

# Material Safety Data Sheet

## Oxalic acid, anhydrous

ACC# 78015

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Oxalic acid, anhydrous

**Catalog Numbers:** AC186430000, AC186430010, AC186432500, AC220820000, AC220820500, S93318

**Synonyms:** Ethanedioic acid.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
144-62-7	Oxalic acid	>98	205-634-3

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white powder.

**Danger!** Causes burns by all exposure routes. Harmful if swallowed, inhaled, or absorbed through the skin. Possible risk of harm to the unborn child. May cause kidney damage.

**Target Organs:** Kidneys, heart, eyes, skin, brain, nerves, mucous membranes.

#### Potential Health Effects

**Eye:** Causes eye burns. May result in corneal injury. Causes redness and pain.

**Skin:** Harmful if absorbed through the skin. Causes severe skin irritation and possible burns. Rare chemical burns may occur from oxalic acid and may cause hypocalcemia. Gangrene has occurred in the hands of people working with oxalic acid solutions without rubber gloves. The skin lesions are characterized by cracking of the skin and the development of slow-healing ulcers. The skin may be bluish in color, and the nails brittle and yellow.

**Ingestion:** Causes gastrointestinal tract burns. Oxalic acid is toxic because of its acidic and chelating properties. It is especially toxic when ingested. As little as 5 grams (71 mg/kg) may be fatal. Ulcerations of the mouth, vomiting of blood, and rapid appearance of shock, convulsions, twitching, tetany, and cardiovascular collapse may occur following ingestion of oxalic acid or its soluble salts. Oxalic acid can bind calcium to form calcium oxalate which is insoluble at physiological pH. Calcium oxalate thus formed might precipitate in the kidney tubules and the brain. Hypocalcemia secondary to calcium oxalate formation might disturb the function of the heart and nerves.

**Inhalation:** Causes chemical burns to the respiratory tract. Inhalation of oxalic acid dust or vapor produces irritation of the respiratory tract, protein in the urine, nosebleed, ulceration of the mucous membranes, headache, nervousness, cough, vomiting, emaciation, back pain (due to kidney injury), and weakness.

**Chronic:** Inhalation of oxalic acid dust or mist over a long period of time might result in weight loss and respiratory tract inflammation. Rats administered oxalic acid at 2.5 and 5% in the diet for 70 days developed depressed thyroid function and weight loss. A study of railroad car cleaners in Norway who were heavily exposed to oxalic acid solutions and vapors revealed a 53% prevalence of urolithiasis (the formation of urinary stones), compared to a rate of 12% among unexposed workers from the same company.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

**Antidote:** Intravenous administration of calcium gluconate or calcium chloride may be required if hypocalcemia or hypocalcemic tetany occur.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or alcohol-resistant foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.  
**Explosion Limits, Lower:** Not available.  
**Upper:** Not available.  
**NFPA Rating:** (estimated) Health: 3; Flammability: 1; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale. Discard contaminated shoes. Use only with adequate ventilation.

**Storage:** Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Oxalic acid	1 mg/m <sup>3</sup> TWA; 2 mg/m <sup>3</sup> STEL	1 mg/m <sup>3</sup> TWA 500 mg/m <sup>3</sup> IDLH	1 mg/m <sup>3</sup> TWA

**OSHA Vacated PELs:** Oxalic acid: 1 mg/m<sup>3</sup> TWA

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Powder

**Appearance:** white

**Odor:** odorless

**pH:** Not available.

**Vapor Pressure:** .92 mm Hg @ 60 deg C

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 157 deg C (sublimes)

**Decomposition Temperature:** 189 deg C

**Solubility:** Moderately Soluble.

**Specific Gravity/Density:** 1.90 @ 17°C

**Molecular Formula:** C<sub>2</sub>H<sub>2</sub>O<sub>4</sub>

**Molecular Weight:** 90.04

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Dust generation, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, mercury, hypochlorite, silver, strong alkalis, chlorites, furfuryl alcohol.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, formic acid.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 144-62-7: R02450000

**LD50/LC50:**

CAS# 144-62-7:

Draize test, rabbit, eye: 250 ug/24H Severe;

Draize test, rabbit, skin: 500 mg/24H Mild;

Oral, rat: LD50 = 7500 mg/kg;

Woman LDLo oral: 600 mg/kg. Published data indicated changes in structure or function of esophagus, hypermotility, diarrhea. bach's says the fatal human dose by ingestion is estimated to be 5-15 g (71-214 mg/kg).

**Carcinogenicity:**

CAS# 144-62-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** A study of railroad car cleaners in Norway who were heavily exposed to oxalic acid solutions and vapors revealed a 53% prevalence of urolithiasis (the formation of urinary stones), compared to a rate of 12% among unexposed workers from the same company.

**Teratogenicity:** No information found

**Reproductive Effects:** Oxalic acid caused kidney damage in fetal sheep and rats and disturbed the estrus cycle in rats. Increased sperm abnormalities were seen in the second generation of mice administered 0.2% oxalic acid in the drinking water.

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Bluegill/Sunfish: LC50 = 4000 mg/L; 24 Hr.; Static Conditions Fish: Mosquito Fish: LC50 = 1350 mg/L; 24 Hr.; Static Conditions No data available.

**Environmental:** An estimated Koc value of 5 for oxalic acid indicates high mobility in soil and oxalic acid has been detected in groundwater. Several screening studies and grab sample tests indicate that under aerobic and anaerobic conditions, oxalic acid will readily biodegrade in aquatic ecosystems. Based on an experimental Henry's Law constant of  $1.4 \times 10^{-10}$  atm-m<sup>3</sup>/mole at 25°C, oxalic acid is expected to be essentially nonvolatile from water. Adsorption to sediment and bioconcentration in aquatic organisms may not be important fate process for oxalic acid.

**Physical:** Oxalic acid in the ambient atmosphere may react slowly with OH radicals, but it is removed rapidly by photolysis; the daytime persistence of oxalic acid is not expected to exceed a few hours. Based on its high water solubility, removal from air via wet deposition is likely to occur. Oxalic acid may also be removed from air via dry deposition with 11% of the total deposition being dry deposition.

**Other:** Based on an average experimental water solubility of 220,000 mg/L at 25°C and a regression derived equation, the BCF for oxalic acid can be estimated to be approximately 0.6 and therefore should not be expected to bioconcentrate in aquatic organisms.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	CORROSIVE SOLIDS, TOXIC, N.O.S.	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (Oxalic acid)
<b>Hazard Class:</b>	8	8
<b>UN Number:</b>	UN2923	UN3261
<b>Packing Group:</b>	III	II

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**

CAS# 144-62-7 is listed on the TSCA inventory.

**Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 144-62-7: immediate, delayed.

**Section 313** No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 144-62-7 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

C

**Risk Phrases:**

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 35 Causes severe burns.

R 63 Possible risk of harm to the unborn child.

**Safety Phrases:**

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**WGK (Water Danger/Protection)**

CAS# 144-62-7: 1

**Canada - DSL/NDSL**

CAS# 144-62-7 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of E, D1B.

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

**Canadian Ingredient Disclosure List**

CAS# 144-62-7 is listed on the Canadian Ingredient Disclosure List.

**Section 16 - Additional Information**

**MSDS Creation Date:** 6/24/1999

**Revision #7 Date:** 3/17/2005

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*