

Material Safety Data Sheet

Revision Issued: 6/21/2012 Supercedes: 2/24/2009 First Issued: 10/14/1998

Section I - Chemical Product And Company Identification

Product Name: Oxalic Acid

CAS Number: 144-62-7

HBCC MSDS No. CO02000



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Section II - Composition/Information On Ingredients

			Exposure Limits (TWAs) in Air		
Chemical Name	CAS Number	%	ACGIH TLV	OSHA PEL	STEL
Oxalic Acid	144-62-7	99-100	1 mg/m ³	1 mg/m ³	2 mg/m ³

Section III - Hazard Identification

Routes of Exposure: Inhalation, Ingestion, Skin, Eyes

Summary of Acute Health Hazards: Oxalic Acid is corrosive to tissue. When ingested, oxalic acid removes calcium from the blood. Kidney damage can be expected as the calcium is removed from the blood in the form of calcium oxalate. The calcium oxalate then obstructs the kidney tubules.

Ingestion: The fatal adult human oral dose is estimated at 5 grams (0.18 oz.). Death occurs rapidly. 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. A delayed effect of ingestion is kidney damage, possibly leading to renal 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.

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.

Skin: Product can act as 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.

Eyes: Contact with 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.

Summary of Chronic Health Hazards: May cause inflammation of the upper respiratory tract. Prolonged skin contact can cause dermatitis, cyanosis of the fingers and possible ulceration, and may affect kidneys.

Signs and Symptoms of Exposure: N/A

Effects of Overexposure: N/A

Medical Conditions Generally Aggravated by Exposure: Persons with pre-existing skin disorders or eye problems, or impaired kidney or respiratory function may be more susceptible to the effects of the substance.

Note to Physicians: Treat symptomatically. Neutralize with sodium bicarbonate.

Section IV - First Aid Measures

Ingestion: DO NOT INDUCE VOMITING! Give large quantities of limewater (calcium hydroxide solution) to drink. Never give anything by mouth to an unconscious person. Seek immediate medical attention or contact poison control center.

Inhalation: Remove to fresh air, administer artificial respiration. 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.

If breathing is difficult, give oxygen. Seek immediate medical attention. **Skin:** In case of contact, wipe off excess from skin then immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Seek immediate medical attention. **Eyes:** Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Seek immediate medical attention.

Section V - Fire Fighting Measures

Flash Point: N/A

Autoignition Temperature: N/A

Lower Explosive Limit: N/A

Upper Explosive Limit: N/A

Unusual Fire and Explosion Hazards: Oxalic Acid is a combustible below 101°C; (215°F). Decomposition products include carbon monoxide & formic acid which are toxic and flammable. This product is corrosive and presents a severe inhalation and contact hazard to firefighters. Reacts explosively with strong oxidizing materials and some silver compounds. 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.

Extinguishing Media: Water spray, dry chemical, alcohol foam, or carbon dioxide. Foam or water on molten oxalic acid may cause frothing. Water spray may be used to keep fire exposed containers cool and to reduce dusts.

Special Firefighting Procedures: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or positive pressure mode. 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.

Section VI - Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment.

Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-

sparkling tools and equipment. Pick up spill for recovery or disposal and place in a closed container. Remove unnecessary people. If material comes in contact with water, neutralize liquid with alkaline material (soda ash, lime), then absorb with an inert material (e.g. vermiculite, dry sand, earth) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater.

Section VII - Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product. Wear rubber gloves and safety goggles. Do not eat or smoke in area. 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. 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.

Section VIII - Exposure Controls/Personal Protection

Respiratory Protection: If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and dust/mist filter may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and dust/mist filter may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. The IDLH concentration for Oxalic Acid is 500 mg/m³. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Ventilation: A system of local and/or general exhaust is recommended to **keep** employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Protective Clothing: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Protective Clothing or Equipment: N/A

Work/Hygienic Practices: Wash hands thoroughly with soap and water before eating, drinking, smoking or using toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Section IX - Physical and Chemical Properties

Physical State: Solid

pH: 1.3 (0.1M solution)

Melting Point/Range: 101.5°C

Boiling Point/Range: 149-160°C (300-320°F)

Product Name: Oxalic Acid

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(216°F)

Sublimes

Appearance/Color/Odor: Transparent, colorless crystals, odorless

Solubility in Water: ca. 1g/7mL of water **Vapor Pressure(mmHg):** < 0.001 @ 20°C; 68°F

Specific Gravity(Water=1): 1.653 **Molecular Weight:** 126.7

Vapor Density(Air=1): 4.3 **% Volatiles (by Volume @ 21°C (70°F):** 0

How to detect this compound : Chemical analysis

Section X - Stability and Reactivity

Stability: Stable, heat will contribute to instability. **Hazardous Polymerization:** Will not occur

Conditions to Avoid: Heat, ignition sources, moisture (hygroscopic), dusting

Materials to Avoid: Alkalis, chlorites, hypochlorites, oxidizing agents, furfuryl alcohol and silver compounds. 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.

Hazardous Decomposition Products: Formic Acid, Carbon Dioxide, Carbon Monoxide.

Section XI - Toxicological 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.

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 LD50: 270 mg/kg; Oral-Rat LD50: 7500 mg/kg; Unreported-rat LD50: 1400 mg/kg

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

Section XII - Ecological 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 is 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. EC0 (*Pseudomonas putida*) 16 hours = 1,550 mg/L; EC0 (*Microcystis aeruginosa* algae) 8 hours = 80 mg/L; EC0 (*Scenedesmus quadricauda* green algae) 7 days = 790 mg/L; EC0 (*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

Section XIII - Disposal Considerations

Dispose of in accordance with federal, state and local regulations. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section XIV - Transport Information

DOT Proper Shipping Name: Corrosive Solid, Acidic, Organic, n.o.s. (Oxalic Acid)
DOT Hazard Class/ I.D. No.: 8, UN3261, III

Section XV - Regulatory Information

Reportable Quantity: N/A
NFPA Rating: Health - 3; Flammability - 1; Instability - 0
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme
Carcinogenicity Lists: No **NTP:** No **IARC Monograph:** No **OSHA Regulated:** No

Section XVI - Other Information

Synonyms/Common Names: Dicarboxylic Acid, Ethanedioic Acid Dihydrate
Chemical Family/Type: Organic Acid
Sections Changed since last revision: IX, X, XV, XVI
IMPORTANT! Read this MSDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This MSDS has been prepared according to the OSHA Hazard

Communication Standard [29 CFR 1910.1200]. The MSDS information is based on sources believed to be reliable. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control, **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Also, additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks prior to use, and then to exercise appropriate precautions for protection of employees and others.