Material Safety Data Sheet

Material Name: Oxalic Acid Dihydrate ID: C1-128

* * * Section 1 - Chemical Product and Company Identification * * *

Chemical Name: Oxalic Acid Dihydrate
Product Use: For Commercial Use
Synonyms: Acide Oxalique, Ethanedioic acid, Ethanedionic Acid, Dicarboxylic acid
Supplier Information

Chem One Ltd.
14140 Westfair East Drive
Houston, Texas 77041-1104

Phone: (713) 896-9966
Fax: (713) 896-7540
Emergency # (800) 424-9300 or (703) 527-3887

General Comments: FOR COMMERCIAL USE ONLY; NOT TO BE USED AS A PESTICIDE.

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

* * * Section 2 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
6153-56-6	Oxalic Acid Dihydrate	99-100

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Oxalic Acid (144-62-7) or Ethanedioic acid.

Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

* * * Section 3 - Hazards Identification * * *

Emergency Overview

Oxalic Acid Dihydrate is a colorless, odorless, crystalline solid. Potentially fatal if swallowed or inhaled. Can cause discoloration, irritation and burns of the skin. Can cause permanent damage to the eyes. Can cause severe irritation of the respiratory system. Emergency responders must wear proper personal protective equipment for the incident to which they are responding. Large amounts or airborne dusts of Oxalic Acid can present an air/dust explosion hazard.

Hazard Statements

DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. Can cause burns of eyes and skin. May cause respiratory tract irritation. Avoid contact with eyes and skin. Avoid breathing dusts. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Keep from contact with clothing and other combustible materials.

Potential Health Effects: Eyes

Contact with the eyes will cause severe irritation, pain, reddening and possibly, damage to the cornea. Depending on the duration of eye contact, damage to the cornea may be irreversible.

Potential Health Effects: Skin

Product can act as a corrosive agent to the skin, especially if contact is prolonged. Repeated or prolonged skin exposure can cause dermatitis and slow healing ulcers. Excessive contact may produce a delayed localized pain and discoloration of the skin with the fingernails becoming brittle and blue with possible gangrenous ulcerations of the skin. Oxalic Acid may be absorbed via intact skin. Chronic skin absorption of Oxalic Acid can lead to formation of kidney and urinary tract stones.

Potential Health Effects: Ingestion

May irritate and cause burns of the mouth and throat. Symptoms may include burning pain of the mouth, throat and stomach followed by profuse vomiting. Small doses may cause headache, pain and twitching in muscles and cramps, while larger doses can cause weak and irregular heartbeat, drop in blood pressure and signs of heart failure. The fatal adult human oral dose is estimated at 5 grams (0.18 oz). Death occurs rapidly. A delayed effect of ingestion is kidney damage, possibly leading to renal failure. Chronic ingestion exposure to solutions of Oxalic Acid is linked to stone formation in the kidneys and urinary tract, resulting in difficult and painful urination and painful abdominal spasms during passing of stones.

Potential Health Effects: Inhalation

May irritate the nose, throat and respiratory tract with symptoms such as sore throat, coughing and difficulty breathing. May cause inflammation of the respiratory tract. Chronic inhalation of Oxalic Acid can result in formation of kidney and urinary tract stones.

HMIS Ratings: Health Hazard: 3* **Fire Hazard:** 1 **Physical Hazard:** 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

In case of contact with eyes, rinse immediately with plenty of water for at least 15 minutes. Seek immediate medical attention if any adverse effect occurs.

First Aid: Skin

Remove all contaminated clothing. For skin contact, wash extremely thoroughly with soap and water. Seek immediate medical attention if irritation develops or persists.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Have victim rinse mouth thoroughly with water, if conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center immediately.

First Aid: Inhalation

Remove source of contamination or move victim to fresh air Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or 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. Administer oxygen if breathing is difficult. Get immediate medical attention.

First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically. Treatment should be rapidly instituted by giving a dilute solution of calcium lactate, lime water, finely pulverized chalk, plaster, and/or milk to supply large amounts of calcium to inactivate oxalate by forming an insoluble calcium salt in the stomach. Gastric lavage is controversial, since this may compound an already severe corrosive lesion in the esophagus or stomach. However, if used, gastric lavage should be done with limewater (calcium hydroxide). Intravenous gluconate or calcium chloride solutions should be given to prevent hypocalcemic tetany; in severe cases parathyroid extract also has been given. Additionally, acute renal failure should be anticipated, and careful fluid management is necessary. Metabolically its toxicity is believed to be due to the capacity of Oxalic Acid to immobilize calcium and thus upset the calcium-potassium ratio in critical tissues. Effective therapy against burns from oxalic acid involves replacement of calcium.

* * * Section 5 - Fire Fighting Measures * * *

Flash Point: Not available
Method Used: Not applicable
Upper Flammable Limit (UEL): Not applicable
Lower Flammable Limit (LEL): Not applicable
Auto Ignition: Not applicable
Flammability Classification: Not applicable
Rate of Burning: Not applicable

General Fire Hazards

Oxalic Acid Dihydrate is a combustible solid, but must be substantially preheated before it ignites. This product is corrosive and presents a severe inhalation and contact hazard to firefighters. When involved in a fire, this material may decompose and produce irritating and toxic gases (e.g., carbon monoxide, carbon dioxide and formic acid). Finely divided dusts of this material may cause a hazard of an air/dust explosion. Large dust clouds from product have the potential to ignite explosively. Refer to NFPA 654, *Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids*, for comprehensive guidance.

Hazardous Combustion Products

Formic acid, carbon dioxide, carbon monoxide.

Extinguishing Media

Use water spray, dry chemical, “alcohol resistant” foam, or carbon dioxide. Reduce dusts with water spray.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self-contained breathing apparatus. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. If possible, prevent runoff water from entering storm drains, bodies of water or other environmentally sensitive areas.

NFPA Ratings: Health: 3 **Fire:** 1 **Reactivity:** 0 **Other:**
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

* * * Section 6 - Accidental Release Measures * * *

Containment Procedures

Stop the flow of material, if this can be done without risk. Contain the discharged material. If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with product (see Section 10 for incompatibility information).

* * * Section 6 - Accidental Release Measures (Continued) * * *

Clean-Up Procedures

Wear appropriate protective equipment and clothing during clean-up. Sweep or vacuum spilled solid, minimizing generation of particulates. (Use an explosion-proof vacuum). Place the material in a suitable container and dispose of in accordance with applicable U.S. Federal, State, or local procedures. Thoroughly wash the area after a spill or leak clean-up. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater.

Evacuation Procedures

Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. Keep materials which can burn away from spilled material. In case of large spills, follow all facility emergency response procedures.

Special Procedures

Remove soiled clothing and launder before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

All employees who handle this material should be trained to handle it safely. Do not breath the dust. Avoid all contact with skin and eyes. Use this product only with adequate ventilation. Wash thoroughly after handling. Areas in which this compound is used should be wiped down periodically so that this substance is not allowed to accumulate. 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.

Storage Procedures

Keep container tightly closed when not in use. If this product is transferred into another container, only use portable containers and tools approved for corrosive solids. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Refer to NFPA 654, *Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids* for additional information on storage. Containers of this material should be separated from oxygen, or other oxidizers, by a minimum distance of 20 ft., or by a barrier of non-combustible material at least 5 ft. high, having a fire-resistance rating of at least 0.5 hours. Additional information can be found the OSHA Safety and Health Information Bulletin: *Combustible Dust in Industry: Preventing and Mitigating the Effects of Fire and Explosions.* Use only appropriately classified electrical equipment and powered industrial trucks. Floors should be sealed to prevent absorption of this material. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers). Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area.

Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Never store food, feed, or drinking water in containers which held this product. Keep this material away from food, drink and animal feed. Do not store this material in open or unlabeled containers. Limit quantity of material stored.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Exposure Guidelines

A: General Product Information

Follow the applicable exposure limits. Use a non-sparking, grounded, explosion-proof ventilation system separate from other exhaust ventilation systems. 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).

B: Component Exposure LimitsThe exposure limits given are for Oxalic Acid (CAS # 144-62-7)

ACGIH: 1 mg/m^3 TWA
2 mg/m^3 STEL

OSHA: 1 mg/m^3 TWA
NIOSH: 1 mg/m^3 TWA
2 mg/m^3 STEL

Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement. Provide dust collectors with explosion vents.

PERSONAL PROTECTIVE EQUIPMENT

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent Standards of Canada. Please reference applicable regulations and standards for relevant details.

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields (or goggles) and a face shield, if this material is made into solution. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin

Wear impervious gloves, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

* * * Section 8 - Exposure Controls / Personal Protection (Continued) * * *

Personal Protective Equipment: Respiratory

If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. The following NIOSH Guidelines for Oxalic Acid (CAS # 144-62-7) are presented for further information.

Up to 25 mg/m^3: SAR operated in a continuous in a continuous-flow mode

Up to 50 mg/m^3: Full-facepiece respirator with high-efficiency particulate filter(s), or full-facepiece SCBA or full-facepiece SAR.

Up to 500 mg/m^3: Positive pressure SAR with full facepiece.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA, or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Full-facepiece respirator with high-efficiency particulate filter(s), or escape-type SCBA.

NOTE: The IDLH concentration for Oxalic Acid is 500 mg/m^3. This substance causes eye irritation or damage, eye protection is needed.

Personal Protective Equipment: General

Have an eyewash fountain and safety shower available in the work area

* * * Section 9 - Physical & Chemical Properties * * *

Physical Properties: Additional Information

The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

Appearance:	Colorless, transparent	**Odor:**	Odorless
Physical State:	Solid	**pH:**	1.3 (0.1M solution)
Vapor Pressure:	< 0.001 mm Hg @ 20 deg C	**Vapor Density:**	4.3
Boiling Point:	149-160 deg C (300-320 deg F)	**Freezing/Melting Point:**	101.5 deg C (215 deg F)
Solubility (H2O):	Freely soluble in water	**Specific Gravity:**	1.65 (H2O = 1)
Softening Point:	Not available	**Particle Size:**	Not available
Molecular Weight:	126.7	**Bulk Density:**	Not available
		Chemical Formula:	(COOH)2*2H2O

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

Normally stable. If heated to melting point, sublimation and decomposition occurs.

Chemical Stability: Conditions to Avoid

Avoid high temperatures and ignition sources.

Incompatibility

This product is incompatible with strong alkalines, strong oxidizers, chlorites and hypochlorites and combustible materials. In contact with iron and iron compounds, Oxalic Acid, Dihydrate may react rapidly to form ferric oxalate. Contact with silver may form explosive silver oxalate. Oxalic Acid Dihydrate in solution is corrosive to metals.

Hazardous Decomposition

Upon heating, water, carbon monoxide, carbon dioxide and formic acid are released.

Hazardous Polymerization

Will not occur.

* * * Section 11 - Toxicological Information * * *

Acute and Chronic Toxicity

A: General Product Information

Acute toxicity is primarily due to its caustic (alkaline properties). Oxalic Acid Dihydrate is a corrosive solid and contact can cause eye and skin irritation and burns. Product is a respiratory tract irritant, and inhalation may cause nose irritation, sore throat, coughing, and chest tightness and possibly, burns to the respiratory system. Inhaling large amounts of vapor from solution or swallowing dust or particulates can cause stomach pain, vomiting, coma and death.

Chronic: Repeated or prolonged skin exposure can cause dermatitis and slow healing ulcers. Severe cases may show symptoms such as albuminuria, chronic cough, vomiting, pain in back, and gradual emaciation and weakness. The skin may be bluish in color and the nails brittle and yellow. Long term ingestion, skin absorption or inhalation overexposure can cause stone formation in the kidney and urinary tract.

This compound was tested, per the July 1992 OECD Guideline for testing of Chemicals, Number 404, "Acute Dermal Irritation/Corrosion". In these tests on intact skin of adult rabbits, erythema and edema were absent, with a test duration time of 3 minutes and 1 hour. With a 4 hour exposure, erythema was absent to very slight at one hour post patch removal and cleared by 24 hours. Edema was absent at all observation intervals. During the course of the study, no abnormal systemic effects were observed and the body weight changes of the test animals were normal.

B: Component Analysis - LD50/LC50

Oxalic Acid Dihydrate:

Skin-Rabbit, adult 500 mg/24 hours Mild irritation effects; Eye effects-Rabbit, adult 250 mg/24 hours Severe irritation effects; Eye effects-Rabbit, adult 100 mg/4 seconds: rns Severe irritation effects ; Intraperitoneal-Mouse LD_{50}: 270 mg/kg; Oral-Rat LD_{50}: 7500 mg/kg; Unreported-rat LD_{50}: 1400 mg/kg

C: Component Analysis - TDLo/LDLo

Oxalic Acid Dihydrate:

Oral-woman LDLo: 600 mg/kg: Gastrointestinal: changes in structure or function of esophagus, hypermotility, diarrhea, other changes; Oral-rat TDLo: 175 gm/kg/70 days-continuous: Endocrine: changes in thyroid weight; Musculoskeletal: other changes; Oral-dog LDLo: 1 gm/kg; Subcutaneous-Frog, adult LDLo 757 mg/kg

Carcinogenicity

A: General Product Information

No information available.

B: Component Carcinogenicity

Oxalic Acid Dihydrate is not listed by any agency as to carcinogenicity.

Epidemiology

No information available.

Neurotoxicity

Prolonged or repeated exposure may result in deposits of calcium oxalate in the kidney tubules and the brain, with effects on the cardiac and nervous tissues.

Mutagenicity

No information available.

Teratogenicity

No information available.

Other Toxicological Information

None.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Persistence: If released to soil, Oxalic Acid Dihydrate will be mobile in soil and is likely to leach to groundwater. Biodegrades at moderate rate. Rapid volatilization from soil is not expected. If released to an aquatic environment, Oxalic Acid Dihydrate is essentially nonvolatile from water. Oxalic Acid Dihydrate may react slowly in water with photochemically produced OH radicals, but it expected to be removed rapidly from surface water by direct photolysis. The daytime persistence of Oxalic Acid Dihydrate is not expected to be more than several hours. If released to the atmosphere, Oxalic Acid Dihydrate is expected to exist solely in the vapor phase. In the vapor phase, Oxalic Acid Dihydrate is very slowly degraded by reaction with photochemically formed hydroxyl radicals. The half-life for this reaction in air is estimated to be about 223 days. As in an aquatic environment, the persistence of Oxalic Acid Dihydrate during daylight is not expected to be more than a few hours. Based on its high water solubility, removal from air via wet deposition is likely to occur. Oxalic Acid Dihydrate may also be removed from dry air via dry deposition. Oxalic Acid Dihydrate is not expected to bioconcentrate significantly in aquatic organisms.

* * * Section 12 - Ecological Information (Continued) * * *

B: Ecotoxicity

Oxalic Acid (144-62-7)

EC_0 (*Pseudomonas putida*) 16 hours = 1,550 mg/L; EC_0 (*Microcystis aeruginosa* algae) 8 hours = 80 mg/L; EC_0 (*Scenedesmus quadricauda* green algae) 7 days = 790 mg/L; EC_0 (*Entosiphon sulcatum* protozoa) 72 hours = 222 mg/L; perturbation level (*Gammarus pulex*) = 25 mg/L; perturbation level (*Vorticella campanula*) = 50 mg/L; perturbation level (*Paramecium caudatum*) = 50 mg/L; perturbation level (*Tubifex tubifex*) = 80 mg/L; perturbation level (*Limnaea ovata*) = 60 mg/L; perturbation level (*Sialis flavilatera*) = 1,000 mg/L; period of survival (goldfish) 0.40–0.5 hour = 1,000 ppm, pH: 2.6; period of survival (goldfish) 4 days = 200 ppm, pH: 5.3

Environmental Fate

No potential for food chain concentration.

* * * Section 13 - Disposal Considerations * * *

US EPA Waste Number & Descriptions

A: General Product Information

As shipped, this product is not considered a hazardous waste. Solutions of Oxalic Acid Dihydrate may require an EPA waste code D002 for corrosivity.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations or with regulations of Canada and its Provinces. This material can be converted to a less hazardous material by weak reducing agents followed by neutralization.

* * * Section 14 - Transportation Information * * *

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under I.M.O., I.C.A.O. (I.A.T.A.) and 49 CFR to assure regulatory compliance.

US DOT Information

Shipping Name: Not Applicable
Hazard Class: Not Applicable
UN/NA #: Not Applicable
Packing Group: Not Applicable
Required Label(s): Not Applicable
RQ Quantity: Not Applicable

50th Edition International Air Transport Association (IATA):

For Shipments by Air transport: This information applies to air shipments both within the U.S. and for shipments originating in the U.S., but being shipped to a different country.

UN/NA #: UN 3077
Proper Shipping Name: Environmentally Hazardous Substance, solid, n.o.s. (Oxalic Acid Dihydrate)
Hazard Class: 9 (Miscellaneous Dangerous Goods)
Packing Group: III
Passenger & Cargo Aircraft Packing Instruction: 911
Passenger & Cargo Aircraft Maximum Net Quantity: 400 kg
Limited Quantity Packing Instruction (Passenger & Cargo Aircraft): Y911
Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft): 30 kg G
Cargo Aircraft Only Packing Instruction: 911
Cargo Aircraft Only Maximum Net Quantity: 400 kg
Excepted Quantities: E1
Special Provisions: A97, A158
ERG Code: 9L

Limited Quantity Shipments: Shipments for air must be marked with the Proper Shipping Name Environmentally Hazardous Substance, solid, n.o.s. (Oxalic Acid Dihydrate) and shall be marked with the UN Number (3077) preceded by the letters "UN", placed within a diamond. The width of the line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. The total weight of each outer packaging cannot exceed 30 kg.

Excepted Quantities: The maximum quantity of this material per inner receptacle is limited to 30 g per receptacle and the aggregate quantity of this material per completed package does not exceed 1kg. The inner receptacles must be securely packed in an

intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg. The completed package must meet a drop test. The requirements are found in 2.7.6.1. The package must not be opened or otherwise altered until it is no longer in commerce. For air transportation no shipping paper is required. The package must be legibly marked with the following marking:

NOTE: The "*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "**" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.

* * * Section 14 - Transportation Information (Continued) * * *

International Maritime Organization (I.M.O.) Classification

For shipments via marine vessel transport, the following classification information applies.

Proper Shipping Name: Not Regulated
Hazard Class: Not Applicable
UN/NA #: Not Applicable
Packing Group: Not Applicable
Special Provisions: Not Applicable
Limited Quantities: Not Applicable
Packing Instructions: Not Applicable
EmS: Not Applicable
Stowage and Segregation: Not Applicable

While the solid form of this material is not regulated, solutions of Oxalic Acid Dihydrate may meet the criteria for corrosive liquid under transportation regulations and should be tested for applicability of hazardous material transportation regulations.

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

A: General Product Information

No additional information.

B: Component Analysis

Oxalic Acid Dihydrate is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

Oxalic Acid Dihydrate (6153-56-6)

CERCLA: Final RQ = Not Applicable

SARA 302 (EHS TPQ) There are no specific Threshold Planning Quantities for Oxalic Acid. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4,540 kg) therefore applies, per 40 CFR 370.20.

C: Sara 311/312 Tier II Hazard Ratings:

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Oxalic Acid Dihydrate	6153-56-6	No	No	No	Yes	Yes
Oxalic Acid	144-62-7	No	No	No	Yes	Yes

State Regulations

A: General Product Information

California Proposition 65

Oxalic Acid Dihydrate is not on the California Proposition 65 chemical lists.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substance lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Oxalic Acid Dihydrate	6153-56-6	No	No	No	No	No	Yes
Oxalic Acid	144-62-7	Yes	Yes	Yes	Yes	Yes	Yes

* * * Section 15 - Regulatory Information (Continued) * * *

Other Regulations

A: General Product Information

Component regulatory information lists CAS # 144-62-7 for Oxalic Acid, Anhydrous. This CAS number will predominate as the regulatory reference for Oxalic Acid Dihydrate; although CAS # 6153-56-6 also occasionally appears in non-regulatory literature representing Oxalic Acid Dihydrate.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Oxalic Acid Dihydrate	6153-56-6	Yes	Yes	Yes
Oxalic Acid	144-62-7	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Oxalic Acid Dihydrate	6153-56-6	No disclosure limit
Oxalic Acid	144-62-7	1 percent

ANSI LABELING (Z129.1): **DANGER!** HARMFUL OR FATAL IF SWALLOWED. CAUSES SKIN AND EYE IRRITATION OR BURNS. HARMFUL IF INHALED. CHRONIC EXPOSURE MAY LEAD TO KIDNEY AND URINARY TRACT STONES. **MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING).** Keep from contact with clothing and other combustible materials. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing dusts or particulates. Keep container closed. Use only with adequate ventilation. Keep away from heat or flame. Keep container closed and grounded. Prevent dust accumulations to minimize explosion hazard Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH-approved respiratory protection, as Appropriate. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, dry chemical, CO_2, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with inert material. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

* * * Section 16 - Other Information * * *

Other Information

Chem One Ltd. ("Chem One") shall not be responsible for the use of any information, product, method, or apparatus herein presented ("Information"), and you must make your own determination as to its suitability and completeness for your own use, for the protection of the environment, and for health and safety purposes. You assume the entire risk of relying on this Information. In no event shall Chem One be responsible for damages of any nature whatsoever resulting from the use of this product or products, or reliance upon this Information. By providing this Information, Chem One neither can nor intends to control the method or manner by which you use, handle, store, or transport Chem One products. If any materials are mentioned that are not Chem One products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed. Chem One makes no representations or warranties, either express or implied of merchantability, fitness for a particular purpose or of any other nature regarding this information, and nothing herein waives any of Chem One's conditions of sale. This information could include technical inaccuracies or typographical errors. Chem One may make improvements and/or changes in the product (s) and/or the program (s) described in this information at any time. If you have any questions, please contact us at Tel. 713-896-9966 or E-mail us at Safety@chemone.com.

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

Contact: Sue Palmer-Koleman, PhD **Contact Phone:** (713) 896-9966

Revision Log

08/23/00 4:21 PM SEP Changed Company name , Sect 1 and 16, from Corporation to Ltd.
05/31/01 9:31 AM HDF Checked exposure limits; made changes to Sect 9; overall review; add SARA 311/312 Haz Ratings.
08/20/01 2:10 PM CLJ Changed contact to Sue, non-800 Chemtrec Num.

10/23/02 18:23 PM HDF Overall review and up-date.
06/22/05 9:27AM SEP update IATA Section 14
11/0906 3:19 pm SEP Section 3- added air/dust explosion staetment
10/18/07 4:34 PM SEP Updated IATA Section 14
10/15/08 9:02 AM DLY Changed Chem One Physical Address, Section 1
06/11/2010 SEP: Update IATA and air/dustexplosion hazard per OSHA guidelines

This is the end of MSDS # Cl-128