

14. TRANSPORT INFORMATION

TDG (Canada):
TDG Shipping Name: PHOSPHORIC ACID SOLUTION
Hazard Class: 8
UN Number: UN1805
Packing Group: III
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Phosphoric Acid	Not Listed.	Listed	Not Listed.
Water	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
E CORROSIVE MATERIAL

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

SAFETY DATA SHEET

1. Identification

Product identifier NINOL 40-CO

Other means of identification

Product code 0262

Recommended use Surfactant

Recommended restrictions For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Stepan Company	
Address	22 West Frontage Road Northfield, IL 60093 USA	
Telephone	General	1-847-446-7500
E-mail	Not available.	
Emergency phone number	Medical	1-800-228-5635
	Chemtrec	1-800-424-9300
	Chemtrec Int'l	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 1B
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Not classified.	

Label elements

Signal word Danger

Hazard statement Causes skin irritation. Causes serious eye irritation. Suspected of causing cancer. May damage fertility or the unborn child. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Wash thoroughly after handling. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Specific treatment (see this label). If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Storage Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Cocoamide DEA (Alternative CAS 68155-07-7)		68603-42-9	> 85
Glycerin		56-81-5	8
Diethanolamine		111-42-2	< 5
Methanol		67-56-1	< 1

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Prevent product from entering drains. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Avoid contact with skin. Avoid contact with eyes. Avoid contact during pregnancy/while nursing. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Glycerin (CAS 56-81-5)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
Methanol (CAS 67-56-1)	PEL	260 mg/m3	
		200 ppm	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Diethanolamine (CAS 111-42-2)	TWA	1 mg/m3	Inhalable fraction and vapor.
Methanol (CAS 67-56-1)	STEL	250 ppm	
	TWA	200 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Diethanolamine (CAS 111-42-2)	TWA	15 mg/m3
		3 ppm
Methanol (CAS 67-56-1)	STEL	325 mg/m3
		250 ppm
	TWA	260 mg/m3
		200 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Methanol (CAS 67-56-1)	15 mg/l	Methanol	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Diethanolamine (CAS 111-42-2) Can be absorbed through the skin.
Methanol (CAS 67-56-1) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Methanol (CAS 67-56-1) Skin designation applies.

US - Tennessee OELs: Skin designation

Methanol (CAS 67-56-1) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Diethanolamine (CAS 111-42-2) Can be absorbed through the skin.
Methanol (CAS 67-56-1) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

Methanol (CAS 67-56-1) Can be absorbed through the skin.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Clear. Viscous.
Physical state	Liquid.
Form	Liquid.
Color	Not available.
Odor	Not available.
Odor threshold	Not available.
pH	9.7 - 11 (1% in water)
Melting point/freezing point	32 °F (0 °C)
Initial boiling point and boiling range	302 °F (150 °C)
Flash point	> 201.0 °F (> 93.9 °C) Pensky-Martens Closed Cup
Evaporation rate	Estimated slower than ethyl ether.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not Determined or Unknown
Vapor density	Estimated heavier than air.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	1172 cP @ 25C
Other information	
Pour point	37.4 °F (3 °C)
Specific gravity	1

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong acids. Strong oxidizing agents. Peroxides. Phenols.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful. May cause damage to organs by inhalation.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
NINOL 40-CO		
Acute		
Dermal		
LD50	Rabbit	> 2 g/kg
Oral		
LD50	Rat	> 5 g/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Cocoamide DEA (Alternative CAS 68155-07-7) (CAS 68603-42-9)	2B Possibly carcinogenic to humans.
Diethanolamine (CAS 111-42-2)	2B Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	May damage fertility or the unborn child.
Specific target organ toxicity - single exposure	Not applicable.
Specific target organ toxicity - repeated exposure	Not applicable.
Aspiration hazard	Not applicable.
Chronic effects	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects. May cause damage to organs through prolonged or repeated exposure.

12. Ecological information

Ecotoxicity Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Product		Species	Test Results
NINOL 40-CO			
Aquatic			
Acute			
Algae	LC50	Algae	< 10 mg/l, 72 hours
Crustacea	LC50	Daphnia	< 10 mg/l, 48 hours

Product		Species	Test Results
Fish	LC50	Fish	< 10 mg/l, 96 hours

Components		Species	Test Results
Glycerin (CAS 56-81-5)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	51000 - 57000 mg/l, 96 hours

Persistence and degradability Readily biodegradable.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

Diethanolamine	-1.43
Glycerin	-1.76
Methanol	-0.77

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

General The provided transportation classifications are for bulk shipments only and may not be representative of all package/shipment sizes.

DOT

UN number UN3082

UN proper shipping name Environmentally Hazardous Substance, Liquid, N.O.S. (Diethanolamine RQ = 2012 LBS)

Transport hazard class(es)

Class 9

Subsidiary risk -

Packing group III

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

DOT

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Diethanolamine (CAS 111-42-2)	Listed.
Methanol (CAS 67-56-1)	Listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Diethanolamine	111-42-2	< 5
Methanol	67-56-1	< 1

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Diethanolamine (CAS 111-42-2)
Methanol (CAS 67-56-1)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

Glycerin (CAS 56-81-5) Other Flavoring Substances with OSHA PEL's

US state regulations

US - New Jersey Community RTK (EHS Survey): Reportable threshold

Diethanolamine (CAS 111-42-2)
Methanol (CAS 67-56-1)

US - New Jersey RTK - Substances: Listed substance

Diethanolamine (CAS 111-42-2)
Glycerin (CAS 56-81-5)
Methanol (CAS 67-56-1)

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Diethanolamine (CAS 111-42-2)
Glycerin (CAS 56-81-5)
Methanol (CAS 67-56-1)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Cocoamide DEA (Alternative CAS 68155-07-7) (CAS 68603-42-9)
Diethanolamine (CAS 111-42-2)
Methanol (CAS 67-56-1)

US. Massachusetts RTK - Substance List

Diethanolamine (CAS 111-42-2)
Glycerin (CAS 56-81-5)
Methanol (CAS 67-56-1)

US. Pennsylvania Worker and Community Right-to-Know Law

Diethanolamine (CAS 111-42-2)
Glycerin (CAS 56-81-5)
Methanol (CAS 67-56-1)

US. Rhode Island RTK

Diethanolamine (CAS 111-42-2)
Methanol (CAS 67-56-1)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Cocoamide DEA (Alternative CAS 68155-07-7) (CAS 68603-42-9)	Listed: June 22, 2012
Diethanolamine (CAS 111-42-2)	Listed: June 22, 2012

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Methanol (CAS 67-56-1)	Listed: March 16, 2012

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 05-22-2014

Revision date 03-10-2017

Version # 07

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Revision information Hazard(s) identification: Hazard statement
Hazard(s) identification: Prevention
Composition / Information on Ingredients: Disclosure Overrides
GHS: Classification

SAFETY DATA SHEET

1. Identification

Product identifier	**NACCONOL 90G**	
Other means of identification		
Product code	0533	
Recommended use	Surfactant	
Recommended restrictions	For industrial use only.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	Stepan Company	
Address	22 West Frontage Road Northfield, IL 60093 USA	
Telephone	General	1-847-446-7500
E-mail	Not available.	
Emergency phone number	Medical Chemtrec Chemtrec Int'l	1-800-228-5635 1-800-424-9300 +1 703-527-3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Combustible dust	

Label elements

Signal word	Danger
Hazard statement	Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Toxic to aquatic life. Harmful to aquatic life with long lasting effects. May form combustible dust concentrations in air.
Precautionary statement	
Prevention	Keep container tightly closed. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. Wear eye/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves. Prevent dust accumulation to minimize explosion hazard.
Response	If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment (see this label). Rinse mouth. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Storage	Store away from incompatible materials.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	May form combustible dust concentrations in air.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Sodium (C10-16) benzenesulfonate (Alternate CAS: 25155-30-0; 68411-30-3)		68081-81-2	90 - 93
Sodium sulfate		7757-82-6	5
Water		7732-18-5	1.5
Sodium chloride		7647-14-5	< 1
Other components below reportable levels			1 - < 3

4. First-aid measures

Inhalation If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye contact Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion Rinse mouth. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Do not induce vomiting without advice from poison control center.

Most important symptoms/effects, acute and delayed Dusts may irritate the respiratory tract, skin and eyes. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Apply extinguishing media carefully to avoid creating airborne dust.

Unsuitable extinguishing media None known.

Specific hazards arising from the chemical Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. In the event of fire, cool tanks with water spray. Move containers from fire area if you can do so without risk.

Specific methods Cool containers exposed to flames with water until well after the fire is out.

General fire hazards May form combustible dust concentrations in air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Use only non-sparking tools. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of dust from the spilled material. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water. Large Spills: Collect spillage. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Minimize dust generation and accumulation. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Ground/bond container and receiving equipment. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not get this material in contact with eyes. Do not get this material in contact with skin. Avoid breathing dust. Do not get this material on clothing. Wear personal protective equipment. Wash thoroughly after handling. Avoid release to the environment.
Conditions for safe storage, including any incompatibilities	Keep away from heat, sparks and open flame. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Guard against dust accumulation of this material. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield. Use tight fitting goggles if dust is generated.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Powder. Class II Dust for National Electric Code (NFPA 70) Pmax = 6.4bar Kst = 56 bar m/s Minimum Ignition Energy (MIE) = > 1000 mJ Minimum Explosible Concentration (MEC) = 74 g/m3 Minimum Autoignition Temperature (MAIT Cloud) = 460 C Limiting Oxygen Concentration (LOC) = 15 vol. % Mean particle size = 218 (11% < 75) micrometer
Color	Cream
Odor	Not available.
Odor threshold	Not available.

pH	6 - 7.5 (1% aqueous)
Melting point/freezing point	> 572 °F (> 300 °C)
Initial boiling point and boiling range	Not available.
Flash point	> 201.0 °F (> 93.9 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not applicable, powder
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Soluble
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Partition coefficient (oil/water)	log Kow = 0.45 (HSDB, 2000)
Specific gravity	0.53

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Keep away from heat, sparks and open flame. Avoid temperatures exceeding the flash point. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Minimize dust generation and accumulation.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product may yield sulfur dioxide and oxides of sulfur.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Inhalation of dusts may cause respiratory irritation.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage. Dust in the eyes will cause irritation.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Not available.

Information on toxicological effects

Acute toxicity	Harmful if swallowed.

Product	Species	Test Results
NACCONOL 90G		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Rat	1080 - 1980 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye damage. Dust in the eyes will cause irritation.

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not applicable.

Specific target organ toxicity - repeated exposure Not applicable.

Aspiration hazard Not applicable.

12. Ecological information

Ecotoxicity Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Product		Species	Test Results
NACCONOL 90G			
Aquatic			
Algae	EC50	Algae	29 mg/l, 72 hours
Crustacea	EC50	Daphnia	1.62 - 9.3 mg/l, 48 hours
Fish	LC50	Fish	3 mg/l, 96 hours

Persistence and degradability Expected to be readily biodegradable.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN3077
UN proper shipping name	Environmentally Hazardous Substance, Solid, N.O.S. (Alkylbenzenesulfonic Acid), MARINE POLLUTANT
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN3077
UN proper shipping name	Environmentally Hazardous Substance, Solid, N.O.S. (Alkylbenzenesulfonic Acid)
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	Marine Pollutant
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN3077
UN proper shipping name	Environmentally Hazardous Substance, Solid, N.O.S. (Alkylbenzenesulfonic Acid), MARINE POLLUTANT
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

DOT; IATA; IMDG

Marine pollutant

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Not regulated.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. Rhode Island RTK

Not regulated.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Inventory (TCSI)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 06-30-2014

Revision date 11-09-2017

Version # 07

Further information Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

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Revision information Hazard(s) identification: Response
Composition / Information on Ingredients: Ingredients
GHS: Classification

Material Safety Data Sheet

LA1604
Van-Sol 16 Mineral Spirits

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA1604
Product Name: Van-Sol 16 Mineral Spirits
Synonyms: Stoddard Solvent
Chemical Family: None Known
Application: Organic solvent.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 19 July 2006
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Solvent Naphtha (petroleum), Medium Aliph. 64742-88-7	100	Acute Oral LD50>6216mg/kg (Rat) Acute Dermal LD50>3108mg/kg (Rabbit) Acute Inhalation LC50>14.1 mg/l/4 hours (Rat)

Note: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Vapours are moderately irritating to the eyes. Symptoms of exposure may include: a burning sensation, redness, swelling and blurred vision.
Skin Contact: May cause moderate skin irritation. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.
Inhalation: Vapours expected to be slightly irritating. Vapours may cause drowsiness and dizziness. Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung.

3. HAZARDS IDENTIFICATION

Ingestion: Aspiration into the lungs during ingestion or vomiting may lead to chemical pneumonitis.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with water for at least 15 minutes while holding eyelids open. Obtain medical attention.
Skin Contact: Wash contaminated skin with mild soap and water for 15 minutes. If irritation persists or signs of toxicity occur, seek medical attention.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do not induce vomiting. Guard against aspiration into lungs by having the individual turn on to their left side. Do not give anything by mouth to an unconscious person. Get immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis.

5. FIRE FIGHTING MEASURES

Flash Point: 43 °C / 109 °F
Flash Point Method: Tag Closed Cup
Autoignition Temperature: 240 °C / 464 °F
Flammable Limits in Air (%): Lower: 0.6 Upper: 5
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray. Not recommended: water jet
Special Exposure Hazards: Combustible. Isolate and restrict area access. Stop leak only if safe to do so. Move containers from fire area if you can do it without risk. Fight fire from a safe distance and from a protected location. Use flooding quantities of water for fire and water spray or fog for vapours. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure build-up which could result in container rupture. This material may produce a floating fire hazard in extreme fire conditions. This product can produce flammable vapors which may travel to a source of ignition and flash back.
Hazardous Decomposition/Combustion Materials (under fire conditions): Carbon monoxide.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: Not Available.
HMIS RATINGS FOR THIS PRODUCT ARE: Not Available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Spills or releases should be reported, if required to the appropriate local, state and federal agencies.
Procedure for Clean Up: Eliminate all ignition sources. Handling equipment must be grounded. Isolate hazard area and restrict access. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. For large spills, remove by mechanical means and place in appropriate containers for disposal. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Flush area with water to remove trace residue.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. DO NOT handle or store near an open flame, heat, or other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 10 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Extinguish any naked flames.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Use explosion-proof ventilation to prevent vapour accumulation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Electrical and mechanical equipment should be explosion proof.
Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator. In case of spill or leak resulting in unknown concentration, use a NIOSH approved supplied air respirator.
Gloves:

Impervious gloves. Nitrile gloves. Polyvinylchloride gloves. Neoprene gloves.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Solvent Naphtha (petroleum), Medium Aliph.	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Colour: Clear, light colour.
Odour: Hydrocarbon odour.
pH Not Available.
Specific Gravity: 0.79
Boiling Point: 157.8 - 201.1 °C / 316.0 - 394.0 °F
Freezing/Melting Point: Not Available.
Vapour Pressure: 0.2 kPa @ 20°C
Vapour Density: 4.8
% Volatile by Volume: Not Available.
Evaporation Rate: 0.1
Solubility: Negligible.
VOCs: 100% @ 6.6°C
Viscosity: Not Available.
Molecular Weight: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur
Conditions to Avoid: Avoid excessive heat, open flames and all ignition sources.
Materials to Avoid: Oxidizing agents.
Hazardous Decomposition Products: None
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Aspiration into the lungs during ingestion or vomiting may lead to chemical pneumonitis.
Skin Contact: May cause moderate skin irritation. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.

11. TOXICOLOGICAL INFORMATION

Inhalation: Vapours expected to be slightly irritating. Vapours may cause drowsiness and dizziness. Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung.
Eye Contact: Vapours are moderately irritating to the eyes. Symptoms of exposure may include: a burning sensation, redness, swelling and blurred vision.

Additional Information: Prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss. Cardiovascular system: chronic abuse of similar materials has been associated with irregular heart rhythms and cardiac arrest. Central nervous system: repeated exposure affects the nervous system.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Solvent Naphtha (petroleum), Medium Aliph.	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Causes foetotoxicity in animals at doses which are maternally toxic.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Solvent Naphtha (petroleum), Medium Aliph.	Not Available.	Not Available.	Not Available.

Other Information: Adsorbs to soil and has low mobility. Floats on water. Oxidises rapidly by photo-chemical reactions in air. Has the potential to bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Waste management priorities (depending on volumes and concentration of waste) are : 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licensed waste disposal facility. Do not attempt to combust waste on site. Incinerate at a licensed waste disposal site with approval of environmental authority.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: PETROLEUM DISTILLATES, N.O.S.
DOT Hazardous Class 3
DOT UN Number: UN1268
DOT Packing Group: III
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.

14. TRANSPORT INFORMATION

Marine Pollutant: No.

TDG (Canada):
TDG Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S
Hazard Class: 3
UN Number: UN1268
Packing Group: III
Note: Not regulated under the Transportation of Dangerous Goods Act when transported by road or rail in packagings or containers of 450 L or less (waste excluded).
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Solvent Naphtha (petroleum), Medium Aliph.	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

WHMIS Hazardous Class:
B3 COMBUSTIBLE LIQUIDS

16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA1183
METHANOL

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA1183
Product Name: METHANOL
Synonyms: Methyl hydrate, Wood spirit, Methyl hydroxide.
Chemical Family: Alcohol
Application: Solvent, fuel, feedstock

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 07/Mar/2017
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): 1-888-226-8832 (1-888-CAN-UTEC)

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Causes serious eye irritation.
Skin Contact: Toxic by skin contact. Repeated exposure to this material can result in absorption through skin causing significant health hazard. Prolonged or repeated exposure may cause skin irritation. May be absorbed through the skin in toxic or lethal amounts.
Inhalation: Toxic if inhaled. Symptoms may include dizziness, headache, nausea and loss of coordination. CNS depression. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.
Ingestion: Toxic if swallowed. Ingestion of as little as 10 ml of methanol can cause blindness and 30 ml (1 ounce) can cause death if victim is not treated. Ingestion causes mild central nervous system (CNS) depression with nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Methanol 67-56-1	100	Dermal LD50 (Rabbit) 15800 mg/kg Oral LD50 (Rat) 5628 mg/kg Inhalation LC50 (Rat) >32,000 ppm / 8hrs Inhalation LC50 (Rat) 64000 ppm (4-hour exposure) Oral LD50 (Mouse) 7300 mg/kg

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Remove contact lenses, if worn. Flush immediately with gentle running water for a minimum of 15 minutes, ensuring all surfaces and crevices are flushed by lifting lower and upper lids. Obtain medical attention.
Skin Contact: Remove contaminated clothing and shoes. In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. If irritation persists get medical attention. Wash clothing before reuse. Thoroughly clean contaminated shoes. Prolonged contact with methanol may defat skin tissue, resulting in drying and cracking.
Inhalation: Remove to fresh air, restore or assist breathing if necessary, obtain medical attention immediately.
Ingestion: If swallowed, do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical help immediately. Onset of symptoms may be delayed for 18 to 24 hours after ingestion. Swallowing methanol is life threatening.
Notes to Physician: Treat symptomatically. The severity of outcome following methanol ingestion may be more related to the time between ingestion and treatment, rather than the amount ingested. Therefore, there is a need for rapid treatment of any ingestion exposure. Antidote is fomepizole which enhances elimination of metabolic formic acid. This must be administered by a trained medical professional only. For specialist advice physicians should contact the Poison Control Centre.

5. FIRE FIGHTING MEASURES

Flash Point: 11 °C / 52 °F
Flash Point Method: Tag Closed Cup
Autoignition Temperature: 385°C /725°F
Flammable Limits in Air (%): Lower: 6% Upper: 36.5%
Extinguishing Media: Small fires: Dry chemical, CO2, water spray Large fires: Water spray(see note in Unsuitable Extinguishing Media), AFFF(R) (Aqueous Film Forming Foam (alcohol resistant)) type with a 3% foam proportioning system.

Unsuitable Extinguishing Media: General purpose synthetic foams or protein foams may work, but much less effectively. Water may be effective for cooling, but may not be effective for extinguishing a fire because it may not cool methanol below its flash point.
Special Exposure Hazards: Flammable Liquid. Isolate and restrict area access. Stay upwind. Methanol burns with a clean clear flame that is almost invisible in daylight. Concentrations of greater than 20% methanol in water can be ignited. Use fine water spray or fog to control fire spread and cool adjacent structures or containers. Contain fire control water for later disposal. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations. Closed containers may rupture violently or explode and suddenly release large amounts of product when exposed to fire or excessive heat for a sufficient period of time.
Hazardous Decomposition/Combustion Materials (under fire conditions): Carbon monoxide. Carbon dioxide. Formaldehyde.
Special Protective Equipment: Fire fighters must wear full face, positive pressure, self-contained breathing apparatus and appropriate protective clothing. Note that methanol fires may require proximity suits. Do not walk through spilled product. Thoroughly decontaminate bunker gear and other fire-fighting equipment before re-use.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Full-face, positive pressure self-contained breathing apparatus or airline and protective clothing must be worn.

Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities. Biodegrades easily in water. Methanol in fresh or salt water may have serious effects on aquatic life. A study on methanol's toxic effects on sewage sludge bacteria reported little effect on digestion at 0.1% while 0.5% methanol retarded digestion. Methanol will be broken down to carbon dioxide and water.

Procedure for Clean Up: Flammable liquid. Eliminate all ignition sources. Isolate hazard area and restrict access. Stop leak only if safe to do so. Do not walk through spilled product as it may be on fire and not visible. Release can cause an immediate fire/explosion hazard. Fluorocarbon alcohol resistant foams may be applied to spill to diminish vapor and fire hazard. Maximize recovery for recycling or reuse. Restrict access to unprotected personnel. Ensure clean-up is conducted by trained personnel only. Ensure disposal is in compliance with all applicable government requirements. Small spills: soak up with absorbent material and scoop into containers. Large spills : prevent contamination of waterways. Dike and pump into suitable containers. Clean up residual with absorbent material, place in appropriate container and flush with water.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. DO NOT handle or store near an open flame, heat, or other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Tanks must be grounded and vented and should have vapor emission controls. Tanks must be diked. Packaging materials: SUITABLE MATERIAL: Steel. Stainless steel. Iron. Glass. MATERIAL TO AVOID: Lead. Aluminum. zinc. Polyethylene. PVC.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:
Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Use explosion proof equipment.
Respiratory Protection: NIOSH/OSHA recommendations for methanol concentrations in air:
Up to 2000 ppm: supplied air respirator
Up to 5000 ppm: supplied air respirator operated in a continuous-flow mode.
Up to 6000 ppm: supplied air respirator with a tight-fitting facepiece operated in a continuous- flow mode; or Full-facepiece self-contained breathing apparatus or Full-facepiece supplied air respirator.
Cartridge type respirators are NOT recommended.
Emergency or Planned entry into unknown concentrations or IDLH (immediately dangerous to life or health) conditions:
Respirator selection must be done by a qualified person and be based upon a risk assessment of the work activities and exposure levels. Respirators must be fit tested and users must be clean shaven where the respirator seals to the face. Exposure must be kept at or below the applicable exposure limits and the maximum use concentration of the respirator must not be exceeded.
Positive pressure, full-facepiece self-contained breathing apparatus; or Positive pressure, full-facepiece supplied air respirator with an auxiliary positive pressure self-contained breathing apparatus.
Gloves:
Appropriate chemical resistant gloves should be worn. Butyl rubber gloves. Nitrile gloves. Neoprene gloves.
Skin Protection: Wear chemical resistant pants and jackets, preferably butyl or nitrile rubber.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location. Chemical resistant footwear.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Methanol	200 ppm TWA (Skin) 250 ppm STEL (Skin)	200 ppm TWA (Skin) 250 ppm STEL (Skin) 260 mg/m³ TWA (Skin) 325 mg/m³ STEL (Skin)	6000 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Clear/ Colorless
Odor: Alcohol
pH Not applicable.
Specific Gravity: 0.791 @ 20°C
Boiling Point: 64.7°C /148.5°F
Freezing/Melting Point: -97.8°C / -144°F
Vapor Pressure: 12.8 kPa @ 20°C
Vapor Density: 1.105 @ 15°C
% Volatile by Volume: 100%
Evaporation Rate: 4.1 (n-butyl acetate = 1)
Solubility: Completely soluble.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: 32.04 g/mol
Other: Odor threshold:

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Incompatible materials. Avoid any source of ignition. Hygroscopic (absorbs moisture from the air).
Materials to Avoid: Strong oxidizers. Strong mineral acids. Organic acids. Strong bases. Contact with these

materials may cause a violent or explosive reaction. May be corrosive to lead, aluminum, magnesium, and platinum. May react with metallic aluminum or magnesium and generate hydrogen gas. May attack some forms of plastic, rubber, and coatings.
Hazardous Decomposition Products: Carbon dioxide. Carbon monoxide. Formaldehyde.
Additional Information:
May form flammable/explosive vapor-air mixture.
Methanol is not compatible with gasket and O-rings materials made of Buna-N and Nitrile.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure
Ingestion: Toxic if swallowed. Ingestion of as little as 10 ml of methanol can cause blindness and 30 ml (1 ounce) can cause death if victim is not treated. Ingestion causes mild central nervous system (CNS) depression with nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.
Skin Contact: Toxic by skin contact. Repeated exposure to this material can result in absorption through skin causing significant health hazard. Prolonged or repeated exposure may cause skin irritation. May be absorbed through the skin in toxic or lethal amounts.
Inhalation: Toxic if inhaled. Symptoms may include dizziness, headache, nausea and loss of coordination. CNS depression. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.
Eye Contact: Causes serious eye irritation.

Additional Information: Repeated exposure by inhalation or absorption of methanol may cause systemic poisoning, brain disorders, impaired vision and blindness. Inhalation may worsen conditions such as emphysema or bronchitis. Repeated skin contact may cause dermal irritation, dryness and cracking. Effects of sub lethal doses may be nausea, headache, abdominal pain, vomiting and visual disturbances ranging from blurred vision to light sensitivity. Methanol is toxic by inhalation and ingestion. Inhalation of vapors may cause cyanosis, CNS effects, lethargy, loss of consciousness and death. The effects from inhalation may be delayed. Ingestion may cause malaise, CNS effects, discomfort, and death if not treated promptly. Ingestion of methanol has resulted in adverse effects (necrosis and hemorrhaging) in the brain. Medical conditions aggravated by exposure include: skin disorders and allergies, liver disorders and eye disease. Long term exposure to methanol has been associated with headaches, giddiness, conjunctivitis, insomnia and impaired vision. Dermal absorption of significant amounts of methanol resulted in death in several animal species. Toxic effects in animals exposed to methanol by inhalation include eye irritation, blindness and nasal discharge. Toxic effects observed in animals exposed to methanol by ingestion include CNS effects , gastrointestinal effects, anesthetic effects, damage to the optic nerve and acidosis.

Synergistic Products: In animals, high concentrations of methanol can increase the toxicity of other chemicals, particularly liver toxins like carbon tetrachloride. Ethanol significantly reduces the toxicity of methanol because it competes for the same metabolic enzymes, and has been usd to treat methanol poisoning.

Potential for Accumulation: Methanol is readily absorbed into the body following inhalation and ingestion. Skin absorption may occur if the skin is broken or exposure is prolonged. Once absorbed, methanol is rapidly distributed to body tissues. A small amount is excreted unchanged in exhaled air and the urine. The rest is first metabolized to formaldehyde, which is then metabolized to formic acid and/or formate. The formic acid and formate are eventually converted to carbon dioxide and water. In humans, methanol clears from the body, after inhalation or oral exposure, with a half-life of 1 day or more for high doses (greater than 1000 mg/kg) or about 1.5-3 hours for low doses (less than 100 mg/kg or 76.5-230 ppm (100-300 mg/m^3)).

Acute Test of Product:
Acute Oral LD50: >5,000 (Rat)
Acute Dermal LD50: 15800 mg/kg (Rabbit)
Acute Inhalation LC50: 64, 000 ppm/4h (Rat)

Carcinogenicity:

Component	IARC - Carcinogens	ACGIH - Carcinogens
Methanol 67-56-1 (100)	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Methanol is reported to cause birth defects in rats exposed to 20 000 ppm. In experimental animals, methanol is fetotoxic, teratogenic and has produced significant behavioral abnormalities in offspring at dose levels not producing maternal toxic effects. Behavioral abnormalities were observed in the offspring of rats given drinking water containing 2% methanol. Methanol has produced mutagenic effects (somatic cells) in experimental animals.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Methanol	LC50 (Oncorhynchus mykiss) 13200 mg/L LC50 (Pimephales promelas) 28100 mg/L (96 hrs) LC50 (Lepomis macrochirus) 15400 mg/L (96 hrs)	EC50 (Daphnia Magna) :24500 mg/L (48hrs)	EC50 (Selenastrum capricornutum): 7.1 mg/L (48hrs)

Other Information:
Methanol in fresh or salty water may have serious effects on aquatic life. A study on methanol's toxic effects on sewage sludge bacteria reported little effect on digestion at 0.1 % while 0.5% methanol retarded digestion. Methanol will be broken down to carbon dioxide and water. Rapidly degradable.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Waste materials must be disposed of in accordance with your municipal, state, provincial and federal regulations.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: METHANOL
DOT Hazardous Class 3 (6.1)
DOT UN Number: UN1230
DOT Packing Group: II
DOT Reportable Quantity (lbs): 5000 / 2270 kg
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: METHANOL
Hazard Class: 3 (6.1)
UN Number: UN1230
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Methanol	Not Listed.	Listed	Listed

California Proposition 65: Listed.
MA Right to Know List: Listed.
Pennsylvania Right to Know List: Listed.
Additional Notes: Not Available.

WHMIS Hazardous Class:
B2 FLAMMABLE LIQUIDS
D1B TOXIC MATERIALS
D2A VERY TOXIC MATERIALS
D2B TOXIC MATERIALS

16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
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*****END OF MSDS*****

Material Safety Data Sheet

LA12689
LACTIC ACID 88% FG

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA12689
Product Name: LACTIC ACID 88% FG
Synonyms: Lactic acid aqueous solution: S(+)-2-hydroxy propionic acid.
Chemical Family: None Known
Application: Food additive. Specialty chemical. Feed additive. Pharmaceutical additive. Personal Care. Cleaning agent. Biocide. For industrial use.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 06/Mar/2015
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Causes severe eye irritation. May cause permanent eye damage.
Skin Contact: Causes skin irritation.
Inhalation: May cause irritation of the respiratory tract. May irritate mouth, nose, and throat.
Ingestion: May cause irritation of the mouth, throat and stomach.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Lactic acid 79-33-4	60-100	Oral LD50 (Rat) 3543 mg/kg Dermal LD50 (Rabbit) >2000 mg/kg
Water 7732-18-5	7-13	Oral LD50 (Rat) >90 mL/kg

Note: Other CAS# 50-21-5

4. FIRST AID MEASURES

Eye Contact: In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: Move person to fresh air. If irritation persists, seek medical attention.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: >112 °C / >234 °F
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Do not use a solid stream of water. Burning produces irritant fumes. Use water spray to cool fire-exposed containers and structures. Contain fire control water for later disposal.
Hazardous Decomposition/Combustion Materials (under fire conditions): Irritating vapors.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 0, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 0, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities.
Procedure for Clean Up: Neutralize with lime slurry, limestone, or soda ash. Absorb with an inert dry material and place in an appropriate waste disposal container. Flush area with water to remove trace residue. Collect the residues for proper disposal.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Wear all protective equipment. Do not consume food, drink or smoke while handling this material. Launder contaminated clothing prior to reuse. Avoid temperatures above 200°C.
Storage: Keep containers tightly closed. Label containers properly. Store in accordance with good industrial practices. Store in clean stainless steel or plastic containers. Storage Temperature: >5°C (41°F).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.
Respiratory Protection: Not normally needed. If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator.
Gloves:

Appropriate chemical resistant gloves should be worn. Rubber gloves. Break through time >8 hours.
Skin Protection: Light weight protective clothing.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Lactic acid	Not available.	Not available.	Not Available.
Water	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Light Yellow
Odor: Characteristic.
pH <2
Specific Gravity: 1.10 - 1.250
Boiling Point: 110°C /230 °F(40% solution)
Freezing/Melting Point: Not Available.
Vapor Pressure: Not Available.
Vapor Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Completely miscible.
VOCs: Not Available.
Viscosity: 5 - 60 mPa.s @ 25°C (50-90% solution)
Molecular Weight: 90
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Temperatures above 200°C
Materials to Avoid: Oxidizing materials. Bases.
Hazardous Decomposition Products: Thermal decomposition type : Irritating vapors.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May cause irritation of the mouth, throat and stomach.
Skin Contact: Causes skin irritation.
Inhalation: May cause irritation of the respiratory tract. May irritate mouth, nose, and throat.
Eye Contact: Causes severe eye irritation. May cause permanent eye damage.

Additional Information: No additional information available.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Lactic acid	Not listed.	Not listed.
Water	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Lactic acid	LC50/48h/Fish = 320 mg/l	Not Available.	3.5 mg/L EC50 Pseudokirchneriella subcapitata 70 h
Water	Not Available.	Not Available.	Not Available.

Other Information:
No additional remark.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: Not Regulated.
DOT Hazardous Class Not Applicable.
DOT UN Number: Not Applicable.
DOT Packing Group: Not Applicable.
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: Not Regulated.
Hazard Class: Not Applicable.
UN Number: Not Applicable.
Packing Group: Not Applicable.
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Lactic acid	Not Listed.	Not Listed.	Not Listed.
Water	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
E CORROSIVE MATERIAL

16. OTHER INFORMATION

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

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*****END OF MSDS*****

Material Safety Data Sheet

LA11339
ISOPROPYL ALCOHOL AHYDROUS ACS GRADE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA11339
Product Name: ISOPROPYL ALCOHOL AHYDROUS ACS GRADE
Synonyms: Propanol-2, Isopropanol
Chemical Family: Alcohol
Application: Use as a solvent only in industrial manufacturing processes.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 09 February 2010
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Isopropyl Alcohol 67-63-0	60-100	Dermal LD50 (Rabbit) 12800 mg/kg Inhalation LC50 (Rat) 16970 ppm/4H Oral LD50 (Mouse) 3600 mg/kg Oral LD50 (Rat) 5045 mg/kg

Note: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause pain disproportionate to the level of irritation to eye tissue. May cause moderate eye irritation. May cause corneal injury. Vapour may cause eye irritation experienced as mild discomfort and redness. May cause lachrymation (excessive tears).
Skin Contact: Prolonged exposure not likely to cause significant skin irritation. May cause drying and flaking of the skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts.

3. HAZARDS IDENTIFICATION

Inhalation: With good ventilation, single exposure is not likely to be hazardous. In poorly ventilated areas, vapors or mists may accumulate and cause respiratory irritation. Prolonged excessive exposure may cause adverse effects. Excessive exposure (400 ppm) to isopropanol may cause eye, nose and throat irritation. Incoordination, confusion, hypotension, hypothermia, circulatory collapse, respiratory arrest and death may follow a longer duration or higher levels. Observations in animals include middle ear lining damage upon exposure to vapors of isopropanol. However, the relevance of this to humans is unknown.
Ingestion: Low toxicity. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. Swallowing larger amounts may cause injury. May cause central nervous system effects, such as headache, nausea, vomiting, abdominal pain, dizziness, confusion and breathing difficulties. Signs and symptoms of excessive exposure may include: Facial flushing. Low blood pressure. Irregular heartbeats. Aspiration into the lungs during ingestion or vomiting may lead to chemical pneumonitis.

4. FIRST AID MEASURES

Eye Contact: In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient. Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.Hemodialysis may be of benefit if substantial amounts have been ingested and the patient is showing signs of intoxication. Consider hemodialysis for patients with persistent hypotension or coma unresponsive to standard therapy (isopropanol levels >400 - 500 mg/dl). (Goldfrank 1998, King et al, 1970).

5. FIRE FIGHTING MEASURES

Flash Point: 12 °C / 54 °F
Flash Point Method: Tag Closed Cup ASTM D56
Autoignition Temperature: 425°C /797°F
Flammable Limits in Air (%): Lower: 2% Upper: 12%
Extinguishing Media: Water fog or fine spray, carbon dioxide, dry chemical, foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use direct water stream, which will spread fire.
Special Exposure Hazards: Isolate and restrict area access. Stop leak only if safe to do so. Move containers from fire area if you can do it without risk. Fight fire from a safe distance and from a protected location. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire-exposed containers and structures. Use water spray to disperse vapors; re-ignition is possible. NEVER use a water jet directly on the fire because it may spread the fire to a larger area. Use caution and test if material is burning before entering area. Material burns with invisible flame. Container may rupture from gas generation in a fire situation. When product is stored in closed containers, a flammable atmosphere can develop. Flammable mixtures of this product are readily ignited even by static discharge. Use proper bonding and grounding during product transfer. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations. Flammable mixtures may exist within the vapor space of containers at room temperature. Flammable concentrations of vapor can accumulate at temperatures above flash point
Hazardous Decomposition/Combustion Materials (under fire conditions): During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Carbon monoxide. Carbon dioxide.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. For large spills, warn public of downwind explosion hazard. Check area with combustible gas detector before reentering area. Use appropriate safety equipment.

Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities.

Procedure for Clean Up: Contain spill by diking. Collect in suitable and properly labeled containers. Apply vapor suppression foams until spill can be cleaned up. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas indicator. Pump with explosion-proof equipment. If available, use foam to smother or suppress vapors. Small spills: soak up with absorbent material and scoop into containers. Large spills : prevent contamination of waterways. Dike and pump into suitable containers. Clean up residual with absorbent material, place in appropriate container and flush with water.

7. HANDLING AND STORAGE

Handling: Keep away from heat, sparks and flame. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid breathing mist or vapour. Wash thoroughly after handling. Do not enter confined spaces unless adequately ventilated. Never use air pressure for transferring product. No smoking or open flame in storage, use or handling areas. Vapors are heavier than air and will collect in low areas. Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point and may flash back explosively. Bond and ground containers during transfer operations. Use non-sparking tools. Empty containers may contain hazardous product residues. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep away from direct sunlight. Place away from incompatible materials. Peroxides can form if this product is stored in contact with air. Peroxides can be explosive. Shelf life: 20 months in original, sealed container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Concentrations in air should be maintained below lower explosive limit at all times or below the recommended threshold limit value if unprotected personnel are involved. Make up air should always be supplied to balance air exhausted (either generally or locally). Electrical and mechanical equipment should be explosion proof. Mechanical ventilation is recommended for all indoor situations to control fugitive emissions.

Respiratory Protection: NIOSH approved supplied air respirator when airborne concentrations exceed exposure limits. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator. For high airbourne concentrations, use a NIOSH -approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

Gloves:

Use gloves chemically resistant to this material, examples of preferred glove barrier materials include: Polyethylene gloves. Natural rubber gloves. Neoprene gloves. Nitrile gloves. Ethyl Vinyl Alcohol Laminate (EVAL). Polyvinylchloride (PVC) gloves. Examples of acceptable glove barrier materials include: Polyvinyl alcohol gloves.

: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials as well as the instructions/specifications provided by the glove supplier.

Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Isopropyl Alcohol	400 ppm STEL 200 ppm TWA	400 ppm TWA 980 mg/m^3 TWA 1225 mg/m^3 STEL 500 ppm STEL	2000 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.
Colour: Colourless.
Odour: Alcohol
pH Not Available.
Specific Gravity: 0.78 - 0.79 @ 20°C
Boiling Point: 82-83°C / 180-181°F
Freezing/Melting Point: -89°C / -128.2°F
Vapour Pressure: 33 hPa @ 20°C
Vapour Density: 2.1
% Volatile by Volume: Not Available.
Evaporation Rate: 1.5
Solubility: Completely miscible.
VOCs: Not Available.
Viscosity: Dynamic 2.4 mPa.s @ 20°C
Molecular Weight: Not Available.
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.

10. STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur.
Conditions to Avoid: Product can decompose at elevated temperatures. Avoid contact with heat, sparks, open flame, and static discharge.
Materials to Avoid: Aldehydes. Halogenated organics. Halogens. Strong acids. Strong oxidizers.
Hazardous Decomposition Products: Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Low toxicity. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. Swallowing larger amounts may cause injury. May cause central nervous system effects, such as headache, nausea, vomiting, abdominal pain, dizziness, confusion and breathing difficulties. Signs and symptoms of excessive exposure may include: Facial flushing. Low blood pressure. Irregular heartbeats. Aspiration into the lungs during ingestion or vomiting may lead to chemical pneumonitis.
Skin Contact: Prolonged exposure not likely to cause significant skin irritation. May cause drying and flaking of the skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: With good ventilation, single exposure is not likely to be hazardous. In poorly ventilated areas, vapors or mists may accumulate and cause respiratory irritation. Prolonged excessive exposure may cause adverse effects. Excessive exposure (400 ppm) to isopropanol may cause eye, nose and throat irritation. Incoordination, confusion, hypotension, hypothermia, circulatory collapse, respiratory arrest and death may follow a longer duration or higher levels. Observations in animals include middle ear lining damage upon exposure to vapors of isopropanol. However, the relevance of this to humans is unknown.
Eye Contact: May cause pain disproportionate to the level of irritation to eye tissue. May cause moderate eye irritation. May cause corneal injury. Vapour may cause eye irritation experienced as mild discomfort and redness. May cause lachrymation (excessive tears).

Additional Information:
Isopropanol is a moderate to severe eye irritant and a mild skin irritant. Repeated or prolonged skin contact can cause drying and cracking of the skin (dermatitis). There are no reports of harmful effects developing following short-term exposure to Isopropanol. Exposure produced mild - moderate irritation of the nose and throat. It can probably cause central nervous system (CNS) depression, based on animal information and comparison to related alcohols. Symptoms may include headache, nausea, dizziness, vomiting and incoordination. High exposures may result in unconsciousness and death. Ingestion of large amounts can result in symptoms of CNS depression. Isopropanol can probably be inhaled into the lungs (aspirated) during ingestion or vomiting. Aspiration can result in severe, life-threatening lung damage. In rats and mice long-term exposure by inhalation or ingestion has produced decreased body weight, a reversible increase in motor activity, increased liver weight, and signs of central nervous system (CNS) depression. Decreased testes weight has been observed in mice, while increased testes weight has been observed in rats exposed to high concentrations. Kidney injury has been observed in rats (especially males) and mice exposed to high concentrations. These effects are believed to be
species specific and unlikely to occur in humans. Observations in animals include: Lethargy. Isopropanol toxicity is synergistic with chloroform and carbon tetrachloride resulting in hepatotoxicity.

Acute Test of Product:
Acute Oral LD50: 5045 mg/kg (rat)
Acute Dermal LD50: 12800 mg/kg (rabbit)
Acute Inhalation LC50: 16000ppm for 8 hrs

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Isopropyl Alcohol	Group 3	A4 : Not classifiable for human and animals.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: There is no human information available for Isopropanol. However, Isopropanol is considered teratogenic/embryotoxic based on animal information. One inhalation rat study has shown that 2-propanol is fetotoxic (caused reduced fetal weight gain) in the absence of maternal toxicity. Other studies have shown no effects or effects in the presence of maternal toxicity. Positive and negative mutagenic results have been obtained in mammalian cells in vitro and negative results in bacteria.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Isopropyl Alcohol	LC50 96 h (Pimephales promelas) 9640 mg/L flow-through LC50 96 h (Pimephales promelas) 11130 mg/L static LC50 96 h (Lepomis macrochirus) >1400000 µg/L	Not Available.	EC50 96 h Desmodesmus subspicatus >1000 mg/L EC50 72 h Desmodesmus subspicatus >1000 mg/L

Other Information:
Ecotoxicity: Material is practically non-toxic to aquatic organisms on an acute basis (LC50 or EC50 >100 mg/L in the most sensitive species tested).
Material is readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: ISOPROPANOL
DOT Hazardous Class 3
DOT UN Number: UN1219
DOT Packing Group: II
DOT Reportable Quantity (lbs): 5000 / 2270 kg
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: ISOPROPANOL
Hazard Class: 3
UN Number: UN1219
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

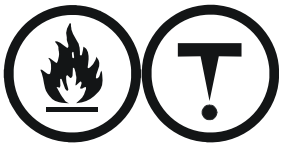
Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Isopropyl Alcohol	Not Listed.	Not Listed.	Listed

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:
B2 FLAMMABLE LIQUIDS
D2B TOXIC MATERIALS



16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

HYDROFLUORIC ACID 30-60 % (AQUEOUS SOLUTION)

Revision Date 12/21/2017

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

1.1 Product identifier

- Trade name: HYDROFLUORIC ACID 30-60 % (AQUEOUS SOLUTION)
- Chemical name: Hydrofluoric acid
- Molecular formula: HF

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

Uses of the Substance / Mixture

- Etching agent
- Electronic industry
- Photovoltaic industry
- Chemical industry
- Glass industry
- Metallurgy.
- Fuel additive
- Chemical intermediate

1.3 Details of the supplier of the safety data sheet

Company

SOLVAY FLUORIDES, LLC
3737 Buffalo Speedway,
Suite 800,
Houston, TX 77098
USA
Tel: 800-515-6065

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although WHMIS has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects

2.1 Classification of the substance or mixture

Hazardous Products Regulations (WHMIS 2015)

Acute toxicity, Category 2	H300: Fatal if swallowed.
Acute toxicity, Category 2	H330: Fatal if inhaled.
Acute toxicity, Category 1	H310: Fatal in contact with skin.
Skin corrosion, Category 1A	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.

2.2 Label elements

Hazardous Products Regulations (WHMIS 2015)

Pictogram

Signal Word

- Danger

Hazard Statements

- H300 + H310 + H330	Fatal if swallowed, in contact with skin or if inhaled.
- H314	Causes severe skin burns and eye damage.

Precautionary Statements

Prevention

- P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
- P262	Do not get in eyes, on skin, or on clothing.
- P264	Wash skin thoroughly after handling.
- P270	Do not eat, drink or smoke when using this product.
- P271	Use only outdoors or in a well-ventilated area.
- P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P284	Wear respiratory protection.

Response

- P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
- P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
- P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
- P361 + P364	Take off immediately all contaminated clothing and wash it before reuse.

Storage

- P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
- P405	Store locked up.

Disposal

- P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

- H402: Harmful to aquatic life.

- Chronic exposure may entail dental or skeletal fluorosis
- Very toxic by inhalation, in contact with skin and if swallowed.
- Causes severe burns.
- Hazardous decomposition products formed under fire conditions.

SECTION 3: Composition/information on ingredients

3.1 Substance

- Not applicable, this product is a mixture.

3.2 Mixture

- Formula HF

WHMIS Hazardous Ingredients and Impurities

Chemical name	Identification number CAS-No.	Concentration [% wt/wt or V/V]
Hydrofluoric acid	7664-39-3	>= 40 - < 50

SECTION 4: First aid measures

4.1 Description of first-aid measures

In case of inhalation

- In case of accident by inhalation: remove casualty to fresh air and keep at rest.
- Oxygen or artificial respiration if needed.
- Victim to lie down in the recovery position, cover and keep him warm.
- Call a physician immediately.
- Take victim immediately to hospital.

In case of skin contact

- Call a physician immediately.
- Take victim immediately to hospital.
- Take off contaminated clothing and shoes immediately.
- Wash off with plenty of water.
- First treatment with calcium gluconate paste.
- Rinse with lukewarm running water.
- Please make sure that hospital staff is aware of the unique characteristics of injuries caused by HF exposures and the fact that the systemic toxic effects of the exposure will require prompt serum monitoring of fluorides, calcium, magnesium and sodium, and calcium replacement by infusion.

In case of eye contact

- Immediate medical attention is required.
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Take victim immediately to hospital.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).

In case of ingestion

- If victim is conscious:
- Rinse mouth with water.
- Give to drink a 1% aqueous calcium gluconate solution.
- Do NOT induce vomiting.
- Artificial respiration and/or oxygen may be necessary.

- Call a physician immediately.
- Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

In case of inhalation

Symptoms

- Breathing difficulties
- sore throat

- Nose bleeding

Effects
- Corrosive to respiratory system.
- Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough.
- Aspiration may cause pulmonary edema and pneumonitis.
- risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia

Repeated or prolonged exposure

- Risk of chronic bronchitis

In case of skin contact

Symptoms
- Redness
- Swelling of tissue
- Burn

Effects
- Causes severe burns.
- Risk of shock.
- Risk of hypocalcemia following the extent of the lesions.

In case of eye contact

Symptoms
- Lachrymation
- Redness
- Swelling of tissue
- Burn

Effects
- Corrosive
- Causes severe burns.
- May cause permanent eye injury.
- May cause blindness.

In case of ingestion

Symptoms
- Nausea
- Bloody vomiting
- Abdominal pain
- Diarrhea
- Cough
- Severe shortness of breath

Effects
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
- Risk of throat (o)edema and suffocation.
- Risk of chemical pneumonitis from product inhalation.
- risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia
- Risk of convulsions, loss of consciousness, deep coma and cardiopulmonary arrest.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

- If skin irritation occurs:
- Immediately apply calcium gluconate gel 2.5% and massage into the affected area using rubber gloves; continue to massage while repeatedly applying gel until 15 minutes after pain is relieved.
- HF-Antidote Gel from IPS Healthcare is recommended as treatment for injuries from hydrofluoric acid.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

- Water may be ineffective.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting

- The product is not flammable.
- Not combustible.
- Hazardous decomposition products formed under fire conditions.
- Gives off hydrogen by reaction with metals.

Hazardous combustion products:

- Hydrogen

5.3 Advice for firefighters

Special protective equipment for fire-fighters

- Wear self-contained breathing apparatus and protective suit.
- Wear chemical resistant oversuit
- Special protective actions for fire-fighters
- In case of fire, use water spray.
- Keep product and empty container away from heat and sources of ignition.
- Cool containers/tanks with water spray.
- Keep from any possible contact with water.
- Approach from upwind.

Further information

- Suppress (knock down) gases/vapors/mists with a water spray jet.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel

- Immediately evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.

Advice for emergency responders

- Wear self-contained breathing apparatus and protective suit.
- Suppress (knock down) gases/vapors/mists with a water spray jet.

- Avoid spraying the leak source.
- Ventilate the area.
- Prevent further leakage or spillage if safe to do so.
- Keep away from incompatible products
- Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

6.2 Environmental precautions

- Should not be released into the environment.
- If the product contaminates rivers and lakes or drains inform respective authorities.
- Prevent product from entering sewage system.

6.3 Methods and materials for containment and cleaning up

- Prevent product from entering sewage system.
- Dilute with water.
- Contact with water may produce heat release and presents risks of splashing.
- Keep in properly labeled containers.
- Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Use only in well-ventilated areas.
- Used in closed system
- Use only clean and dry utensils.
- Keep away from water.
- Preferably transfer by pump or gravity.
- Avoid inhalation, ingestion and contact with skin and eyes.
- Keep away from incompatible products

Hygiene measures

- Use only in an area equipped with a safety shower.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- May not get in touch with:
- Leather
- Handle in accordance with good industrial hygiene and safety practice.
- Consult the industrial hygienist or the safety manager for the selection of personal protective equipment suitable for the working conditions.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

- Keep container tightly closed.
- Keep in a cool, well-ventilated place.
- Keep away from heat.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Information about special precautions needed for bulk handling is available on request.

- Keep away from:
- Incompatible products

Packaging material

Suitable material
- Coated steels.

Unsuitable material
- glass

7.3 Specific end use(s)

- Contact your supplier for additional information
- Contact your supplier for additional information

SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters

Components with workplace occupational exposure limits

Consult local authorities for acceptable exposure limits.

Ingredients	Value type	Value	Basis
Hydrofluoric acid	TWA	0.5 ppm	American Conference of Governmental Industrial Hygienists
	Upper Respiratory Tract irritation, Lower Respiratory Tract irritation, Eye irritation, Skin irritation, Fluorosis, Substances for which there is a Biological Exposure Index or Indices (see BEI® section), Danger of cutaneous absorption Expressed as :Fluorine		
Hydrofluoric acid	C	2 ppm	American Conference of Governmental Industrial Hygienists
	Upper Respiratory Tract irritation, Lower Respiratory Tract irritation, Eye irritation, Skin irritation, Fluorosis, Substances for which there is a Biological Exposure Index or Indices (see BEI® section), Danger of cutaneous absorption Expressed as :Fluorine		

Biological Exposure Indices

Ingredients	Value type	Value	Basis
Hydrofluoric acid	BEI	2 mg/l Fluoride Urine Prior to shift (16 hours after exposure ceases)	American Conference of Governmental Industrial Hygienists
Hydrofluoric acid	BEI	3 mg/l Fluoride Urine End of shift (As soon as possible after exposure ceases)	American Conference of Governmental Industrial Hygienists

8.2 Exposure controls

Control measures

Engineering measures
- Provide appropriate exhaust ventilation at machinery.
- Apply technical measures to comply with the occupational exposure limits.

Individual protection measures

Respiratory protection
- In the case of dust or aerosol formation use respirator with an approved filter.
- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.
- Respirator with a full face mask.

Hand protection
- Impervious gloves
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Suitable material
- Fluoroelastomer

Eye protection
- Chemical resistant goggles must be worn.

- If splashes are likely to occur, wear:
- Face-shield

Skin and body protection
- Impervious clothing
- Apron/boots of butyl rubber if risk of splashing.

- Do not wear leather shoes.

Hygiene measures
- Use only in an area equipped with a safety shower.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- May not get in touch with:

- Leather
- Handle in accordance with good industrial hygiene and safety practice.
- Consult the industrial hygienist or the safety manager for the selection of personal protective equipment suitable for the working conditions.

SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

Appearance	Physical state: liquid Color: colorless colorless
Odor	pungent
Odor Threshold	no data available
Molecular weight	20 g/mol
pH	< 1.0
Melting point/freezing point	Freezing point: -33.0 °F (-36.1 °C)
Initial boiling point and boiling range	Boiling point/boiling range: 223 °F (106 °C)
Flash point	Not applicable
Evaporation rate (Butylacetate = 1)	no data available
Flammability (solid, gas)	Not applicable
Flammability (liquids)	The product is not flammable.
Flammability / Explosive limit	Explosiveness: With certain materials (see section 10).
Autoignition temperature	Not applicable
Vapor pressure	23.03 mmHg (30.70 hPa) (68 °F (20 °C))
Vapor density	no data available
Density	Bulk density: Not applicable
Relative density	1.16 (77 °F (25 °C))
Solubility	Water solubility: completely miscible, Reacts violently with water.

Partition coefficient: n-octanol/water	Not applicable
Decomposition temperature	no data available
Viscosity	no data available
Explosive properties	no data available
Oxidizing properties	Not applicable

9.2 Other information

no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

- Reacts violently with water.
- Risk of explosion.

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- Corrosive in contact with metals, Gives off hydrogen by reaction with metals.

10.4 Conditions to avoid

- Exposure to moisture.

10.5 Incompatible materials

- Water
- glass

10.6 Hazardous decomposition products

- Hydrogen

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity

Hydrofluoric acid	study scientifically unjustified

Acute inhalation toxicity

Hydrofluoric acid	LC50 - 1 h (gas) : 2,240 - 2,340 ppm - Rat , male dry air Humid air

Acute dermal toxicity

Hydrofluoric acid	NOEC : 2 %(m) - Rabbit Test substance: solution Exposure time 1 min NOEC : 0.01 %(m) - Rabbit Test substance: solution Exposure time 30 min

Acute toxicity (other routes of administration)	no data available

Skin corrosion/irritation

Hydrofluoric acid	Corrosive

Serious eye damage/eye irritation

Hydrofluoric acid	Risk of serious damage to eyes.

Respiratory or skin sensitization

Hydrofluoric acid	By analogy Does not cause skin sensitization. Test substance: Sodium fluoride

Mutagenicity

Genotoxicity in vitro

Hydrofluoric acid	By analogy Test substance: Sodium fluoride In vitro tests did not show mutagenic effects

Genotoxicity in vivo

Hydrofluoric acid	By analogy Test substance: Sodium fluoride In vivo tests did not show mutagenic effects

Carcinogenicity

Hydrofluoric acid	By analogy Rat Oral NOAEL: 175ppm Test substance: Sodium fluoride drinking water Mouse Oral NOAEL: 175ppm Test substance: Sodium fluoride drinking water No carcinogenic effects have been observed

This product does not contain any ingredient designated as probable or suspected human carcinogens by:
ACGIH

Toxicity for reproduction and development

Toxicity to reproduction / fertility

Hydrofluoric acid	By analogy Two-generation study - Rat, male and female Oral Fertility NOAEL Parent: 10 mg/kg Fertility NOAEL F1: 10 mg/kg Test substance, Sodium fluoride, drinking water, The product is not considered to affect fertility.

Developmental Toxicity/Teratogenicity

Hydrofluoric acid	By analogy Oral Teratogenicity NOAEL:14mg/kg Test substance, Sodium fluoride, drinking water, The product is not considered to be toxic for development.

STOT

STOT-single exposure

Hydrofluoric acid	The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.

STOT-repeated exposure

Hydrofluoric acid	The substance or mixture is not classified as specific target organ toxicant, repeated exposure according to GHS criteria. Inhalation Prolonged exposure - Rat

Test substance: gas
Target Organs: Cardio-vascular system, Nervous system
observed effect

Experience with human exposure no data available

Aspiration toxicity no data available

Further information

corrosive effects
Liver and kidney injuries may occur.
Chronic exposure may entail dental or skeletal fluorosis
The carcinogenic effect is not demonstrated in human
risk of effect to:
toxic effects for reproduction

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish

Hydrofluoric acid

By analogy

LC50 - 96 h : 51 mg/l - Fishes, Salmo gairdneri
static test

Test substance: Sodium fluoride
Fresh water

Acute toxicity to daphnia and other aquatic invertebrates.

Hydrofluoric acid	By analogy EC50 - 48 h : 26 mg/l - Daphnia magna (Water flea) static test Test substance: Sodium fluoride Fresh water EC50 - 96 h : 10.5 mg/l static test Test substance: Sodium fluoride Marine species salt water

Toxicity to aquatic plants

Hydrofluoric acid	By analogy EC50 - 96 h : 43 mg/l - Algae static test Test substance: Sodium fluoride Fresh water By analogy EC50 - 96 h : 81 mg/l - Algae static test Test substance: Sodium fluoride Sea water By analogy NOEC - 7 Days : 50 mg/l - Algae static test Test substance: Sodium fluoride Fresh water Sea water

Toxicity to microorganisms	no data available

Chronic toxicity to fish

Hydrofluoric acid	By analogy NOEC: 4 mg/l - 21 Days - Oncorhynchus mykiss (rainbow trout) static test Test substance: Sodium fluoride Fresh water

Chronic toxicity to daphnia and other aquatic invertebrates.

Hydrofluoric acid	By analogy NOEC: 8.9 mg/l - 21 Days - Daphnia magna (Water flea) static test Test substance: Sodium fluoride Fresh water
Chronic Toxicity to aquatic plants	no data available

12.2 Persistence and degradability

Abiotic degradation

Photodegradation

Hydrofluoric acid	Air neutralization by natural alkalinity
Physical- and photo-chemical elimination	no data available

Biodegradation

Biodegradability

Hydrofluoric acid	The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

Hydrofluoric acid	Not applicable, inorganic substance

Bioconcentration factor (BCF)

Hydrofluoric acid	Does not bioaccumulate.

12.4 Mobility in soil

Adsorption potential (Koc)

Hydrofluoric acid	Air mobility as solid aerosols Water Solubility(ies) Mobility Soil/sediments potential adsorption pH Test substance fluoride

Known distribution to environmental compartments no data available

12.5 Results of PBT and vPvB assessment Not applicable, inorganic substance

12.6 Other adverse effects

Ecotoxicity assessment

Acute aquatic toxicity
Hydrofluoric acid — Harmful to aquatic organisms.

Chronic aquatic toxicity
Hydrofluoric acid — . low chronic toxicity.

Remarks No data is available on the product itself., Ecological data therefore refers only to the effects of the decomposition products., Harmful to aquatic organisms., Nevertheless, hazard for the environment is limited due to product properties:, . low chronic toxicity., Product fate is highly dependent on environmental conditions: pH, temperature, redox potential, mineral and organic content of the medium ,...

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal

- In accordance with local and national regulations.
- Refer to manufacturer/supplier for information on recovery/recycling.
- Absorb the product in a KOH solution.
- Can be eliminated from water by precipitation.
- Filtrate the product and send the cake to a landfill for industrial waste.
- Discharge liquid filtrate to a wastewater treatment system

Advice on cleaning and disposal of packaging

- Clean container with water.
- The empty and clean containers are to be reused in conformity with regulations.
- To avoid treatments, as far as possible, use dedicated containers.

SECTION 14: Transport information

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification.
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

TDG

14.1 UN number UN 1790

14.2 Proper shipping name HYDROFLUORIC ACID

14.3 Transport hazard class 8

Subsidiary hazard class	6.1
Label(s)	8 (6.1)
14.4 Packing group	
Packing group	II
ERG No	157
14.5 Environmental hazards	NO
Marine pollutant	

DOT

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)
14.4 Packing group	
Packing group	II
ERG No	157
14.5 Environmental hazards	NO
Marine pollutant	

14.6 Special precautions for user

This product contains one or more ingredients identified as a hazardous substance in Appendix A of 49 CFR 172.101.

Reportable quantities	:	RQ substance: Hydrofluoric acid RQ limit for substance: 100 lb RQ limit for product: 166.66 lb

NOM

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)
14.4 Packing group	
Packing group	II
ERG No	157
14.5 Environmental hazards	NO
Marine pollutant	

IMDG

14.1 UN number	UN 1790

14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)
14.4 Packing group	
Packing group	II
14.5 Environmental hazards	NO
Marine pollutant	
14.6 Special precautions for user	
EmS	F-A , S-B

For personal protection see section 8.

IATA

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class:	6.1
Label(s):	8 (6.1)
14.4 Packing group	
Packing group	II
Packing instruction (cargo aircraft)	855
Max net qty / pkg	30.00 L
Packing instruction (passenger aircraft)	851
Max net qty / pkg	1.00 L
14.5 Environmental hazards	NO
14.6 Special precautions for user	

For personal protection see section 8.

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information

15.1Notification status

Inventory Information	Status
United States TSCA Inventory	- Listed on Inventory
Mexico INSQ (INSQ)	- Listed on Inventory
Canadian Domestic Substances List (DSL)	- Listed on Inventory
New Zealand. Inventory of Chemical Substances	- Listed on Inventory
Australia Inventory of Chemical Substances (AICS)	- Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- Listed on Inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on Inventory
EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)	- If product is purchased from Solvay in Europe it is in compliance with REACH, if not please contact the supplier.

15.2 National Regulations

Canada. CEPA 1999 Significant New Activity (SNAc) List:

- No substances are subject to a Significant New Activity Notification.

SECTION 16: Other information

Revision Date:

12/21/2017

NFPA (National Fire Protection Association) - Classification

Health	4 severe
Flammability	0 minimal
Instability or Reactivity	1 slight
Special Notices	None

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

Health	4 severe
Flammability	0 minimal
Reactivity	1 slight
PPE	Determined by User; dependent on local conditions

Further information

- Environmental Protection Agency (EPA) requirements for a Risk Management Plan must be followed anytime at least 1000 lbs. of Hydrogen fluoride/Hydrofluoric acid (conc 50% or greater) are used or stored. Refer to 40 CFR 68.150 for specific details.
- Occupational Safety and Health Administration (OSHA) requirements for process safety management must be followed anytime at least 1000 lbs. of Hydrogen Fluoride are used or stored. Refer to 29 CFR 1910.119 for specific details.

Key or legend to abbreviations and acronyms used in the safety data sheet

- C	Ceiling limit
- STEL	Short-term exposure limit
- TWA	8-hour, time-weighted average
- ACGIH	American Conference of Governmental Industrial Hygienists
- OSHA	Occupational Safety and Health Administration
- NTP	National Toxicology Program
- IARC	International Agency for Research on Cancer
- NIOSH	National Institute for Occupational Safety and Health

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.

Material Safety Data Sheet

LA0548
Hydrogen Peroxide 35%

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA0548
Product Name: Hydrogen Peroxide 35%
Synonyms: None
Chemical Family: None Known
Application: Oxidizing agent. Bleach & water chemicals.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 07/Oct/2016
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Corrosive. May cause conjunctivitis, corneal burns and permanent damage. Symptoms may occur with delay.
Skin Contact: Corrosive. May cause burns resulting in permanent damage. Prolonged exposure may cause severe irritation and white discoloration. Burning may result in localized erythema (redness) or even blistering of the skin.
Inhalation: Causes severe respiratory irritation. Vapors may cause pulmonary edema. Toxic effects may be delayed.
Ingestion: Ingestion of high concentrations causes rapid release of oxygen which may expand the esophagus or stomach resulting in severe damage (bleeding, ulceration or perforation). Expected to cause burns to the gastrointestinal tract. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Hydrogen Peroxide 7722-84-1	30-60	LD50 (oral, male rat): 1193 mg/kg (35% solution) ; LD50 (oral, female rat): 801 mg/kg (60% solution) ; LD50 (oral, male rat): 75 mg/kg (70% solution) ; LD50 (oral, mouse): 2000 mg/kg (90% solution) ; LD50 (dermal, rabbit): approximately 690 mg/kg (90% solution) ; LD50 (oral, rat): 805 mg/kg (70% solution) ; LC50 (inhalation, rat) ; >0.17mg/l/4h (50% solution) ; LD50 (dermal, rabbit) : > 6500 mg/kg (70% solution)

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing. Have an ophthalmologist make an evaluation of eye injury.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Hydrogen peroxide at this concentration is a strong oxidant. Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of corrosive effects on the gastrointestinal tract after ingestion, and the unlikelihood of systemic effects, attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is a remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Do not use CO2 extinguisher on this material; use only water spray or appropriate foam. Do not use organic compounds on this material.
Special Exposure Hazards: Strong oxidizer. Contact with combustible materials may cause a fire. Release of oxygen may support combustion. Contact with incompatible materials (e.g. metals, alkalis and reducing agents) will cause hazardous decomposition resulting in the release of large quantities of heat, steam and oxygen gas. Exposure to heat may cause hazardous decomposition. A severe detonation hazard may exist when mixed with organic liquids, e.g. kerosene or gasoline. Isolate and restrict area access. Fight fire from a safe distance and from a protected location. Stay upwind. Stop leak only if safe to do so. Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure build-up which could result in container rupture.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxygen. Steam.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 3 FLAMMABILITY 0 INSTABILITY 1 SPECIAL Oxidizer
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 3, FLAMMABILITY 0, REACTIVITY 1

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed.
Procedure for Clean Up: Restrict access to unprotected personnel. Stop leak only if safe to do so. Small spills: Flush area with water. Large spills : Dike with earth, sand or inert sorbent material to contain spill. Remove liquid with compatible pumps or vacuum equipment. Place in suitable container for disposal. Flush area with water. Keep materials which can burn away from spilled materials. Spontaneous combustion hazard : - combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles, can cause the material to ignite and result in a fire.

7. HANDLING AND STORAGE

Handling: For food plant and other industrial use only. Handle and open containers with care. Never touch eyes of face with hands or gloves that may be contaminated with this product. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment.

7. HANDLING AND STORAGE

Storage: Do not store near combustible materials. Store in a cool, dry, well ventilated area. Keep containers tightly closed. Do not store this material in containers made of light metals. Recommended container materials: glass, polyvinyl chloride, polyethylene, ceramics, polypropylene. Use adequate venting devices on all packages, containers and tanks and check correct operation periodically. Do not confine product in unvented vessels or between closed valves. Risk of overpressure and bursting due to decomposition in confined spaces and pipes. Do not store on wooden floors or wooden pallets.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator. In case of spill or leak resulting in unknown concentration, use a NIOSH approved supplied air respirator.

Gloves:

Natural rubber gloves. Butyl rubber gloves. Nitrile gloves.

Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Hydrogen Peroxide	1 ppm TLV-TWA	1 ppm TWA 1.4 mg/m^3 TWA	75 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Clear Colorless
Odor: Pungent
pH <2 (20°C)
Specific Gravity: 1.13
Boiling Point: 119°C /246.2°F
Freezing/Melting Point: -56°C / -68.8°F
Vapor Pressure: 48 Pa @ 30°C
Vapor Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Completely miscible.
VOCs: Not Available.
Viscosity: 1.8 mPa.s @ 0°C
Molecular Weight: 34.02 g/Mol
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: High temperatures. Spontaneous combustion hazard : - Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood, or other combustibles, can cause the material to ignite and result in a fire.
Materials to Avoid: Metals. Reducing agents. Alkalis. Combustible material. Organic materials. Heavy metals and their salts.
Hazardous Decomposition Products: Steam. Oxygen.

10. STABILITY AND REACTIVITY

Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Ingestion of high concentrations causes rapid release of oxygen which may expand the esophagus or stomach resulting in severe damage (bleeding, ulceration or perforation). Expected to cause burns to the gastrointestinal tract. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.
Skin Contact: Corrosive. May cause burns resulting in permanent damage. Prolonged exposure may cause severe irritation and white discoloration. Burning may result in localized erythema (redness) or even blistering of the skin.
Inhalation: Causes severe respiratory irritation. Vapors may cause pulmonary edema. Toxic effects may be delayed.
Eye Contact: Corrosive. May cause conjunctivitis, corneal burns and permanent damage. Symptoms may occur with delay.

Additional Information:
Acute Test of Product:
Acute Oral LD50: 805 mg/kg (rat)
Acute Dermal LD50: >6500 mg/kg (rabbit)
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Hydrogen Peroxide	Group 3	A3

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: It is not possible to conclude that hydrogen peroxide is mutagenic. Positive results have been obtained in cultured humans cells. Negative results have been obtained in relevant studies using live animals. Positive results have been obtained in short-term mutagenicity tests.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Hydrogen Peroxide	LC50 (48 hr) carp: 42 mg/L. ; LC50 (96 hr) fish : 37.4 mg/l	EC50 (24 hr) Daphnia : 7.7 mg/l	NOEC (72 hr) Algae : 0.1 mg/l

Other Information:
Under ambient conditions quick hydrolysis, reduction or decomposition occurs. Hydrogen peroxide quickly decomposes to oxygen and water.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
DOT Hazardous Class 5.1 (8)
DOT UN Number: UN2014
DOT Packing Group: II
DOT Reportable Quantity (lbs): Not Available.

14. TRANSPORT INFORMATION

Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Hazard Class: 5.1 (8)
UN Number: UN2014
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Hydrogen Peroxide	Listed	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
C OXIDIZING MATERIALS
D1B TOXIC MATERIALS
E CORROSIVE MATERIAL
F DANGEROUSLY REACTIVE MATERIAL

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA1954
Hexane

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA1954
Product Name: Hexane
Synonyms: None
Chemical Family: None Known
Application: Solvent.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 19/Jan/2016
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause eye irritation.
Skin Contact: Prolonged contact can cause skin irritation. Prolonged or repeated contact may cause defatting and drying of the skin.
Inhalation: In high concentrations, vapor may cause irritation of the nose and throat, dizziness, and headache. Peripheral neurotoxicity has been reported in connection with over exposure to n-hexane. Prolonged exposure over a period of weeks or months to levels well above the TLV may cause neurotoxic disease, with symptoms including weakness and lack of sensation in fingers, hands, arms, feet and legs. Methyl ethyl ketone has been reported to potentiate the neurotoxic effects caused by either n-hexane or methyl-n-butyl ketone. Methyl ethyl ketone by itself does not cause a peripheral neuropathy. MEK may also potentiate the liver and kidney toxicity of haloalkane solvents.
Ingestion: May cause irritation of the mouth, throat and stomach. Ingestion of this product would cause headache, dizziness, fatigue and central nervous system depression. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Naphtha (petroleum), Hydrotreated Light 64742-49-0	100	Oral LD50 > 8 ml/kg (rat) Dermal LD50 >4ml/kg Inhalation LC50 : 3400ppm / 4hrs (rat)

Note: Naphtha (petroleum) hydrotreated light, CAS# 64742-49-0 contains Cyclohexane CAS# 110-82-7 (<3%), n-Hexane CAS# 110-54-3 (45-60%).

4. FIRST AID MEASURES

Eye Contact: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation persists or signs of toxicity occur, seek medical attention.
Skin Contact: Wash with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.
Inhalation: Remove from source of exposure. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Get medical attention immediately.
Ingestion: Do not induce vomiting. Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.
Notes to Physician: Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g. gastric lavage after endotracheal intubation).

5. FIRE FIGHTING MEASURES

Flash Point: <-18 °C / 0 °F
Flash Point Method: ASTM D56
Autoignition Temperature: 225°C /437°F
Flammable Limits in Air (%): Lower: 1.2% Upper: 7.3%
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Use water spray to cool fire-exposed containers and structures. Do not use a solid stream of water. If a leak or spill has not ignited use water spray to disperse the vapors. Product will float and can be reignited on surface of water. Vapors may travel along ground and flashback along vapor trail may occur.
Hazardous Decomposition/Combustion Materials (under fire conditions): Smoke. Toxic fumes. Carbon monoxide.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Consult local authorities.
Procedure for Clean Up: Ventilate area. Blanket spill with foam as a precaution against accidental ignition. Take extreme care to avoid sparks - do not operate electrical appliances near spill, unless explosion proof. Collect liquid with explosion proof pumps. Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor-suppressing foam may be used to reduce vapor. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor, but may not prevent ignition in enclosed spaces.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. DO NOT handle or store near an open flame, heat, or other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Use non-sparking tools. Use explosion proof electrical equipment. Bond and ground containers during transfer operations. Spilled material may be slippery.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Store at ambient temperature. Store in an area equipped with fire protection (sprinkler system, partition walls, etc). Drums must be earthed and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters. Outdoor or detached storage is preferred.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Use explosion proof equipment.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator. For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Gloves:

Appropriate chemical resistant gloves should be worn. Viton gloves. Nitrile gloves.

Skin Protection: Rubber apron. Rubber boots.

Eyes: Safety glasses with side shields or chemical goggles.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Naphtha (petroleum), Hydrotreated Light	ACGIH RECOMMENDS: For Heptane, 400 ppm (1640 mg/m^3). For Methylcyclohexane, 400 ppm (1610 mg/m^3). Manufacturer recommends: a TWA of 1400 mg/m^3 (346 ppm) based on total hydrocarbon. Local regulated limits may vary.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Clear, colorless
Odor: Mild petroleum.
pH Not Available.
Specific Gravity: 0.672 @ 15.6°C
Boiling Point: 66-69°C / 151-156°F
Freezing/Melting Point: <-75°C / <-103°F
Vapor Pressure: 141.6 mmHg @ 20°C
Vapor Density: 3 @ 101 kPa
% Volatile by Volume: Not Available.
Evaporation Rate: 8.3
Solubility: Negligible in water.
VOCs: Not Available.
Viscosity: 0.42 cSt @ 40°C
Molecular Weight: 86
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid excessive heat, open flames and all ignition sources.
Materials to Avoid: Strong oxidizing agents.

10. STABILITY AND REACTIVITY

Hazardous Decomposition Products: Not available.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May cause irritation of the mouth, throat and stomach. Ingestion of this product would cause headache, dizziness, fatigue and central nervous system depression. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.
Skin Contact: Prolonged contact can cause skin irritation. Prolonged or repeated contact may cause defatting and drying of the skin.
Inhalation: In high concentrations, vapor may cause irritation of the nose and throat, dizziness, and headache. Peripheral neurotoxicity has been reported in connection with over exposure to n-hexane. Prolonged exposure over a period of weeks or months to levels well above the TLV may cause neurotoxic disease, with symptoms including weakness and lack of sensation in fingers, hands, arms, feet and legs. Methyl ethyl ketone has been reported to potentiate the neurotoxic effects caused by either n-hexane or methyl-n-butyl ketone. Methyl ethyl ketone by itself does not cause a peripheral neuropathy. MEK may also potentiate the liver and kidney toxicity of haloalkane solvents.
Eye Contact: May cause eye irritation.

Additional Information: Chronic high levels n-hexane exposure damages the nervous system initially producing a lack of feeling in the extremities and possibly progressing to a more severe nerve damage.
Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Naphtha (petroleum), Hydrotreated Light	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Naphtha (petroleum), Hydrotreated Light	Not Available.	Not Available.	Not Available.

Other Information:
This material is expected to be toxic to aquatic life.May cause long-term adverse effects in the aquatic environment. Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids. Material is readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: HEXANES
DOT Hazardous Class 3
DOT UN Number: UN1208
DOT Packing Group: II
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: HEXANES
Hazard Class: 3
UN Number: UN1208
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

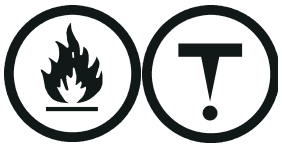
U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Naphtha (petroleum), Hydrotreated Light	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
B2 FLAMMABLE LIQUIDS
D2B TOXIC MATERIALS



16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

Material Safety Data Sheet

LA13599
HEPTANE NORMAL

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA13599
Product Name: HEPTANE NORMAL
Synonyms: None
Chemical Family: Aliphatic hydrocarbon
Application: Solvent.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 14/Apr/2016
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May cause mild, short-lasting discomfort to eyes.
Skin Contact: Causes skin irritation. Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Inhalation: High vapor/aerosol concentrations (attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects.
Ingestion: Low toxicity. Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Heptane 142-82-5	99	Inhalation LC50 Rat = 103 g/m^3 4 h Dermal LD50 Rabbit = 3000 mg/kg Oral LD50 Mouse = 5000 mg/kg
3-methylhexane 589-34-4	0.5	Not available.
Isoheptane 591-76-4	0.2	Not available.

Note: No additional remark.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with large amounts of water until irritation subsides. If irritation persists or signs of toxicity occur, seek medical attention.
Skin Contact: Flush with copious amounts of water. Wash with soap and water. Remove contaminated clothing and launder before reuse.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately. This light hydrocarbon material, or a component, may be associated with cardiac sensitization following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.

5. FIRE FIGHTING MEASURES

Flash Point: -4 °C / 24.8 °F
Flash Point Method: ASTM D56
Autoignition Temperature: 285°C /545°F
Flammable Limits in Air (%): Lower: 1.1% Upper: 6.7%
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Flammable Liquid. May release vapors that form flammable mixtures at or above the flash point. Use water spray to cool containers. Do not use a solid stream of water. If a leak or spill has not ignited use water spray to disperse the vapors. This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of carbon. Smoke.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 3, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Notify the appropriate authorities.
Procedure for Clean Up: Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Warn other shipping. Allow liquid to evaporate from the surface. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

7. HANDLING AND STORAGE

Handling: Handle and open containers with care. DO NOT handle or store near an open flame, heat, or other sources of ignition. Protect material from direct sunlight. Material will accumulate static charges which may cause an electrical spark (ignition source). Ensure proper electrical grounding procedures are in place. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. DO NOT reuse empty containers with out commercial cleaning or reconditioning. Handling Temperature: Ambient.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabeled containers. Keep containers tightly closed. Outdoor or detached storage is preferred. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge. Store at ambient temperature. Place away from incompatible materials. Suitable Containers/Packing: Drums; Barges; Tank Cars; Tank Trucks
Suitable Materials and Coatings: Carbon steel; Polyethylene; Polypropylene; Teflon; Stainless steel; Polyester
Unsuitable Materials and Coatings: Polystyrene; Natural rubber; Butyl rubber; Ethylene-propylene-diene monomer (EPDM)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits. In the laboratory environment, this product should be handled in a hood. Provide mechanical ventilation in confined spaces. Use explosion proof equipment.
Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator. For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.
Gloves:

Appropriate chemical resistant gloves should be worn. Butyl rubber gloves.
Skin Protection: The selection of personal protective equipment varies depending upon conditions of use. As a minimum, wear long-sleeve shirts, trousers, and gloves for routine product use.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Heptane	500 ppm STEL 400 ppm TLV-TWA	400 ppm TWA 1600 mg/m^3 TWA 500 ppm STEL 2000 mg/m^3 STEL	750 ppm
3-methylhexane	500 ppm STEL 400 ppm TLV-TWA	Not available.	Not Available.
Isoheptane	500 ppm STEL 400 ppm TLV-TWA	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Clear Colorless
Odor: Mild petroleum.
pH Not Available.
Specific Gravity: 0.70
Boiling Point: 97-98°C / 206.6-208.4°F
Freezing/Melting Point: -91°C / -131.8°F
Vapor Pressure: 40 mmHg @ 20°C
Vapor Density: 3.45
% Volatile by Volume: Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Evaporation Rate: Not Available.
Solubility: <0.1%
VOCs: Not Available.
Viscosity: 0.59 cST @ 25°C
Molecular Weight: 102
Other: Pour point -57 °C / -71 °F

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid excessive heat, open flames and all ignition sources.
Materials to Avoid: Strong oxidizing agents.
Hazardous Decomposition Products: Material does not decompose at ambient temperatures.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Low toxicity. Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).
Skin Contact: Causes skin irritation. Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Inhalation: High vapor/aerosol concentrations (attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects.
Eye Contact: May cause mild, short-lasting discomfort to eyes.

Additional Information: Health studies have shown that many petroleum hydrocarbons pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized. In a subchronic oral laboratory study, heptane, a component of this product, has produced kidney damage in male rats only. Inhaled heptane at 1,000 ppm causes central nervous system involvement without noticeable mucous membrane irritation. The odor threshold for heptane is 150 ppm. Heptane does not cause nerve damaged. However, exposures at 13,000 to 19,000 ppm has caused convulsions and deaths within 15-40 minutes.Very high exposure (confined spaces / abuse) to light hydrocarbons may result in abnormal heart rhythm (arrhythmias). Concurrent high stress levels and/or co-exposure to high levels of hydrocarbons (above occupational exposure limits), and to heart-stimulating substances like epinephrine, nasal decongestants, asthma drugs, or cardiovascular drugs may initiate arrhythmias.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Heptane	Not listed.	Not listed.
3-methylhexane	Not listed.	Not listed.
Isoheptane	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Heptane	375.0 mg/L LC50 (Cichlid fish) 96 h	Not Available.	Not Available.
3-methylhexane	Not Available.	Not Available.	Not Available.
Isoheptane	Not Available.	Not Available.	Not Available.

Other Information:
This material is expected to be toxic to aquatic life.May cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: HEPTANES
DOT Hazardous Class 3
DOT UN Number: UN1206
DOT Packing Group: II
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: HEPTANES
Hazard Class: 3
UN Number: UN1206
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Heptane	Not Listed.	Not Listed.	Not Listed.
3-methylhexane	Not Listed.	Not Listed.	Not Listed.
Isoheptane	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
B2 FLAMMABLE LIQUIDS
D2B TOXIC MATERIALS

16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
Univar, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

For Emergency Assistance
Involving Chemicals Call CHEMTREC
(800) 424-9300

WHMIS (Classification)
CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
CLASS D-2B: Material causing other toxic effects (TOXIC).

Section I. Chemical Product Identification

Distributed by:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Product Name	CMS 515 (Glycol Ether EB)	Code	LA3944
		CAS#	Mixture.
Synonym	Ethyleneglycol monobutyl ether	DSL	On the DSL list.
Chemical Name	2-Butoxyethanol	CI#	Not available.
Chemical Family	Glycol ethers		
Chemical Formula	C6H14O2		
Material Uses	Industrial applications: All purpose solvent often used in water-base paint formulations and hard surface cleaners.		

Section II. Composition and Information on Ingredients

Name	CAS #	% by Weight	LC50/LD50
Ethyleneglycol monobutyl ether	000111762	99	ORAL (LD50): Acute: 470 mg/kg [Rat(Rtecs)]. DERMAL (LD50): Acute: 220 mg/kg [Rabbit(Rtecs)]. VAPOR (LC50): Acute: 450 ppm 4 hours [Rat]. 700 ppm 7 hours [Rat].

Section III. Hazards Identification

Potential Acute Health Effects	Extremely hazardous in case of eye contact (irritant). Very hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
Potential Chronic Health Effects	CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Hazardous Skin Contact	Not available.
Inhalation	If inhaled, remove to fresh air. Get medical attention immediately.
Hazardous Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.
Ingestion	If swallowed, induce vomiting as directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Seek medical attention.
Hazardous Ingestion	NOTES TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgement of the physician in response to reactions of the patient.

Section V. Fire and Explosion Data

The Product is: Combustible.

Auto-Ignition Temperature	244°C (471.2°F)
Flash Points	CLOSED CUP: 65.5°C (149.9°F). (Tagliabue.)
Flammable Limits	LOWER: 1.1% UPPER: 10.6%

Products of Combustion	These products are carbon oxides (CO, CO2).
Fire Hazards in Presence of Various Substances	Slightly flammable to flammable in presence of oxidizing materials.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. DO NOT use water jet.
Special Remarks on Fire Hazards	Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.
Special Remarks on Explosion Hazards	Not available.

Section VI. Accidental Release Measures

Small Spill	Pump with explosion-proof equipment. Absorb with an inert material and place in an appropriate waste disposal container.
Large Spill	Combustible liquid. Absorb with DRY earth, sand or other non-combustible material. If available, use foam to smother or suppress. Pump with explosion-proof equipment. Eliminate all sources of ignition. Prevent entry into sewers, basements or confined areas; dike if needed. Vapor explosion hazard keep out of sewers.

Section VII. Handling and Storage

Precautions	Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents. Never use air pressure for transferring product.
Storage	Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Use of non-sparkling or explosion proof equipment may be necessary, depending upon the type of operation. Store in carbon steel, stainless steel, Teflon.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection	Use chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator. Use protective clothing impervious to this material. Selection of specific items such as faceshield, gloves, boots, apron of full-body suit will depend on operatation. Safety shower should be located in immediate work area. Remove contamination clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Items which cannot de decontaminated, such as shoes, belts and watchbands, should be removed and destroyed. When respiratory protection is required, use an approved air-purifying or positive-pressure supplied-air respirator depending on the potential airbourne concentration. Where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.
Personal Protection in Case of a Large Spill	Use chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator. Use protective clothing impervious to this material. Selection of specific items such as faceshield, gloves, boots, apron of full-body suit will depend on operatation. Safety shower should be located in immediate work area. Remove contamination clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Items which cannot de decontaminated, such as shoes, belts and watchbands, should be removed and destroyed. When respiratory protection is required, use an approved air-purifying or positive-pressure supplied-air respirator depending on the potential airbourne concentration. Where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.
Exposure Limits	Ethyleneglycol monobutyl ether TWA: 25 (ppm) from ACGIH (TLV) [United States] SKIN Consult local authorities for acceptable exposure limits.

Section IX. Physical and Chemical Properties

Physical State and Appearance	Liquid.	Odor	Ether
		Taste	Not available.
Molecular Weight	Not applicable.		
pH (1% soln/water)	Basic.	Color	Clear
Boiling Point	171°C (339.8°F)		
Melting Point	May start to solidify at -65°C (-85°F) based on data for: Ethyleneglycol monobutyl ether.		

Critical Temperature	Not available.
Specific Gravity	0.902 (Water = 1)
Vapor Pressure	0.1 kPa (@ 20°C)
Vapor Density	4.1 (Air = 1)
Volatility	100% (w/w). (Ethyleneglycol monobutyl ether.)
Odor Threshold	The highest known value is 0.1 ppm (Ethyleneglycol monobutyl ether)
Evaporation rate	Not available.
Viscosity	Not available.
Water/Oil Dist. Coeff.	The product is more soluble in oil; log(oil/water) = 0.8
Ionicity (in Water)	Not available.
Dispersion Properties	See solubility in water, diethyl ether, acetone.
Solubility	Easily soluble in hot water. Soluble in cold water, diethyl ether, acetone.

Section X. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Avoid static discharge. Flammable vapors can be released at elevated temperatures.
Incompatibility with various substances	Highly reactive with oxidizing agents.
Corrosivity	Not available.
Special Remarks on Reactivity	Avoid contact with metals such as: zinc, magnesium, aluminum and galvanized metals. Avoid contact with oxidizing materials.
Special Remarks on Corrosivity	Not available.
Hazardous Polymerization	Will not occur.

Section XI. Toxicological Information

Routes of Entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): 475 mg/kg (Rat(Rtecs)) (Calculated value for the mixture).

	Acute dermal toxicity (LD50): 222 mg/kg (Rabbit(Rtecs)) (Calculated value for the mixture).
Chronic Effects on Humans	CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Other Toxic Effects on Humans	Extremely hazardous in case of eye contact (irritant). Very hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
Special Remarks on Toxicity to Animals	SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Observations in animals include blood and kidney effects. CANCER INFORMATION: In long-term animal studies with ethylene glycol butyl ether, small but statistically significant increases in tumors were seen in mice but not rats. These effects are not beleived to be relevant to humans. if the material is handled in accordance with proper industrial handling, exposures should not pose any carcinogenic risk to man. TERATOLOGY(BIRTH DEFECTS): Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother. REPRODUCTIVE EFFECTS: In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. (Ethyleneglycol monobutyl ether)
Special Remarks on Chronic Effects on Humans	Not available.
Special Remarks on Other Toxic Effects on Humans	Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen. (Ethyleneglycol monobutyl ether)

Section XII. Ecological Information

Ecotoxicity	Material is practically non-toxic to aquatic organisms on an acute basis. (LC50 greater than 100 mg/L in most sensitive species). Acute LC50 for fathead minnow (Pimephales promelas) is 1700-2137 mg/L. Acute LC50 for water flea (Daphnia magna) is 835-1720 mg/L.
BOD5 and COD	Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD greater than 40%). 5- Day biochemical oxygen deman (BOD5) is 0.12 p/p 20-Day biochemical oxygen demand (BOD20) is 1.66 p/p Theoretical oxygen deman (ThOD) is calculated to be 2.30 p/p

	10-Day biochemical oxygen demand (BOD10) is 1.32 p/p
Products of Biodegradation	These products are carbon oxides (CO, CO2) and water.
Toxicity of the Products of Biodegradation	The products of degradation are less toxic than the product itself.
Special Remarks on the Products of Biodegradation	Not available.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

Section XIV. Transport Information

TDG Classification	CLASS 6.1: Poisonous material.
Shipping name	Ethylene glycol monobutyl ether
PIN	UN2369
Packing Group	III
Special Provisions for Transport	No additional remark.

Section XV. Other Regulatory Information

Other Regulations	OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Section XVI. Other Information

References	-Manufacturer's Material Safety Data Sheet.
Other Special Considerations	Not available.

Validated by Wendi MacKinnon on 6/26/2000. Verified by Hardev Bendick.

Tel. number for non-emergency questions concerning MSDS: 1-866-686-4827

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that exist.

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========== END OF MSDS ==========

Material Safety Data Sheet

LA1223
Exxsol D 40 Solvent

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA1223
Product Name: Exxsol D 40 Solvent
Synonyms: None
Chemical Family: Aliphatic hydrocarbon
Application: Solvent.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.
Preparation date of MSDS: 18/Jul/2016
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Slightly irritating, but will not injure eye tissue.
Skin Contact: Low toxicity. Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis). Skin contact may aggravate an existing dermatitis condition.
Inhalation: High vapor/aerosol concentrations (attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects. May be fatal if inhaled.
Ingestion: Low toxicity. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Distillates (petroleum), Hydrotreated Light 64742-47-8	100	Oral LD50 > 5000 mg/kg (Rat) Dermal LD50 > 3000 mg/kg (Rabbit)

Note: The light distillate-hydrotreated cas no. 64742-47-8 contains Nonane cas no. 111-84-2 (1-5%) as part of it's composition.

4. FIRST AID MEASURES

Eye Contact: Flush eyes with large amounts of water until irritation subsides. If irritation persists or signs of toxicity occur, seek medical attention.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Inhalation: Move person to fresh air. Administer artificial respiration if breathing has stopped. Allow victim to rest in a well-ventilated area. Seek immediate medical attention
Ingestion: Do not induce vomiting. Seek immediate medical attention.
Notes to Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: 43 °C / 109 °F
Flash Point Method: ASTM D56
Autoignition Temperature: 233°C /451°F
Flammable Limits in Air (%): Lower: 0.7% Upper: 5.6%
Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.
Special Exposure Hazards: Combustible. May release vapors that form flammable mixtures at or above the flash point. Use water spray to cool fire-exposed containers and structures. Shut off fuel to fire. Avoid spraying water directly into storage containers due to danger of boil over. This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of carbon. Smoke. Toxic fumes.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 2, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 2, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Consult local authorities.
Procedure for Clean Up: Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Warn other shipping. Allow liquid to evaporate from the surface. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

7. HANDLING AND STORAGE

Handling: Ensure proper electrical grounding procedures are in place. Keep the containers closed when not in use. Handle and open containers with care. DO NOT handle or store near an open flame, heat, or other sources of ignition. Protect material from direct sunlight. Material will accumulate static charges which may cause an electrical spark (ignition source). DO NOT pressurize, cut, heat, or weld containers. Empty product containers may contain product residue. DO NOT reuse empty containers with out commercial cleaning or reconditioning. Handling Temperature: Ambient. Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semi conductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semi conductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Store in accordance with good industrial practices. Store at ambient temperature. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.
Suitable Containers/Packing: Drums; Barges; Tank Cars; Tank Trucks
Suitable Materials and Coatings: Carbon steel; Teflon; Stainless steel;
Unsuitable Materials and Coatings: Polystyrene; Natural rubber; Butyl rubber; Ethylene-propylene-diene monomer (EPDM)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Use explosion proof equipment.
Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator. For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.
Gloves:

Appropriate chemical resistant gloves should be worn.
Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
Eyes: Safety glasses with side shields.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Distillates (petroleum), Hydrotreated Light	Manufacturer Recommends: a TWA of 1200 mg/m^3 (197 ppm) based on total hydrocarbon.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Clear Colorless
Odor: Faint Petroleum
pH Not Available.
Specific Gravity: 0.777 @ 15.6°C
Boiling Point: 160-198°C / 320-388°F
Freezing/Melting Point: Not Available.
Vapor Pressure: 0.163 kPa (1.22 mmHg) @ 20°C
Vapor Density: 4.9 @ 101 kPa
% Volatile by Volume: 100%
Evaporation Rate: 0.18

9. PHYSICAL AND CHEMICAL PROPERTIES

Solubility: Negligible in water.
VOCs: Not Available.
Viscosity: 1.09 cSt @ 25°C
Molecular Weight: 143
Other: Pour point -67 °C / -89 °F

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid excessive heat, open flames and all ignition sources.
Materials to Avoid: Strong oxidizing agents.
Hazardous Decomposition Products: Material does not decompose at ambient temperatures.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Low toxicity. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.
Skin Contact: Low toxicity. Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis). Skin contact may aggravate an existing dermatitis condition.
Inhalation: High vapor/aerosol concentrations (attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects. May be fatal if inhaled.
Eye Contact: Slightly irritating, but will not injure eye tissue.

Additional Information:
Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Distillates (petroleum), Hydrotreated Light	IARC Group 3.	ACGIH A3.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Distillates (petroleum), Hydrotreated Light	2.2 mg/L LC50 (Lepomis macrochirus) 96 h static 2.4 mg/L LC50 (Oncorhynchus mykiss) 96 h static 45 mg/L LC50 (Pimephales promelas) 96 h flow-through	Not Available.	Not Available.

Other Information: Not expected to be harmful to aquatic life. Not expected to demonstrate chronic toxicity to aquatic organisms. Hydrolysis: Transformation due to hydrolysis not expected to be significant. Photolysis: Transformation due to photolysis not expected to be significant. Atmospheric Oxidation: Expected to degrade rapidly in air.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: PETROLEUM DISTILLATES, N.O.S.
DOT Hazardous Class 3
DOT UN Number: UN1268
DOT Packing Group: III
DOT Reportable Quantity (lbs): Not Available.
Note: This product is regulated as a hazardous material according to the Department of Transport in bulk quantities (greater than 119 gallons per package) only.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class: 3
UN Number: UN1268
Packing Group: III
Note: Not regulated under the Transportation of Dangerous Goods Act when transported by road or rail in packagings or containers of 450 L or less (waste excluded).
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Distillates (petroleum), Hydrotreated Light	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

Additional Notes: Not Available.

WHMIS Hazardous Class:
B3 COMBUSTIBLE LIQUIDS

16. OTHER INFORMATION

Additional Information:

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

Disclaimer:

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*****END OF MSDS*****

Cervantes~Delgado, Inc.

SAFETY DATA SHEET

Urea, Prill

SECTION 1: Identification

1.1 Product Identifier

Product Name: Urea, Dry

Synonyms: Urea, Prill

Formula: NH_2CONH_2

Product Type: Solid, prill

Product Code(s): 823, 833

1.2 Recommended Use

Identified Uses: Industrial use, NOx Reducing Agent, Anima Feed, Water Treatment

1.3 Supplier Details

Cervantes-Delgado, Inc.

471 W. Lambert Road, Suite #100

Brea, CA 92821

714-990-3940

cdi@cervantes-delgado.com

www.cervantes-delgado.com

1.4 Emergency Phone No.

CHEMTREC (US & Canada) 1-800-424-9300

SECTION 2: Hazards Identification

National Fire Protection Association

Health	1
Flammability	0
Physical Hazard	0
Personal Protection	

Legend HMIS / NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

2.1 Classification of the Substance or mixture

GHS-US classification

Not classified

2.2 Label Elements

Signal Word: None

Hazard Statement: No know significant effects or critical hazards.

Pictograms: None

Precautionary Statements: None

2.3 Other Hazards

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness and burning. No harmful effects from skin absorption have been reported.

Inhalation (Breathing): No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

Ingestion (Swallowing): No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

Signs and Symptoms: Effects of overexposure may include irritation of the nose, throat and digestive tract, headaches, coughing, nausea, vomiting, and transient disorientation.

Cancer: Inadequate evidence available to evaluate the cancer hazard of this material.

SECTION 3: Composition / Information of Ingredients

Name	Product Identifier	% by weight	GHS- US Classification
Urea	(CAS No.) 57-13-6	97.5 -99.5	Skin Irrit. 2, H315 Eye Irrit. 2A, H319
Methylenediurea	(CAS No.) 13547-17-6	0-2.5	Eye Irrit. 2A, H319
Biuret	(CAS No.) 108-19-0	≤ 1	Skin Irrit. 2, H315 Eye Irrit. 2A, H319
Alkalinity, as Ammonia	(CAS No.) 7664-41-7	≤ 0.7	

SECTION 4: First Aid Measures

4.1 Description of Necessary First Aid Measures

General: If medical attention is needed have product container or label available.

Eye Contact: Immediately flush eyes with clean water for a prolonged period (15 minutes). If irritation or redness develops or persists, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops and persists, seek medical attention. Wash contaminated clothing before reuse.

Inhalation: If respiratory problems develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion: First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention. Do not induce vomiting.

4.2 Most Important symptoms and effects, both acute and delayed

Eye Contact: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin Contact: Contact may cause mild skin irritation including redness and burning. No harmful effects from skin absorption have been reported.

Inhalation: Overexposure may be irritating to the respiratory system.

Ingestion: Ingesting large quantities may result in abdominal pains, diarrhea, nausea or vomiting. Get medical attention if feeling unwell.

Chronic Symptoms: None are expected under normal conditions.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician: No special requirements. Treat symptomatically.

SECTION 5: Fire-Fighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media: Material is non-flammable. Use extinguishing media appropriate for the surrounding fire.

Unsuitable Extinguishing Media: None known

5.2 Special hazards arising from the substance or mixture

Fire Hazard: Under fire conditions this material may decompose to ammonia, nitrogen oxides and carbon dioxide.

Explosion Hazard: Material is not explosive but may form explosive mixtures when in contact with strong oxidizing agents such as chlorine (bleach), peroxides, chromates, nitric acid, perchlorates, concentrated oxygen or permanganates. Contact can generate heat, fires, explosions and release toxic fumes.

Reactivity: Hazardous reactions are unlikely to occur under normal conditions.

5.3 Advice for fire-fighters

Special Protective Equipment: Fire-fighters should wear complete turn-out gear including self-contained breathing apparatus. Avoid inhalation of combustion by-products.

Other Information: Do not allow run-off from the fire fighting to enter drains or water courses.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away from the spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Stop the source of the release if it can be done without risk. Immediately isolate the hazard area and restrict access to authorized personnel only. Spilled material, wet or dry, can become slippery on smooth surfaces.

6.2 Environmental precautions

Prevent spilled material from entering sewers, storm drains or natural watercourses. Contain and collect material as a solid. Inform appropriate authorities if the material enters environmentally sensitive waterways.

6.3 Methods and material for containment and clean up

Small Spill: Contain any spill as a solid. Sweep or vacuum up spill and place in a suitable waste container for disposal at an appropriate disposal facility according to current applicable laws and regulations.

Large Spill: Stop the source of the release if it can be done without risk. Immediately isolate the hazard area and restrict access to authorized personnel only. Wear appropriate protective equipment including respiratory protection as conditions warrant. Prevent spilled material from entering sewers, storm drains or natural watercourses. Recover the spilled material by shoveling, sweeping or vacuuming and place in a suitable, labeled waste container for disposal at an appropriate disposal facility according to current applicable laws and regulations. If the material is uncontaminated it can be recovered for reuse.

6.4 Reference to other sections

Personal Protection –Section 8

Disposal Considerations – Section 13

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Handle using good industrial hygiene and safety procedures.

Wear appropriate personal protective equipment.

Avoid breathing dust.

Do not eat, drink or smoke when working with this material.

Avoid contact with skin and eyes. Wash hands and other areas of contact thoroughly with soap and water after handling this material.

7.2 Conditions for safe storage, including and incompatibilities

Store material in the original container protected from direct sunlight in a clean, cool, dry and well ventilated area.

Protect from moisture.

Avoid contamination with similar looking products which may cause product degradation.

Avoid equipment and fittings made of brass, bronze, other copper alloys or galvanized metals.

Store this material away from incompatible materials (Section 10).

7.3 Specific end use(s)

Fertilizer, Industrial applications, NOx reducing agent, animal feed.

SECTION 8: Exposure Controls / Personal Protection

8.1 Control parameters

No exposure limits established from the manufacturer, supplier, importer or appropriate advisory agency.

8.2 Exposure controls

Engineering controls: Provide adequate ventilation in storage and handling areas. Provide emergency eye wash station in the vicinity of potential exposure.

8.3 Individual protection measures

Personal protective equipment: Gloves, Safety Goggles, Protective Clothing

Hand Protection: Impermeable protective gloves should be worn at all times when handling chemical products.

Eye protection: Wear close fitting chemical goggles of full face shield where contact is likely. Do not wear contact lenses.

Skin and Body protection: Wear task appropriate protective clothing and full protective suit if splashing may occur.

Respiratory protection: Under normal operating conditions no personal respiratory protection is necessary. Use a NIOSH-approved respirator if concentrations of mist or vapor are expected to exceed occupational exposure limits.

General Hygiene measures:

-Wash contaminated clothing before reuse.

-Wash hands after handling the material particularly before eating or drinking.

-Avoid breathing dust.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Physical State	:	Solid
Appearance	:	White spheres
Color	:	White
Odor	:	Slight, Ammonia
pH	:	7.2 (10% water solution)
Molecular Weight	:	60.07
Melting / Freezing point	:	Decomposes above 132.6°C (270.7°F)
Boiling Point	:	No data available
Flash Point	:	No data available
Evaporation Rate	:	No data available
Self-ignition temperature	:	No data available
Decomposition temperature	:	132.6°C (270.7°F)
Flammability	:	No data available
Flammability limits	:	No data available
Vapor Pressure @ 20°C	:	No data available
Relative vapor density @ 20°C	:	No data available

Specific Gravity	:	No data available
Density	:	44-49 lb / ft^3
Solubility	:	1,193 g/l @ 25°C
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing Properties	:	No data available
Explosive limits	:	No data available

SECTION 10: Stability and Reactivity

10.1 Reactivity

Material is stable under normal conditions of storage and handling.

10.2 Chemical Stability

Material is stable at standard temperature and pressure.

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid extreme high and low temperatures.

Avoid contamination from metals, dust or organic materials.

10.5 Incompatible materials

Avoid contact with strong oxidizing agents such as chlorine (bleach), peroxides, chromates, nitric acid, perchlorates, concentrated oxygen or permanganates. Contact can generate heat, fires, explosions and release toxic fumes.

10.6 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Under fire conditions this material may decompose to ammonia, nitrogen oxides and carbon dioxide.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute Toxicity:	No known significant effects or critical hazard
Oral:	Low acute toxicity - LD50 (rat) =8471mg/kg
Dermal:	Low acute toxicity - LD50 (rat) >2000mg/kg

Skin Corrosion / Irritation:	Prolonged contact can cause irritation.
Serious damage / Irritation:	Can cause irritation.
Respiratory or skin sensitization:	No known significant effects.
Germ cell mutagenicity:	No known significant effects or critical hazard
Carcinogenicity:	No known significant effects or critical hazard
Mutagenicity:	No known significant effects or critical hazard
Reproductive toxicity:	No known significant effects or critical hazard
Teratogenicity:	No known significant effects or critical hazard
Specific Target Organ toxicity (single exposure):	Not classified
Specific Target Organ toxicity (repeated exposure):	Not classified
Aspiration Hazard:	No known significant effects or critical hazard

11.2 Potential Acute Health Effects

Short Term Exposure

Eye Contact:	No known significant effects or critical hazard
Inhalation:	Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin Contact:	No known significant effects or critical hazard
Ingestion:	No known significant effects or critical hazard

Potential Chronic Health Effects: No known significant effects or critical hazard.

SECTION 12: Ecological Information

12.1 Toxicity

Low toxicity to aquatic organisms

Fish: *Barillius barna,* 96 Hr LC_{50} >9,100 mg/L

Invertebrates: *Daphnia magna,* 24-Hr EC50 ≥ 10,000 mg/L

Plants: *Scenadesmus quadricauda*, 192 Hr cell multiplication inhibition Test TT > 10,000 mg/L

12.2 Persistence / degradability

Not established, ultimately biodegradable

12.3 Bioaccumulation / accumulation

Material is unlikely to persist in the environment.

12.4 Mobility in environmental media

Because the product is highly water soluble, it will move with surface and ground water.

12.5 Chemical fate information

In water: Material is a fertilizer which may promote eutrophication in waterways. It is non-toxic to aquatic organisms as defined by USEPA.

In soil: Urea converts to nutrient nitrogen readily available to plants.

12.6 Other adverse effects

No known significant effects or critical hazards.

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

Contain any waste in appropriate containers for safe disposal.

13.2 Waste Disposal Recommendations

Place waste in appropriate containers and dispose of in accordance with requirements of environmental protection and waste disposal legislation and any regional authority.

Do not allow dispersal of spilled material or runoff into waterways, drains or sewers.

Surplus and non-recyclable material should be disposed of by a licensed waste disposal contractor.

13.3 Additional Information

This material is not listed as a RCRA Toxic Hazardous Waste

SECTION 14: Transport Information

U.S. Department of Transportation (DOT): Not regulated as Hazardous Material

Transportation of Dangerous Goods (TDG-Canada): Not regulated as Hazardous Material

International Maritime Dangerous Goods Code (IMDG): Not regulated as Hazardous Material

International Air Transport Association (IATA): Not regulated as Hazardous Material

14.1 UN number:

Not applicable

14.2 UN Proper Shipping Name:

Not applicable

14.3 Additional Information:

No supplementary information available.

SECTION 15: Regulatory Information

15.1 U.S. Federal Regulations

Urea	57-13-6	Listed on the United Sate TSCA (Toxic Substances Control Act) inventory
Biuret	108-19-0	Listed on the United Sate TSCA (Toxic Substances Control Act) inventory

OSHA: Not listed, however, some states have more stringent OSH programs than OSHA. Consult local state regulations to confirm compliance.

EPA

Clean Air Act: *Not listed*

Clean Water Act: *Not listed*

SARA

Hazard Categories-

Immediate Health hazard: Yes

Delayed Hazard: No

Fire Hazard: No

Pressure Hazard: No

Reactivity Hazard: No

304: Reportable quantity- 111,000 lbs

311/312: Classification not applicable, no products were listed.

15.2 Canadian Regulations

Urea, Dry	WHMIS Classification : Uncontrolled product
Urea (57-13-6)	Listed on Canadian DSL (Domestic Substances List) inventory
	WHMIS Classification : Uncontrolled product
Biuret (108-19-0)	Listed on Canadian DSL (Domestic Substances List) inventory

SECTION 16: Other Information

The information in this document is believed to be correct as of the date issued. **HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.** This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assumes the risk of his use thereof.

Issue Date: 6/1/2015

Effective Dates: 6/1/2015 – 6/1/2018

Revision: 1.0

Revision Date:

Material Safety Data Sheet

LA9392
D-LIMONENE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA9392
Product Name: D-LIMONENE
Synonyms: Citrus Stripper Oil, Terpene Hydrocarbons.
Chemical Family: None Known
Application: Solvent. Household cleaner. Industrial cleaners. Industrial degreaser. Automotive.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 13 December 2007
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Citrus Terpenes 94266-47-4	100	Not available.

Note: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: May irritate eyes.
Skin Contact: May cause slight skin irritation. Prolonged or repeated contact may cause defatting and drying of the skin.
Inhalation: Irritating to the nose, throat and respiratory tract. May cause coughing. May cause headache.
Ingestion: May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation.

4. FIRST AID MEASURES

Eye Contact: In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Skin Contact: Remove contaminated clothing and launder before reuse. Wash contaminated skin with mild soap and water for 15 minutes. Get medical attention if irritation persists.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing. Get immediate medical attention.
Notes to Physician: No specific antidote. Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point: >43 °C / >110 °F
Flash Point Method: Closed cup.
Autoignition Temperature: Not Available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use Carbon Dioxide, Dry Chemicals, Foam. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.
Special Exposure Hazards: Spray extinguishing media directly into base of the flames. Water is unsuitable for use on burning materials, but may be used to cool containers exposed to heat.
Hazardous Decomposition/Combustion Materials (under fire conditions): Oxides of carbon.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 2, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 1, FLAMMABILITY 2, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed.
Procedure for Clean Up: Ventilate area. Isolate spill and stop leak where safe. Eliminate all ignition sources. Absorb with an inert dry material and place in an appropriate waste disposal container. Spilled material may cause floors and contact surfaces to become slippery.

7. HANDLING AND STORAGE

Handling: Avoid prolonged contact with eyes or prolonged skin contact. Do not ingest. Use good personal hygiene. Handle and open containers with care. Keep away from heat, sparks and flame. Use with adequate ventilation. Drum lining may occasionally chip and fall to bottom of container after long storage or excessive handling. As a precaution, pour liquid through filter/strainer to catch small pieces of liner before blending or repackaging. Keep the containers closed when not in use. Do not cut, drill, grind, weld or perform similar operations on or near containers. Partially filled containers should be blanketed with nitrogen.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Store in accordance with good industrial practices.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.
Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. Organic vapor respirator.
Gloves:

Nitrile gloves.
Skin Protection: The selection of personal protective equipment varies depending upon conditions of use. Impervious clothing.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Citrus Terpenes	Not available.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.
Colour: Colourless to Pale yellow.
Odour: Citrus.
pH Not Available.
Specific Gravity: 0.838 - 0.843 @ 20°C
Boiling Point: 176 °C / 349 °F
Freezing/Melting Point: -96 °C / 140 °F
Vapour Pressure: <2 mmHg @ 20°C
Vapour Density: Not Available.
% Volatile by Volume: >95%
Evaporation Rate: Not Available.
Solubility: Insoluble in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: Not Available.
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Keep away from heat, sparks and flame. Products may oxidise on exposure to air.
Materials to Avoid: Strong oxidizing agents. Strong acids.
Hazardous Decomposition Products: Oxides of citrus terpenes.
Additional Information:

No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation.
Skin Contact: May cause slight skin irritation. Prolonged or repeated contact may cause defatting and drying of the skin.
Inhalation: Irritating to the nose, throat and respiratory tract. May cause coughing. May cause headache.
Eye Contact: May irritate eyes.

Additional Information:
Acute Test of Product:
Acute Oral LD50: >5000 mg/kg (Rabbit)
Acute Dermal LD50: >5000 mg/kg (Rabbit)
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Citrus Terpenes	Not listed.	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Citrus Terpenes	Not Available.	Not Available.	Not Available.

Other Information:
No additional remark.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: TERPENE HYDROCARBONS N.O.S. (D'LIMONENE)
DOT Hazardous Class 3
DOT UN Number: UN2319
DOT Packing Group: III
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Proper Shipping Name: TERPENE HYDROCARBONS N.O.S.
Hazard Class: 3
UN Number: UN2319
Packing Group: III
Note: Not regulated under the Transportation of Dangerous Goods Act when transported by road or rail in packagings or containers of 450 L or less (waste excluded).
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

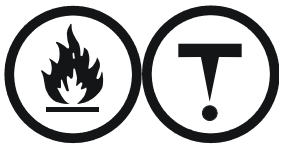
Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Citrus Terpenes	Not Listed.	Not Listed.	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Not Listed.
New Jersey Right-to-Know List: Not Listed.
Pennsylvania Right to Know List: Not Listed.

WHMIS Hazardous Class:
B3 COMBUSTIBLE LIQUIDS
D2B TOXIC MATERIALS



16. OTHER INFORMATION

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

Disclaimer: NOTICE TO READER:
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*****END OF MSDS*****

Univar USA Inc Safety Data Sheet

3075 Highland Pkwy, Ste 200, Downers Grove, IL 60515
(425) 889 3400

Emergency Assistance

For emergency assistance involving chemicals call
Chemtrec - (800) 424-9300

Citric Acid Anhydrous

Version	Revision Date:	SDS Number:	Date of last issue: 06/16/2017
1.1	06/22/2017	100000000123	Date of first issue: 06/16/2017
US / EN			

SECTION 1. IDENTIFICATION

Product name	:	Citric Acid Anhydrous
Substance name	:	Citric Acid Anhydrous
Molecular formula	:	C6-H8-O7
Chemical identity	:	2-hydroxypropane-1,2,3-tricarboxylic acid
CAS-No.	:	77-92-9
Chemical nature	:	Solid

Manufacturer or supplier's details

Details of the supplier of the safety data sheet

Company	:	Jungbunzlauer Inc. 7 Wells Avenue Newton Centre, Massachusetts 02459 USA www.jungbunzlauer.com
Telephone	:	+1 617 969-0900
Telefax	:	+1 617 964-2921
E-mail address Responsible/issuing person	:	msds@jungbunzlauer.com

Emergency telephone number

Emergency telephone number	:	National Chemical Emergency Centre (NCEC) +1 202 464 2554

Recommended use of the chemical and restrictions on use

Recommended use	:	Food/ feedstuff additives Cosmetic additive Medical aids Industrial use
Restrictions on use	:	None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Eye irritation	:	Category 2A

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.

Precautionary statements :

Prevention:

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

Hazards Not Otherwise Classified

May form combustible dust concentrations in air (during processing).

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Pure substance

Substance name : Citric Acid Anhydrous

CAS-No. : 77-92-9

Chemical nature : Solid

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Citric acid anhydrous	77-92-9	100

SECTION 4. FIRST AID MEASURES

General advice : Avoid inhalation, ingestion and contact with skin and eyes.
Consult a physician.

If inhaled : If breathed in, move person into fresh air.
If symptoms persist, call a physician.
If not breathing, give artificial respiration.

If breathing is difficult, give oxygen.

In case of skin contact	:	In case of contact, immediately flush skin with plenty of water. Get medical attention if symptoms occur.
In case of eye contact	:	If easy to do, remove contact lens, if worn. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.
If swallowed	:	Drink plenty of water. If swallowed, DO NOT induce vomiting.
Most important symptoms and effects, both acute and delayed	:	Eye irritation may cause mild and mechanical irritation and thus symptoms which would be redness and pain. Causes serious eye irritation.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray Dry powder Foam Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Do not use a solid water stream as it may scatter and spread fire. Hazardous decomposition products formed under fire conditions.
Hazardous combustion products	:	Carbon dioxide (CO2) Carbon monoxide
Specific extinguishing methods	:	Standard procedure for chemical fires.
Further information	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire and/or explosion do not breathe fumes.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Wear fire resistant or flame retardant clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emer-	:	Avoid dust formation. Dust deposits should not be allowed to accumulate on surfac-

gency procedures		es, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid breathing dust. Ensure adequate ventilation, especially in confined areas. Wear personal protective equipment. Avoid contact with skin and eyes. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	No special environmental precautions required. Prevent further leakage or spillage if safe to do so.
Methods and materials for containment and cleaning up	:	Use mechanical handling equipment. Keep in suitable, closed containers for disposal. Clean contaminated surface thoroughly. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Risk of dust explosion. Do not breathe dust. Avoid contact with skin and eyes. Wear personal protective equipment. For personal protection see section 8.
Conditions for safe storage	:	Keep in an area equipped with acid resistant flooring. Keep container tightly closed in a dry and well-ventilated place. Minimize dust generation and accumulation. Take measures to prevent the build up of electrostatic charge.
Materials to avoid	:	Incompatible with strong bases and oxidizing agents.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Provide adequate ventilation. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Personal protective equipment

Respiratory protection	:	In the case of dust or aerosol formation use respirator with an approved filter. Use NIOSH approved respiratory protection.

Hand protection

Remarks	:	Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer.
Eye protection	:	Safety glasses Ensure that eyewash stations and safety showers are close to the workstation location.
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	crystalline
Colour	:	white
Odour	:	odourless
Odour Threshold	:	Not relevant
pH	:	1.8 (77 °F) Concentration: 5 %
Melting point/range	:	ca. 307 °F
Boiling point/boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	does not ignite
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	Not applicable
Relative vapour density	:	Not applicable
Relative density	:	No data available

Density	:	1.665 g/cm3 (68 °F)
Solubility(ies)		
Water solubility	:	ca. 1,450 g/l (68 °F)
Partition coefficient: n-octanol/water	:	log Pow: -1.8 - -0.2 Calculation
Ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	No oxidising effect.
Molecular weight	:	192.12 g/mol
Dust explosion class	:	St1

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Avoid dust formation.
Incompatible materials	:	Strong bases Oxidizing agents
Hazardous decomposition products	:	Build-up of dangerous/toxic fumes possible in cases of fire/high temperature. Carbon dioxide (CO_2) Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

Citric acid anhydrous:

Acute oral toxicity	:	LD50 Oral (Mouse): 5.400 mg/kg body weight

Method: OECD Test Guideline 401

LD50 Oral (Rat): 11.700 mg/kg body weight
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 Dermal (Rat): > 2.000 mg/kg body weight

Acute toxicity (other routes of administration) : LD50 (Rat): 725 mg/kg
Application Route: i.p.

LD50 (Mouse): 940 mg/kg
Application Route: i.p.

Skin corrosion/irritation

Components:

Citric acid anhydrous:

Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
May cause skin irritation in susceptible persons.

Serious eye damage/eye irritation

Components:

Citric acid anhydrous:

Species: Rabbit
Result: Irritating to eyes.
Method: OECD Test Guideline 405

Respiratory or skin sensitisation

Components:

Citric acid anhydrous:

No data available

Germ cell mutagenicity

Components:

Citric acid anhydrous:

Genotoxicity in vitro : Test Type: Ames test
Species: Salmonella typhimurium
Concentration: 0 - 5 mg/plate
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative

Genotoxicity in vivo : Test Type: in vivo assay
Species: Rat
Application Route: Oral

Method: OECD Test Guideline 475
Result: negative

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

Carcinogenicity

Components:

Citric acid anhydrous:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

Reproductive toxicity

Components:

Citric acid anhydrous:

Reproductive toxicity - Assessment : No toxicity to reproduction

STOT - single exposure

Components:

Citric acid anhydrous:

No data available

STOT - repeated exposure

Components:

Citric acid anhydrous:

No data available

Repeated dose toxicity

Components:

Citric acid anhydrous:

Species: Rat
NOAEL: 4,000 mg/kg
LOAEL: 8,000 mg/kg
Application Route: Oral
Exposure time: 10 d
Dose: 2, 4, 8, 16 g/kg bw/day

Aspiration toxicity

Components:

Citric acid anhydrous:
No aspiration toxicity classification

Experience with human exposure

Product:

Inhalation	:	Target Organs: Respiratory system Symptoms: No information available.
Skin contact	:	Target Organs: Skin Symptoms: May cause skin irritation in susceptible persons.
Eye contact	:	Target Organs: Eyes Symptoms: Redness, Itching
Ingestion	:	Target Organs: Digestive organs Symptoms: No information available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Citric acid anhydrous:

Toxicity to fish	:	LC50 (Leuciscus idus (Golden orfe)): 440 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1,535 mg/l Exposure time: 24 h Test Type: static test
Toxicity to algae	:	NOEC (Scenedesmus quadricauda (Green algae)): 425 mg/l Exposure time: 8 d Test Type: static test
Toxicity to microorganisms	:	TT (Pseudomonas putida): > 10,000 mg/l Exposure time: 16 h

Persistence and degradability

Components:

Citric acid anhydrous:

Biodegradability	:	Biodegradation: 97 % Testing period: 28 d Method: OECD Test Guideline 301B Readily biodegradable.

Biodegradation: 100 %
Testing period: 19 d
Method: OECD Test Guideline 301E
Readily biodegradable.

Biochemical Oxygen Demand (BOD)	:	526 mg/g
Chemical Oxygen Demand (COD)	:	728 mg/g
Physico-chemical removability	:	Readily biodegradable.

Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water	:	log Pow: -1.8 - -0.2 Calculation

Components:

Citric acid anhydrous:

Bioaccumulation	:	The product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected.

Mobility in soil

No data available

Other adverse effects

Components:

Citric acid anhydrous:

Results of PBT and vPvB assessment	:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Additional ecological information	:	This product has no known ecotoxicological effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Where possible recycling is preferred to disposal or incineration. Can be landfilled or incinerated, when in compliance with local regulations.
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal. Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

DOT
Not regulated as a hazardous material

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 311/312 Hazards	:	Acute Health Hazard Fire Hazard
SARA 302	:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

California Prop. 65	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

EINECS	:	On the inventory, or in compliance with the inventory
TSCA	:	On TSCA Inventory
TSCA_12b	:	Not applicable
DSL	:	All components of this product are on the Canadian DSL
REACH	:	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 06/22/2017

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Univar USA Inc Safety Data Sheet

For Additional Information contact SDS Coordinator during business hours, Pacific time: (425) 889-3400

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Do not use ingredient information and/or ingredient percentages in this SDS as a product specification. For product specification information refer to a product specification sheet and/or a certificate of analysis. These can be obtained from your local Univar sales office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein.

This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process

Univar USA Inc Safety Data Sheet

3075 Highland Pkwy, Ste 200, Downers Grove, IL 60515
(425) 889 3400

Emergency Assistance

For emergency assistance involving chemicals call
Chemtrec - (800) 424-9300

Univar
3075 Highland Pkwy STE 200
Downers Grove, IL 60515
425-889-3400

SAFETY DATA SHEET

1. Identification

Product identifier: - CAUSTIC SODA SOLID

Other means of identification

Synonyms:	Sodium Hydroxide
CAS NUMBERS:	1310-73-2
SDS number:	000100002497

Recommended use and restriction on use

Recommended use: Reserved for industrial and professional use.

Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor Information

Univar

3075 Highland Pkwy STE 200

Downers Grove, IL 60515

425-889-3400

Emergency telephone number:For emergency assistance Involving chemicals

call CHEMTREC day or night at: 1-800-424-9300. CHEMTREC INTERNATIONAL Tel# 703-527-3887

2. Hazard(s) identification

Hazard Classification

Health Hazards

Acute toxicity (Oral)	Category 4
Skin Corrosion/Irritation	Category 1A
Serious Eye Damage/Eye Irritation	Category 1
Environmental Hazards Acute hazards to the aquatic environment	Category 3

Label Elements

Hazard Symbol

Signal Word	Danger
Hazard Statement	Corrosive. Harmful if swallowed. Causes severe skin burns and eye damage. May be corrosive to metals.
Precautionary Statements	
Prevention	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust or mists. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF SWALLOWED: Call a POISON CENTER/doctor/ if you feel unwell. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before reuse.
Storage	Store locked up.

Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards which do not result in GHS classification	None.

3. Composition/information on ingredients

Substances

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
Sodium hydroxide		1310-73-2	90 - 100%
Soda Ash (Sodium Carbonate)		497-19-8	0 - 5%
Sodium Chloride		7647-14-5	0 - 5%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments: The components are not hazardous or are below required disclosure limits.

4. First-aid measures

Ingestion: Rinse mouth. Give one or two glasses or water if patient is alert and able to swallow. Seek immediate medical attention. Do not induce vomiting. Never give liquid to an unconscious person.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. Perform artificial respiration if breathing has stopped.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Eye contact: If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

Most important symptoms/effects, acute and delayed

Symptoms: No data available.

Indication of immediate medical attention and special treatment needed

Treatment: No data available.

5. Fire-fighting measures

General Fire Hazards: No data available.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: No data available.

Specific hazards arising from the chemical: No data available.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: No data available.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: No data available.

Methods and material for containment and cleaning up: Absorb spillage with non-combustible, absorbent material. Dike for later disposal.

7. Handling and storage

Precautions for safe handling: Use personal protective equipment as required. Do not get in eyes, on skin, on clothing.

Conditions for safe storage, including any incompatibilities: No data available.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
Sodium hydroxide	Ceiling	2 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008)
Sodium hydroxide - Particulate.	ST ESL	20 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013)
	AN ESL	2 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013)
Sodium hydroxide	Ceiling	2 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (02 2012)
	Ceiling	2 mg/m3	US. ACGIH Threshold Limit Values (03 2016)
	Ceil_Time	2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)
	Ceiling	2 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)

Appropriate Engineering Controls Adequate ventilation should be provided so that exposure limits are not exceeded. Minimize dust generation and accumulation.

Individual protection measures, such as personal protective equipment

General information: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.

Eye/face protection: Normal eye protection practices should be used. If dusty conditions exist, chemical goggles are recommended.

Skin Protection

Hand Protection: No data available.

Other: Wear suitable protective clothing. Wear appropriate clothing to prevent any possibility of skin contact. Avoid contact with eyes and prolonged skin

	contact.
Respiratory Protection:	Use respiratory protection. Avoid breathing dust. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.
Hygiene measures:	Do not breathe dust/fume/gas/mist/vapors/spray.

9. Physical and chemical properties

Physical state:	solid
Form:	No data available.
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	14
Melting point/freezing point:	318 °C
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity: No data available.
Chemical Stability: No data available.
Possibility of hazardous reactions: No data available.
Conditions to avoid: No data available.
Incompatible Materials: No data available.
Hazardous Decomposition Products: No data available.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion: No data available.
Inhalation: No data available.
Skin Contact: No data available.
Eye contact: No data available.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: ATEmix (): 321.824853 mg/kg

Dermal

Product: ATEmix (): 4,000 mg/kg

Inhalation

Product: No data available.

Specified substance(s):

Soda Ash (Sodium Carbonate): LC50 (Guinea pig,): 800 mg/m3 (, No) 2 = reliable with restrictions LC50 (Mouse,): 1,200 mg/m3 (, No) 2 = reliable with restrictions LC50 (Mouse, 2 h): 1.2 mg/l LC50 (Guinea pig, 2 h): 0.8 mg/l LC50 (Rat, 2 h): 2.3 mg/l

Specified substance(s):

Sodium Chloride: LC50 (Rat,): > 42 mg/l 2 = reliable with restrictions LC50 (Rat, 1 h): > 42 mg/l 2 = reliable with restrictions

Repeated dose toxicity

Product: No data available.

Skin Corrosion/Irritation

Product: No data available.

Serious Eye Damage/Eye Irritation

Product: No data available.

Respiratory or Skin Sensitization

Product: No data available.

Carcinogenicity

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro

Product: No data available.

In vivo

Product: No data available.

Reproductive toxicity

Product: No data available.

Specific Target Organ Toxicity - Single Exposure

Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure

Product: No data available.

Aspiration Hazard

Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Sodium hydroxide	LC50 (Bony fish superclass (Osteichthyes), 48 h): 33 - 100 mg/l Mortality LC50 (Western mosquitofish (Gambusia affinis), 96 h): 125 mg/l Mortality LC50 (Goldfish (Carassius auratus), 24 h): 160 mg/l Mortality LC50 (Western mosquitofish (Gambusia affinis), 48 h): 125 mg/l Mortality LC50 (Guppy (Poecilia reticulata), 24 h): 145 mg/l Mortality
Soda Ash (Sodium	LC50 (Sailfin molly (Poecilia latipinna), 50 h): 297 mg/l Mortality LC50

Carbonate)	(Fathead minnow (Pimephales promelas), 24 h): 3,540 - 6,160 mg/l Mortality LC50 (Bluegill (Lepomis macrochirus), 96 h): 300 mg/l Mortality LC50 (Fathead minnow (Pimephales promelas), 48 h): 950 - 4,060 mg/l Mortality LC50 (Bluegill (Lepomis macrochirus), 24 h): 385 mg/l Mortality
Sodium Chloride	LC50 (Fathead minnow (Pimephales promelas), 96 h): 7,450 mg/l Mortality

Aquatic Invertebrates

Product:	No data available.
Specified substance(s):	
Sodium hydroxide	LC50 (Common shrimp, sand shrimp (Crangon crangon), 48 h): 33 - 100 mg/l Mortality LC50 (Cockle (Cerastoderma edule), 48 h): 330 - 1,000 mg/l Mortality EC50 (Water flea (Ceriodaphnia dubia), 48 h): 34.59 - 47.13 mg/l Intoxication
Soda Ash (Sodium Carbonate)	LC50 (Water flea (Daphnia magna), 24 h): 347 mg/l Mortality LC50 (Water flea (Daphnia magna), 48 h): 1,170 - 2,030 mg/l Mortality LC50 (Water flea (Daphnia magna), 24 h): 1,900 - 2,870 mg/l Mortality EC50 (Water flea (Daphnia magna), 4.2 d): 524 mg/l Intoxication LC50 (Pond snail (Lymnaea), 96 h): 411 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish

Product:	No data available.

Aquatic Invertebrates

Product:	No data available.

Toxicity to Aquatic Plants

Product:	No data available.

Persistence and Degradability

Biodegradation

Product:	No data available.

BOD/COD Ratio

Product:	No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

Product:	No data available.

Partition Coefficient n-octanol / water (log Kow)

Product:	No data available.

Mobility in Soil: No data available.

Known or predicted distribution to environmental compartments

Sodium hydroxide	No data available.
Soda Ash (Sodium Carbonate)	No data available.
Sodium chloride	No data available.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN Number:	UN 1823
UN Proper Shipping Name:	Sodium hydroxide, solid
Transport Hazard Class(es)	
Class:	8
Label(s):	8
Packing Group:	II
Marine Pollutant:	Not regulated.
Special precautions for user:	–

15. Regulatory information

US Federal RegulationsUS. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Sodium hydroxide Reportable quantity: 1000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Not listed.

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	RQ
Sodium hydroxide	1000 lbs.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Sodium hydroxide	500 lbs
Soda Ash (Sodium Carbonate)	500 lbs
Sodium Chloride	500 lbs

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

Sodium hydroxide Reportable quantity: 1000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

Sodium hydroxide Listed

US. Massachusetts RTK - Substance List

Sodium hydroxide Listed

US. Pennsylvania RTK - Hazardous Substances

Sodium hydroxide Listed

US. Rhode Island RTK

Sodium hydroxide Listed

Inventory Status: Australia AICS:	Not in compliance with the inventory.
Canada DSL Inventory List:	Not in compliance with the inventory.
EU EINECS List:	Not in compliance with the inventory.
EU ELINCS List:	Not in compliance with the inventory.
Japan (ENCS) List:	Not in compliance with the inventory.
EU No Longer Polymers List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	Not in compliance with the inventory.
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	Not in compliance with the inventory.
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	Not in compliance with the inventory.
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16.Other information, including date of preparation or last revision

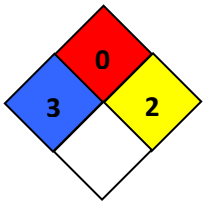
HMIS Hazard ID

Health		3
Flammability		0
Physical Hazards		0
PERSONAL PROTECTION		B

B - Safety Glasses & Gloves

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

NFPA Hazard ID



Flammability
Health
Reactivity
Special hazard.

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date:	04/18/2017
Revision Date:	No data available.
Version #:	1.0
Further Information:	No data available.

Univar USA Inc Safety Data Sheet

For Additional Information contact SDS Coordinator during business hours, Pacific time: (425) 889-3400

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(425) 889 3400

Emergency Assistance

For emergency assistance involving chemicals call
Chemtrec - (800) 424-9300

SAFETY DATA SHEET

M48006 - ANSI - EN

OXY Occidental Chemical Corporation
A subsidiary of Occidental Petroleum Corporation

DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES

SDS No.: M48006
Rev. Num. 10

SDS Revision Date: 03-Aug-2016

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, TX 75380-9050 1-800-752-5151
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	**DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES**
Synonyms:	Calcium Dichloride, Calcium Chloride, Calcium Chloride Flake, DOWFLAKE
Product Use:	Concrete Acceleration, Ice Melting, Dust Control, Road Base Stabilization
Uses Advised Against:	None identified
Note:	**DOWFLAKE ™ is a trademark of The Dow Chemical Company.**
Additional Information:	CONSUMER PRODUCTS: When packaged in quantities of 50 lbs. or less, and used in a manner and frequency typical of consumer use, OxyChem considers this product a consumer use product which is regulated by the Consumer Product Safety Commission (CPSC). Because CPSC labeling requirements differ from the

Occupational Safety and Health Administration (OSHA) GHS requirements for safety data sheets (SDS), slight differences in hazard information between the product label and SDS may be observed.

SECTION 2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

****

EMERGENCY OVERVIEW:

Color: White
Appearance: Flakes
Odor: Odorless

Signal Word: **WARNING**

MAJOR HEALTH HAZARDS: CAUSES SERIOUS EYE IRRITATION. CAUSES SKIN IRRITATION. HARMFUL IF SWALLOWED.

PHYSICAL HAZARDS: Heat is generated when mixed with water or aqueous acid solutions.

PRECAUTIONARY STATEMENTS: Avoid contact with eyes. Wash thoroughly after handling.

****

GHS CLASSIFICATION:

GHS: CONTACT HAZARD - SKIN:	Category 2 - Causes skin irritation
GHS: CONTACT HAZARD - EYE:	Category 2A - Causes serious eye irritation
GHS: ACUTE TOXICITY - ORAL:	Category 4 - Harmful if swallowed

UNKNOWN ACUTE TOXICITY: A percentage of this product consists of ingredient(s) of unknown acute toxicity.
Unknown Acute Dermal Toxicity:
3% of this product consists of ingredient(s) of unknown acute dermal toxicity.

GHS SYMBOL: Exclamation mark

GHS SIGNAL WORD: **WARNING**

GHS HAZARD STATEMENTS:

GHS - Health Hazard Statement(s)
- Causes serious eye irritation
- Causes skin irritation
- Harmful if swallowed

GHS - Precautionary Statement(s) - Prevention
- Wear eye and face protection
- Wear protective gloves
- Wash thoroughly after handling
- Do not eat, drink or smoke when using this product

GHS - Precautionary Statement(s) - Response
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- If eye irritation persists: Get medical advice/attention
- IF ON SKIN: Wash with plenty of water
- Take off contaminated clothing and wash it before reuse
- If skin irritation occurs: Get medical advice/attention
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- Rinse mouth
- Specific treatment (see First Aid information on product label and/or Section 4 of the SDS)

GHS - Precautionary Statement(s) - Storage
- There are no Precautionary-Storage phrases assigned

GHS - Precautionary Statement(s) - Disposal
- Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations

Additional Hazard Information
Mixing with water may cause heat to be released

See Section 11: TOXICOLOGICAL INFORMATION

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Calcium Dichloride, Calcium Chloride, Calcium Chloride Flake, DOWFLAKE

Component	Percent [%]	CAS Number
Calcium chloride	> 83 - < 87	10043-52-4
Water	> 8 - < 14	7732-18-5
Potassium Chloride	> 2 - < 3	7447-40-7
Sodium Chloride	> 1 - < 2	7647-14-5

Notes: *Potassium chloride and sodium chloride are impurities from the naturally-occurring source material, brine solution.*

SECTION 4. FIRST AID MEASURES

INHALATION: If inhalation of dust occurs and adverse effects result, remove to uncontaminated area. Call a POISON CENTER or doctor/physician if you feel unwell.

SKIN CONTACT: If on skin, wash with plenty of water. If skin irritation occurs: Get medical advice/ attention. Take off contaminated clothing and wash before reuse. SPECIFIC TREATMENT: Wash with lots of water.

EYE CONTACT: If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation occurs, get medical advice/attention.

INGESTION: If swallowed, rinse mouth. Contact a poison center or doctor/physician if you feel unwell.

Most Important Symptoms/Effects (Acute and Delayed):

Acute Symptoms/Effects: Listed below.
Inhalation (Breathing): Inhaling dust may cause irritation to upper respiratory tract (nose and throat). Nasal mucosal and oropharyngeal erythema.
Skin: Skin Irritation. Direct abrasion of skin from solid, erythema and burn from reaction with water. Prolonged contact and occlusion may cause more severe symptoms. Damage is localized to contact areas.
Eye: Eye Irritation. Direct abrasion of cornea from solid, erythema and burn from reaction with water, conjunctival swelling and cornea opacification from hypertonic solution and heat. Corneal eye pain, redness, acute corneal thickening or whitening.
Ingestion (Swallowing): Consumption of solids or hypertonic solutions causes nausea, vomiting, and increased thirst.

Delayed Symptoms/Effects:
- Chronic exposures to skin and mucus membranes that cause irritation may cause a chronic dermatitis or mucosal membrane problem

Interaction with Other Chemicals Which Enhance Toxicity: None known.

Medical Conditions Aggravated by Exposure: Any skin condition that disrupts the skin, such as abrasions, cuts, psoriasis, fungal infections, etc. Any upper respiratory conditions that compromise mucosa can increase local damage from dust contact. Any eye condition that compromises tear production, conjunctiva, or normal corneal homeostasis.

Protection of First-Aiders: At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne

pathogen transmission. If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Notes to Physician: Due to irritant properties, resulting from heat created as solid material dissolves in water, swallowing may result in burns/ulceration of mucus membranes. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5. FIRE-FIGHTING MEASURES

Fire Hazard: This material does not burn.

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire

Fire Fighting: Keep unnecessary people away, isolate hazard area and deny entry. This material does not burn. Fight fire for other material that is burning. Water should be applied in large quantities as fine spray. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Wear protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Hazardous Combustion Products: Formed under fire conditions: hydrogen chloride gas, calcium oxide

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not applicable

Upper Flammability Level (air): Not applicable

Flash point: Not applicable

Auto-ignition Temperature: Not applicable

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Isolate area. Keep unnecessary and unprotected personnel from entering the area. Spilled material may cause a slipping hazard on some surfaces. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.

Methods and Materials for Containment and Cleaning Up:
Small and large spills: Contain spilled material if possible. Collect in suitable and properly labeled containers. Flush residue with plenty of water. See Section 13, Disposal considerations, for additional information.

Environmental Precautions:
Prevent large spills from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling:
Heat developed during diluting or dissolving is very high. Use cool water when diluting or dissolving (temperature less than 80°F, 27°C). Avoid contact with eyes, skin, and clothing. Do not swallow. Wash thoroughly after handling. See Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Safe Storage Conditions:
Store in a dry place. Protect from atmospheric moisture. Keep container tightly closed. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:
Heat is generated when mixed with water or aqueous acids. Spattering and boiling can occur. Avoid contact with: bromide trifluoride, 2-furan percarboxylic acid because calcium chloride is incompatible with those substances. Contact with zinc forms flammable hydrogen gas, which can be explosive. Catalyzes exothermic polymerization of methyl vinyl ether. Attacks metals in the presence of moisture, and may release flammable hydrogen gas. Reaction of bromide impurity with oxidizing materials may generate trace levels of impurities such as bromates

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Regulatory Exposure Limit(s): Listed below for the product components that have regulatory occupational exposure limits (OEL's) established.

Component	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PELCeiling
Particles Not Otherwise Regulated (PNOR) 00-00-001	15 mg/m³ (Total) 5 mg/m³ (Respirable)	-----	-----

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

NON-REGULATORY EXPOSURE LIMIT(S): Listed below for the product components that have advisory (non-regulatory) occupational exposure limits (OEL's) established.
- *The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).*

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

Additional Advice:
1. Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating

ENGINEERING CONTROLS: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear safety glasses with side-shields. For dusty operations or when handling solutions of the material, wear chemical goggles.

Skin and Body Protection: Wear clean, body-covering clothing.

Hand Protection: Use gloves chemically resistant to this material. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Examples of preferred glove barrier materials include: Neoprene, Polyvinyl chloride ("PVC" or "vinyl"), Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In dusty or misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: High efficiency particulate air (HEPA) N95. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Flakes
Color:	White
Odor:	Odorless
Odor Threshold [ppm]:	No data available.
Molecular Formula:	CaCl2
Decomposition Temperature:	Not applicable

Boiling Point/Range:	Not applicable to solids
Freezing Point/Range:	Not applicable to solids.
Melting Point/Range:	772 °C (1,422 °F)
Vapor Pressure:	Negligible at ambient temperature
Vapor Density (air=1):	Not applicable
Relative Density/Specific Gravity (water=1):	Not applicable to solids
Bulk Density:	51 - 61 lb/ft3
Water Solubility:	Readily soluble
pH:	Not applicable to solids
Volatility:	Not applicable
Evaporation Rate (ether=1):	Not applicable
Partition Coefficient (n-octanol/water):	No data available
Flash point:	Not applicable
Flammability (solid, gas):	Not applicable
Lower Flammability Level (air):	Not applicable
Upper Flammability Level (air):	Not applicable
Auto-ignition Temperature:	Not applicable
Viscosity:	Not applicable
Hygroscopic:	Yes

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Hygroscopic. Liberates large amounts of heat when dissolving in water or aqueous acids.

Chemical Stability: Stable at normal temperatures and pressures.

Possibility of Hazardous Reactions: Avoid moisture.

Conditions to Avoid: (e.g., static discharge, shock, or vibration) -. None known.

Incompatibilities/ Materials to Avoid: Heat is generated when mixed with water or aqueous acids. Spattering and boiling can occur. Avoid contact with: bromide trifluoride, 2-furan percarboxylic acid because calcium chloride is incompatible with those substances. Contact with zinc forms flammable hydrogen gas, which can be explosive. Catalyzes exothermic polymerization of methyl vinyl ether. Attacks metals in the presence of moisture, and may release flammable hydrogen gas. Reaction of bromide impurity with oxidizing materials may generate trace levels of impurities such as bromates

Hazardous Decomposition Products: Formed under fire conditions: hydrogen chloride gas, calcium oxide

Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES

TOXICITY DATA:

PRODUCT TOXICITY DATA: DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
1126 mg/kg - Oral Acute Toxicity Estimate (ATE)	2637 mg/kg - Dermal Acute Toxicity Estimate (ATE)	No data is available

COMPONENT TOXICITY DATA:
Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

****

POTENTIAL HEALTH EFFECTS:

Eye contact: For solid: May cause slight eye irritation, mechanical injury only. Dust formation should be avoided, as dust can cause severe eye irritation with corneal injury.

Skin contact: Brief contact is essentially nonirritating to skin. Prolonged contact may cause skin irritation, even a burn. Not classified as corrosive to the skin according to DOT guidelines. May cause more severe response if skin is damp, abraded (scratched or cut), or covered by clothing, gloves, or footwear.

Inhalation: Dust may cause irritation to upper respiratory tract (nose and throat).

Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause local mucosal damage to esophagus and stomach. Swallowing may result in gastrointestinal irritation or ulceration.

Chronic Effects: Chronic exposures to calcium chloride that cause irritation may cause a chronic dermatitis or mucosal membrane problem. For the minor component(s): POTASSIUM CHLORIDE: In animals, effects have been reported on the following organs after ingestion: Gastrointestinal tract, heart, and kidney. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. SODIUM CHLORIDE: Medical experience with sodium chloride has shown a strong association between elevated blood pressure and prolonged dietary overuse. Related effects could occur in the kidneys.

SIGNS AND SYMPTOMS OF EXPOSURE:
Solution and or solids may be visible on the skin and or eyes. Localized redness, warmth, and irritation consistent with mechanism of injury: abrasion, burn, hypertonic solution.

Inhalation (Breathing): Inhaling dust may cause irritation to upper respiratory tract (nose and throat). Nasal mucosal and oropharyngeal erythema.
Skin: Skin Irritation. Direct abrasion of skin from solid, erythema and burn from reaction with water. Prolonged contact and occlusion may cause more severe symptoms. Damage is localized to contact areas.
Eye: Eye Irritation. Direct abrasion of cornea from solid, erythema and burn from reaction with water, conjunctival

swelling and cornea opacification from hypertonic solution and heat. Corneal eye pain, redness, acute corneal thickening or whitening.
Ingestion (Swallowing): Consumption of solids or hypertonic solutions causes nausea, vomiting, and increased thirst.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

****

GHS HEALTH HAZARDS:

GHS: ACUTE TOXICITY - ORAL: Category 4 - Harmful if swallowed.

GHS: CONTACT HAZARD - EYE: Category 2A - Causes serious eye irritation

GHS: CONTACT HAZARD - SKIN: Category 2 - Causes skin irritation.

Skin Absorbent / Dermal Route? No.

MUTAGENIC DATA:
Not classified as a mutagen per GHS criteria. The data presented are for the following material: Calcium chloride (CaCl2) - In vitro genetic toxicity studies were negative. The data presented are for the following material: Potassium chloride - In vitro genetic toxicity studies were positive. However, the relevance of this to humans is unknown. For the minor component(s): Sodium chloride - In vitro genetic toxicity studies were predominantly negative.

DEVELOPMENTAL TOXICITY:
Not classified as a developmental or reproductive toxin per GHS criteria. For the major component(s): Did not cause birth defects or any other fetal effects in laboratory animals.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

Component	Freshwater Fish	Invertebrate Toxicity:	Algae Toxicity:	Other Toxicity:
Calcium chloride	- LC50, bluegill (Lepomis macrochirus): 8350 - 10650 mg/l	- LC50, water flea Daphnia magna: 759 - 3005 mg/l	- No data available	- No data available
Potassium Chloride	- LC50, rainbow trout (Oncorhynchus mykiss), 96 h: 4,236 mg/l	- EC50, water flea Daphnia magna, 24 h, immobilization: 590 mg/l - LC50, water flea Ceriodaphnia dubia, 96 h: 3,470 mg/l	- No data available	- No data available
Sodium Chloride	- LC50, fathead	- LC50, water flea	- IC50, OECD 209	- IC50, OECD 209

	minnow (Pimephales promelas): 10,610 mg/l	Daphnia magna: 4,571 mg/l	Test; activated sludge, respiration inhibition: > 1,000 mg/l	Test; activated sludge, respiration inhibition: > 1,000 mg/l

Aquatic Toxicity:
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested)

Invertebrate Toxicity:
Calcium Chloride: LC50, water flea Daphnia magna: 759 - 3,005 mg/l
Potassium Chloride: EC50, water flea Daphnia magna, 24 h, immobilization: 590 mg/l
LC50, water flea Ceriodaphnia dubia, 96 h: 3,470 mg/l
Sodium Chloride: LC50, water flea Daphnia magna: 4,571 mg/l

FATE AND TRANSPORT:

BIODEGRADATION: This material is inorganic and not subject to biodegradation.

PERSISTENCE: Calcium chloride is believed not to persist in the environment because it is readily dissociated into calcium and chloride ions in water. Calcium chloride released into the environment is thus likely to be distributed into water in the form of calcium and chloride ions. Calcium ions may remain in soil by binding to soil particulate or by forming stable salts with other ions. Chloride ions are mobile and eventually drain into surface water. Both ions originally exist in nature, and their concentrations in surface water will depend on various factors, such as geological parameters, weathering, and human activities.

BIOCONCENTRATION: No bioconcentration is expected because of the relatively high water solubility. Potential for mobility in soil is very high (Koc between 0 and 50). Partitioning from water to n-octanol is not applicable.

BIOACCUMULATIVE POTENTIAL: Calcium chloride and its dissociated forms (calcium and chloride ions) are ubiquitous in the environment. Calcium and chloride ions can also be found as constituents in organisms. Considering its dissociation properties, calcium chloride is not expected to accumulate in living organisms.

MOBILITY IN SOIL: Calcium chloride is not expected to be absorbed in soil due to its dissociation properties and high water solubility. It is expected to dissociate into calcium and chloride free ions or it may form stable inorganic or organic salts with other counter ions, leading to different fates between calcium and chloride ions in soil and water components. Calcium ions may bind to soil particulate or may form stable inorganic salts with sulfate and carbonate ions. The chloride ion is mobile in soil and eventually drains into surface water because it is readily dissolved in water.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from material:
Reuse or reprocess, if possible. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Report spills if applicable. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE

PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN SDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Landfill and waste water treatment system.

Container Management:
Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

SECTION 14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:
Status: Not Regulated.
CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
Status: Not Regulated.

MARITIME TRANSPORT (IMO / IMDG) Not regulated

Status - IMO / IMDG: Not Regulated

SECTION 15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
Not regulated.

SARA EHS Chemical (40 CFR 355.30)
Not regulated

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):
Acute Health Hazard

EPCRA SECTION 313 (40 CFR 372.65):
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
Not regulated

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt.

TSCA 12(b): This product is not subject to export notification.

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

Component	DSL	NDSL
Calcium chloride 10043-52-4	Listed	Not Listed
Potassium Chloride 7447-40-7	Listed	Not Listed
Sodium Chloride 7647-14-5	Listed	Not Listed

STATE REGULATIONS

California Proposition 65:
This product is not listed, but it may contain impurities/trace elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. WARNING: This product (when used in aqueous formulations with a chemical oxidizer such as ozone) may react to form calcium bromate, a chemical known to the State of California to cause cancer.

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List
Calcium chloride 10043-52-4	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Potassium Chloride 7447-40-7	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Sodium Chloride 7647-14-5	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed

Component	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List	Rhode Island Right to Know Hazardous Substance List
Calcium chloride 10043-52-4	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Potassium Chloride 7447-40-7	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Sodium Chloride 7647-14-5	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed

CANADIAN REGULATIONS
• This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and

the SDS contains all the information required by the Controlled Products Regulations

Component	Canadian Chemical Inventory:	NDSL:	WHMIS - Classifications of Substances:
Calcium chloride	Listed		D2B
Potassium Chloride	Listed		Uncontrolled product according to WHMIS classification criteria
Sodium Chloride	Listed		Uncontrolled product according to WHMIS classification criteria

SECTION 16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Product Stewardship

Rev. Date: 03-Aug-2016

Disclaimer:
We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

Reason for Revision:
- **Revised GHS Information: SEE SECTION 2**
- **Format change to sections: 12 AND 15**
- **Removed NFPA rating from format: SEE SECTION 16**

IMPORTANT:
The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESSED OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and Occidental Chemical Corporation assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees

End of Safety Data Sheet

Univar USA Inc Safety Data Sheet

For Additional Information contact SDS Coordinator during business hours, Pacific time: (425) 889-3400

Notice

Univar USA Inc. (”Univar”) expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this SDS as a product specification. For product specification information refer to a product specification sheet and/or a certificate of analysis. These can be obtained from your local Univar sales office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein.

This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process

SAFETY DATA SHEET

1. Identification

Product identifier **BTC 2125M-80%**

Other means of identification

Product code 3202

Recommended use Biocidal product

Recommended restrictions For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Stepan Company	
Address	22 West Frontage Road Northfield, IL 60093 USA	
Telephone	General	1-847-446-7500
E-mail	Not available.	
Emergency phone number	Medical	1-800-228-5635
	Chemtrec	1-800-424-9300
	Chemtrec Int'l	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity, oral	Category 4
	Acute toxicity, inhalation	Category 2
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	

Label elements

Signal word Danger

Hazard statement Flammable liquid and vapor. Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. Fatal if inhaled. May cause damage to organs. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Keep container tightly closed. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only outdoors or in a well-ventilated area. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection.

Response	If swallowed: Immediately call a poison center/doctor. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment is urgent (see this label). Wash contaminated clothing before reuse. In case of fire: Use appropriate media to extinguish. Collect spillage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Alkyl (68% C12, 32% C14) dimethyl ethylbenzyl ammonium chloride		85409-23-0 (Alternate CAS 68956-79-6)	40
_Alkyl dimethyl benzyl ammonium chloride (C12-18)		68391-01-5	40
Ethanol		64-17-5	9
Water		7732-18-5	< 10
_Amines, C12-18-alkyldimethyl		68391-04-8	< 1.6

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage. Treat the affected person appropriately.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not breathe vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

Environmental precautions

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Vapors may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Avoid prolonged exposure. Do not get this material on clothing. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE OR DISPOSAL. PESTICIDE STORAGE: Store in a dry place no lower in temperature than 50°F or higher than 120°F. Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Keep in an area equipped with sprinklers.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethanol (CAS 64-17-5)	PEL	1900 mg/m3 1000 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Ethanol (CAS 64-17-5)	TWA	1900 mg/m3 1000 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls	Ensure adequate ventilation, especially in confined areas. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Wear protective gloves.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Wear positive pressure self-contained breathing apparatus (SCBA).
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Light yellow.
Odor	Not available.
Odor threshold	Not available.
pH	7.5 - 8.5 (10% aqueous solution)
Melting point/freezing point	Not available.
Initial boiling point and boiling range	173 °F (78.33 °C)
Flash point	103.0 °F (39.4 °C) Pensky-Martens Closed Cup
Evaporation rate	Estimated slower than ethyl ether
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not determined or unknown
Vapor density	Estimated heavier than air
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	320 cP @ 25C
Other information	
Density	7.80 lb/gal
Pour point	36 °F (2.22 °C)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.

Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Anionic surfactants
Hazardous decomposition products	Upon decomposition, this product may yield oxides of nitrogen and ammonia, carbon dioxide, carbon monoxide and other low molecular weight hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Not likely, due to the form of the product.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage.

Information on toxicological effects

Acute toxicity Fatal if inhaled. Harmful if swallowed.

Product	Species	Test Results
BTC 2125M-80%		
Acute		
Dermal		
Liquid		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
Mist		
LC50		0.054 - 0.51 mg/l
Oral		
Liquid		
LD50	Rat	344 mg/kg

Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	May cause damage to organs.
Specific target organ toxicity - repeated exposure	Not applicable.
Aspiration hazard	Not applicable.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Product		Species	Test Results
BTC 2125M-80%			
Aquatic			
Acute			
Algae	EC50	Algae	0.063 mg/l, 96 hours
Crustacea	LC50	Daphnia	0.0058 - 0.016 mg/l, 48 hours
Fish	LC50	Fish	0.86 ppm, 96 hours

Persistence and degradability Readily biodegradable.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

Ethanol	-0.31

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions PESTICIDE DISPOSAL - Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL - Nonrefillable Container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse empty container with water. Then offer for recycling or reconditioning. If not available, puncture and dispose in a sanitary landfill.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Not available.

Contaminated packaging Not available.

14. Transport information

DOT

UN number UN2920
UN proper shipping name Corrosive liquid, flammable, N.O.S. (Alkyl dimethyl benzyl ammonium chloride, Ethanol)
Transport hazard class(es)
Class 8
Subsidiary risk 3
Packing group II
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number UN2920
UN proper shipping name Corrosive liquid, flammable, N.O.S. (Alkyl dimethyl benzyl ammonium chloride, Ethanol)
Transport hazard class(es)
Class 8
Subsidiary risk 3
Packing group II
Environmental hazards Yes
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN2920
UN proper shipping name Corrosive liquid, flammable, N.O.S. (Alkyl dimethyl benzyl ammonium chloride, Ethanol), MARINE POLLUTANT
Transport hazard class(es)
Class 8
Subsidiary risk 3

Packing group	II
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-C
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available.

DOT

IATA; IMDG

Marine pollutant

15. Regulatory information

US federal regulations

This product is a U.S. EPA registered pesticide.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

Ethanol (CAS 64-17-5) Low priority

FIFRA Information This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Signal word DANGER

Hazard statement Corrosive.
Causes irreversible eye damage and skin burns.
May be fatal if swallowed or absorbed through skin.
This product is toxic to fish, aquatic invertebrates, oysters, and shrimp.

US state regulations

US - New Jersey RTK - Substances: Listed substance

Ethanol (CAS 64-17-5)

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Ethanol (CAS 64-17-5)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Ethanol (CAS 64-17-5)

US. Pennsylvania Worker and Community Right-to-Know Law

Ethanol (CAS 64-17-5)

US. Rhode Island RTK

Not regulated.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	09-10-2014
Revision date	03-21-2017
Version #	03
Disclaimer	Terms and Conditions. This SDS is designed only as guidance for the products to which it applies. To the greatest extent permitted by applicable law, nothing contained herein creates any legal obligation including contractual obligations, expressed or implied warranties, including any warranties of merchantibility or fitness for particular purpose; or confers any intellectual property rights, including rights to use trademarks or a license to use patents, issued or pending. The information contained herein is based on the manufacturer's own study and the work of others, and is subject to change at any time without further notice. There is no warranty, expressed or implied, as to the accuracy, completeness or adequacy of the information contained herein, and neither the provider nor the manufacturer (nor the agents, directors, officers, contractors or employees of either) are liable to any party for any damages of any nature, including direct, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy or furnishing of any information in this SDS, or in any other way related (directly or indirectly) to this SDS. The receipt and use of this information constitutes consent to these terms and conditions.
Revision information	Hazard(s) identification: Hazard statement Hazard(s) identification: Prevention Composition / Information on Ingredients: Disclosure Overrides Physical & Chemical Properties: Multiple Properties Regulatory information: California Prop 65 Other information, including date of preparation or last revision: Disclaimer HazReg Data: International Inventories GHS: Classification

Univar USA Inc Safety Data Sheet

3075 Highland Pkwy, Ste 200, Downers Grove, IL 60515
(425) 889 3400

Emergency Assistance

For emergency assistance involving chemicals call
Chemtrec - (800) 424-9300

SAFETY DATA SHEET

1. Identification

Product identifier	**Sodium Hypochlorite Solution 5-17%**
Other means of identification	None.
Recommended use	Swimming pool chlorinator, hard surface cleaner, mildecide, Water treatment chemical, Biocides, bleach solutions and bleach fixer solutions
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Company name	KA Steel Chemicals, Inc
Address	1001 W. 31st Street Downers Grove, IL 60515
Telephone	630-257-3900
E-mail	http://www.kasteelchemicals.com/
Contact person	SDS Review Group
Emergency phone number	CHEMTREC (US) 1-800-424-9300 (Canada) 1-800-567-7455

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 2

OSHA defined hazards Not classified.

Label elements

Signal word	Danger
Hazard statement	May be corrosive to metals. Causes severe skin burns and eye damage. May cause respiratory irritation. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention	Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe mist or vapor. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Keep only in original container. Avoid release to the environment.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage. Collect spillage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information

Contact with acids liberates toxic gas.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Sodium hypochlorite	7681-52-9	5-17
Sodium hydroxide	1310-73-2	0.3-5

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Take off immediately all contaminated clothing. Wash off IMMEDIATELY with plenty of water for at least 15-20 minutes. Get medical attention immediately. Wash contaminated clothing before reuse. Call a physician or poison control center immediately.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed Treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. With eye exposure, continue flushing during transport to hospital.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire. Do not use dry extinguishing media that contains ammonium compounds.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Absorb spillage to prevent material damage. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of the SDS.

Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see Section 13 of the SDS.

Environmental precautions Do not discharge into drains, water courses or onto the ground. Environmental manager must be informed of all major releases.

7. Handling and storage

Precautions for safe handling Wear appropriate personal protective equipment. Do not get in eyes, on skin, on clothing. Use with adequate ventilation. Observe good industrial hygiene practices. Do not apply heat or direct sunlight. Temperature and product concentration affect product quality and decomposition rates.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Store in a cool and well-ventilated place. Store in a corrosive resistant container. Consult container manufacturer for additional guidance. Store away from and do not mix with incompatible materials such as acids, oxidizers, organics, reducing agents, and all metals except titanium.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
Sodium hypochlorite (CAS 7681-52-9)	STEL	2 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield. Wear a full-face respirator, if needed.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing. Reports indicate that sodium hypochlorite can react with various fabrics usually increasing with concentration. Reactions vary significantly depending on strength of chemical, material, fabric treatment and color of dyes. FRC treated cotton has a stronger response than plain cotton. Poly blend fabrics and meta aramid fabric have a weaker response than natural fibers. Contact the Personal Protective Equipment manufacturer for specific information about their products.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Color Not available.

Odor Pungent.

Odor threshold 0.9 mg/m³

pH 12 - 14 (25 °C/77 °F)

Melting point/freezing point	-4 °F (-20 °C) (7% solution)
Initial boiling point and boiling range	Not available.
Flash point	Not applicable.
Evaporation rate	No data available
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	12 mm Hg (20°C/68°F)
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Completely miscible
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Bulk density	Not applicable.
Molecular formula	NaOCl
Molecular weight	74.5 g/mol

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Avoid ultraviolet (UV) light sources. Excessive heat. Reacts violently with strong acids. Acid contact will produce chlorine gas. Amine contact will produce chloramines.
Incompatible materials	Strong oxidizing agents. Acids. Metals. Organic compounds. Ammonia.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapors and spray mist may irritate throat and respiratory system and cause coughing.
Skin contact	Causes skin burns.
Eye contact	Causes eye burns.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.
Symptoms related to the physical, chemical and toxicological characteristics	Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Occupational exposure to the substance or mixture may cause adverse effects.

Product	Species	Test Results
Sodium Hypochlorite Solution 5-17% (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 2 g/kg
Oral		
LD50	Rat	3 - 5 g/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization This product is not expected to cause respiratory sensitization.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Sodium hypochlorite (CAS 7681-52-9) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not classified, however droplets of the product may be aspirated into the lungs through ingestion or vomiting and may cause a serious chemical pneumonia.

Chronic effects Prolonged or repeated overexposure causes lung damage.

Further information Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Product		Species	Test Results
Sodium Hypochlorite Solution 5-17%			
Aquatic			
Crustacea	LC50	Daphnia	1 mg/l
Fish	LC50	Bluegill (Lepomis macrochirus)	0.6 mg/l, 48 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available for this product.

Mobility in soil Not available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1791
UN proper shipping name	Hypochlorite solutions
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB3, N34, T4, TP2, TP24
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241

IATA

UN number	UN1791
UN proper shipping name	Hypochlorite solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Environmental hazards	Yes
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1791
UN proper shipping name	HYPOCHLORITE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA Hazardous Substance: Sodium Hypochlorite, CAS # 7681-52-9, RQ = 100 lbs

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2)	LISTED
Sodium hypochlorite (CAS 7681-52-9)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. New Jersey Worker and Community Right-to-Know Act

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. Rhode Island RTK

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	29-April-2014
Revision date	10-June-2015
Version #	02
List of abbreviations	LD50: Lethal Dose, 50%. LC50: Lethal Concentration, 50%. EC50: Effective concentration, 50%. TWA: Time weighted average.
References	EPA: AQUIRE database HSDB® - Hazardous Substances Data Bank US. IARC Monographs on Occupational Exposures to Chemical Agents IARC Monographs. Overall Evaluation of Carcinogenicity ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
Disclaimer	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Univar USA Inc Safety Data Sheet

For Additional Information contact SDS Coordinator during business hours, Pacific time: (425) 889-3400

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This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process

SAFETY DATA SHEET

1. Identification

Product identifier **BIO-SOFT N-901**

Other means of identification

Product code 8331

Recommended use Surfactant

Recommended restrictions For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Stepan Company

Address 22 West Frontage Road
Northfield, IL 60093
USA

Telephone General 1-847-446-7500

E-mail Not available.

Emergency phone number Medical 1-800-228-5635
Chemtrec 1-800-424-9300
Chemtrec Int'l +1 703-527-3887

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 1

Environmental hazards Hazardous to the aquatic environment, acute hazard Category 2

Hazardous to the aquatic environment, long-term hazard Category 3

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes skin irritation. Causes serious eye damage. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Wash thoroughly after handling. Avoid release to the environment. Wear protective gloves. Wear eye/face protection.

Response If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment (see this label). If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Storage Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Alcohols, C9-11, ethoxylated		68439-46-3	80 - < 90
_Alcohols, C12-13, ethoxylated		66455-14-9	5 - < 10
Water		7732-18-5	3 - < 5
Other components below reportable levels			< 0.1

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion Rinse mouth. Get medical attention if symptoms occur. Do not induce vomiting without advice from poison control center.

Most important symptoms/effects, acute and delayed Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Prevent product from entering drains. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Do not get this material in contact with eyes. Avoid contact with skin. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Wear protective gloves.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Clear to slightly hazy.
Physical state	Liquid.
Form	Not available.
Color	Colorless.
Odor	Mild.
Odor threshold	Not available.
pH	5.5 - 7.5 (1% aqueous)
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	> 201.0 °F (> 93.9 °C) Pensky-Martens Closed Cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.

Solubility(ies)

Solubility (water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	47 cP @ 25C

Other information

Density	8.19 lb/gal @ 25C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Not available.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
BIO-SOFT N-901		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg ATE mix
Oral		
LD50	Rat	> 2000 mg/kg ATE mix

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not applicable.
Specific target organ toxicity - repeated exposure	Not applicable.
Aspiration hazard	Not applicable.

12. Ecological information

Ecotoxicity	Toxic to aquatic life. Harmful to aquatic life with long lasting effects.
Persistence and degradability	Expected to be readily biodegradable.

Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

UN number	UN3082
UN proper shipping name	Environmentally Hazardous Substance, Liquid, N.O.S. (Alcohols C12-16 Poly (1-6) Ethoxylate)
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN3082
UN proper shipping name	Environmentally Hazardous Substance, Liquid, N.O.S. (Alcohol C12-16 Poly (1-6) Ethoxylate), MARINE POLLUTANT
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available.

IATA; IMDG

Marine pollutant

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Not regulated.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

WARNING: This product may contain a chemical known to the State of California to cause cancer and birth defects or other reproductive harm: ethylene oxide (75-21-8).

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

1,4-dioxane (CAS 123-91-1)	Listed: January 1, 1988
Acetaldehyde (CAS 75-07-0)	Listed: April 1, 1988

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 04-01-2016

Revision date 04-01-2016

Version # 01

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SAFETY DATA SHEET

1. Identification

Product identifier	**AMMONYX LO**
Other means of identification	
Product code	1928
Recommended use	Surfactant
Recommended restrictions	For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Stepan Company	
Address	22 West Frontage Road Northfield, IL 60093 USA	
Telephone	General	1-847-446-7500
E-mail	Not available.	
Emergency phone number	Medical	1-800-228-5635
	Chemtrec	1-800-424-9300
	Chemtrec Int'l	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention	Wear eye/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves.
Response	If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment (see this label). Rinse mouth. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. Collect spillage.
Storage	Store away from incompatible materials.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Water		7732-18-5	70 - < 80
_Lauramine Oxide		1643-20-5	20 - 24
_Dimethyltetradecylamine oxide		3332-27-2	5 - 9
Other components below reportable levels			< 0.1

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion Rinse mouth. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Do not induce vomiting.

Most important symptoms/effects, acute and delayed Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling
Do not get this material in contact with eyes. Do not taste or swallow. Avoid contact with skin. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities
Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits
No exposure limits noted for ingredient(s).

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Hand protection
Wear appropriate chemical resistant gloves.

Other
Wear appropriate chemical resistant clothing.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state
Liquid.

Form
Liquid.

Color
Light yellow.

Odor
Not available.

Odor threshold
Not available.

pH
7 - 8.5 (10% in H2O)

Melting point/freezing point
Not available.

Initial boiling point and boiling range
212 °F (100 °C)

Flash point
> 201.0 °F (> 93.9 °C) Pensky-Martens Closed Cup

Evaporation rate
Estimated slower than ethyl ether

Flammability (solid, gas)
Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)
Not available.

Flammability limit - upper (%)
Not available.

Explosive limit - lower (%)
Not available.

Explosive limit - upper (%)
Not available.

Vapor pressure
Not available.

Vapor density
Estimated lighter than air

Relative density
Not available.

Solubility(ies)

Solubility (water)
Not available.

Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	18 cP @ 25C
Other information	
Density	8.05 lb/gal @ 25C
Pour point	10 °F (-12.22 °C)
Specific gravity	0.96 @ 25C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Nitrous acid and other nitrosating agents
Hazardous decomposition products	Upon decomposition, this product may yield oxides of nitrogen and ammonia, carbon dioxide, carbon monoxide and other low molecular weight hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Harmful if swallowed.

Product	Species	Test Results
AMMONYX LO		
Acute		
Dermal		
Liquid		
LD50	Rabbit	> 2000 mg/kg
Oral		
Liquid		
LD50	Rat	> 1065 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization. Causes skin irritation.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not applicable.
Specific target organ toxicity - repeated exposure	Not applicable.
Aspiration hazard	Not applicable.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Product		Species	Test Results
AMMONYX LO			
Aquatic			
Acute			
Algae	EC50	Algae	0.19 mg/l, 72 hours
Crustacea	EC50	Daphnia	3.1 mg/l, 48 hours
Fish	LC50	Fish	2.67 mg/l, 96 hours

Persistence and degradability	Expected to be readily biodegradable.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

UN number	UN3082
UN proper shipping name	Environmentally Hazardous Substance, Liquid, N.O.S. (Lauramine/Dimethyltetradecylamine Oxide)
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN3082
UN proper shipping name	Environmentally Hazardous Substance, Liquid, N.O.S. (Lauramine/Dimethyltetradecylamine Oxide), MARINE POLLUTANT
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes

EmS Not available.

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

IATA; IMDG

Marine pollutant

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Not regulated.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. Rhode Island RTK

Not regulated.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 05-23-2014

Revision date 06-30-2017

Version # 05

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Revision information Transport Information: Material Transportation Information

Material Safety Data Sheet

LA0644
Alcohol Dag 2-H Anhydrous

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA0644
Product Name: Alcohol Dag 2-H Anhydrous
Synonyms: None
Chemical Family: Alcohol
Application: Alcohol fuel

Distributed By:

Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Univar USA.
6100 Carillon Point
Kirkland, WA 98003
USA.

24-Hour Emergency Telephone Number (CHEMTREC): (800) 424-9300

Preparation date of MSDS: 04/30/2003

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.

Telephone number of preparer (Canada): 1-866-686-4827

Univar USA. Inc. Corporate Office Number: (425) 889-3400

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components:

Ingredients	Percent	LD50s and LC50s Route & Species:
Ethanol 64-17-5	90	Inhalation LC50 (Rat) 20000 ppm/10H Oral LD50 (Mouse) 3450 mg/kg Inhalation LC50 (Mouse) 39 gm/m3/4H Oral LD50 (Rat) 7060 mg/kg

Ethyl Acetate 141-78-6	5	Inhalation LC50 (Rat) 200 gm/m3 Oral LD50 (Mouse) 4100 mg/kg Inhalation LC50 (Mouse) 45 gm/m3/2H Oral LD50 (Rat) 5620 mg/kg Dermal LD50 (Rabbit) 20 mL/kg
Methanol 67-56-1	5	Dermal LD50 (Rabbit) 15800 mg/kg Oral LD50 (Rat) 5628 mg/kg Inhalation LC50 (Rat) 64000 ppm/4H Oral LD50 (Mouse) 7300 mg/kg

Notes: No additional remark.

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:

Eye Contact: Causes moderate to severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva.

Skin Contact: Causes mild skin irritation. May be absorbed through the skin and contribute to the symptoms listed under ingestion. May cause dermatitis, prolonged or repeated contact may cause skin sensitization.

Inhalation: High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.

Ingestion: May cause nausea, abominal discomfort, vomiting, diarrhea, dizziness, drowsiness, faintness, lack of coordination and unconsciousness.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with copious quantities of water for at least 20 minutes holding lids apart to ensure flushing of the entire surface. Seek immediate medical attention.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Get medical attention immediately.

Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.

Notes To Physician: Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE FIGHTING MEASURES

Flash Point (C): 13 **(F):** 55.4
Flash Point Method: Closed cup.
Autoignition Temperature (C): 422 **(F):** 791.6
Flammable Limits in Air - Lower (%): 4.3
Flammable Limits in Air - Upper (%): 19

Extinguishing Media: Use DRY chemicals, CO2, alcohol foam or water spray.

Special Exposure Hazards: Use water spray to cool fire-exposed containers and structures. Use water spray to disperse vapors; re-ignition is possible. Vapors form from this product and may travel or be moved by air currents and ignited by

pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point.

Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.

NFPA RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 3 , REACTIVITY 0

HMIS RATINGS FOR THIS PRODUCT ARE: HEALTH 2, FLAMMABILITY 3 , REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

Procedure for Clean Up: Absorb with an inert dry material and place in an appropriate waste disposal container. Avoid direct contact with material. Isolate hazard area and restrict access. Prevent spilled material from entering sewers, confined spaces, drains, or waterways. Wear appropriate breathing apparatus (if applicable) and protective clothing.

Personal Precautionary Measures: Wear appropriate protective equipment.

Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Consult local authorities.

7. HANDLING AND STORAGE

Handling: Keep away from heat, sparks and flame. Keep the containers closed when not in use. Use with adequate ventilation. Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Bond and ground containers during transfer operations.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Store in accordance with good industrial practices. Place away from incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Local exhaust ventilation as necessary to maintain exposures to within applicable limits.

Respiratory Protection: If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator. In case of spill or leak resulting in unknown concentration, use NIOSH approved supplied air respirator.

Gloves: Neoprene gloves. Rubber gloves. Butyl rubber gloves.

Skin Protection: Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Hazardous Components:

Ingredients	Percent	Exposure Limit - ACGIH	Exposure Limit - OSHA
Ethanol 64-17-5	90	= 1000 ppm TWA	1000 ppm TWA 1900 mg/m³ TWA
Ethyl Acetate 141-78-6	5	400 ppm TWA	1400 mg/m³ TWA 400 ppm TWA

Methanol 67-56-1	5	200 ppm TWA 250 ppm STEL	200 ppm TWA 260 mg/m³ TWA 250 ppm STEL 325 mg/m³ STEL

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Colourless
Odor:	Alcohol
pH	Not Available.
Specific Gravity:	0.788
Boiling Point (C):	78.5 **(F):** 173.3
Freezing/Melting Point (C):	-117 **(F):** -178.6
Vapor Pressure:	5.9 kPa
Vapor Density:	1.6
% Volatile by Volume:	100%
Evaporation Rate:	1.7
Solubility:	Soluble.
VOCs (lbs/gallon):	Not Available.
Viscosity:	Not Available.
Molecular Weight:	Not available.

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	Avoid excessive heat, open flames and all ignition sources.
Materials to Avoid:	Strong acids. Strong oxidizers. Chlorine.
Hazardous Decomposition Products:	Carbon monoxide. Carbon dioxide. Irritating fumes and gases.
Additional Information:	No additional remark.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion:	May cause nausea, abominal discomfort, vomiting, diarrhea, dizziness, drowsiness, faintness, lack of coordination and unconsciousness.
Skin Contact:	Causes mild skin irritation. May be absorbed through the skin and contribute to the symptoms listed under ingestion. May cause dermatitis, prolonged or repeated contact may cause skin sensitization.
Inhalation:	High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Eye Contact:	Causes moderate to severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva.
Other:	Synergistic effects between ethanol and many chemicals have been related to the ingestion of ethanol. Occupational exposures are anticipated to be much lower and therefore the effects would be substantially reduced. Synergistic materials include many alcohols, ketones, hydrocarbons and metals. Long term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis. Long term exposure to methanol has been associated with headaches, giddiness, conjunctivitis, insomnia and impaired vision. Repeated exposure to ethanol may exacerbate liver injury produced from other causes.

Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Hazardous Components:

Ingredients	Percent	IARC - Group 1 (carcinogenic to humans)	IARC - Group 2A (Probably carcinogenic)	IARC - Group 2B (Possibly carcinogenic)	IARC - Group 3 (not classifiable)	IARC - Group 4 (probably not carcinogen)
Ethanol 64-17-5	90	Not Listed.	Not Listed.	Not listed.	Not listed.	Not listed.
Ethyl Acetate 141-78-6	5	Not Listed.	Not Listed.	Not listed.	Not listed.	Not listed.
Methanol 67-56-1	5	Not Listed.	Not Listed.	Not listed.	Not listed.	Not listed.

Hazardous Components:

Ingredients	Percent	ACGIH 2000 - Carcinogens
Ethanol 64-17-5	90	A4 - Not Classifiable as a Human Carcinogen
Ethyl Acetate 141-78-6	5	Not listed.
Methanol 67-56-1	5	Not listed.

Carcinogenicity Comment: No additional information available.

Genotoxicity: Not Available.
Reproductive/Developmental Toxicity: Not Available.
Teratogenicity: Not Available.
Embryotoxicity: Not Available.
Mutagenicity: Ethanol has been shown to produce mutagenic effects in live animals.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Hazardous Components:

Ingredients	Percent	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Ethanol 64-17-5	90	24 Hr LC50 (fingerling trout) 11200 mg/L 96 Hr LC50 (rainbow trout (30 days old)) 12900 mg/L 96 Hr LC50 (fathead minnow) 14200 mg/L	Not Available.	Not Available.
Ethyl Acetate 141-78-6	5	96 Hr LC50 (fathead minnow) 230 mg/L	Not Available.	Not Available.
Methanol 67-56-1	5	96 Hr LC50 (rainbow trout (fingerling)) 13 mg/L 96 Hr LC50 (fathead minnow (28 days old)) 29400 mg/L 48 Hr LC50 (trout) 8000 mg/L	Not Available.	Not Available.

Other Information: No additional remark.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method:
Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

Contaminated Packaging:
Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):

DOT Shipping Name:	Alcohols, flammable, toxic, n.o.s. (Methanol)
DOT Hazardous Class	3 (6.1)
DOT UN Number:	UN1986
DOT Packing Group:	II
DOT Reportable Quantity (lbs):	Not applicable.
Marine Pollutant:	No.

ICAO/IATA:

IATA Proper Shipping Name:	Alcohols, flammable, toxic, n.o.s. (Methanol)
IATA Hazard Class:	3 (6.1)
UN/NA Number:	UN1986
Packing Group:	II
IATA Label:	Flammable liquid. Toxic.
Remarks:	No additional remark.

IMDG:

IMDG Proper Shipping Name:	Alcohols, flammable, toxic, n.o.s. (Methanol)
Hazard Class:	3 (6.1)
Packing Group:	II
Marine Pollutant:	No.
IMDG Label:	Flammable liquid. Toxic.

Remarks: No additional remark.

TDG (Canada):

TDG Proper Shipping Name: ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. (methanol)
Hazard Class: 3 (6.1)
UN Number: UN1986
Packing Group: II
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on theToxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL) or the Non-Domestic Substances List (NDSL) or exempt.

U.S. Regulatory Rules

Hazardous Components:

Ingredients	Percent	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Ethanol 64-17-5	90	Not Listed.	Not Listed.	Not Listed.
Ethyl Acetate 141-78-6	5	Not Listed.	LISTED	Not Listed.
Methanol 67-56-1	5	Not Listed.	LISTED	LISTED

California Proposition 65: Listed.

MA Right to Know List: Listed.

New Jersey Right-to-Know List: Listed.

Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class

B2 FLAMMABLE LIQUIDS
D1A VERY TOXIC MATERIALS
D2B TOXIC MATERIALS

16. OTHER INFORMATION

Additional Information: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS containsall the information required by the CPR.

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*****END OF MSDS*****