

# School Material Safety Data Sheet

Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



No. 26

OXALIC ACID

February 1987

## SECTION 1. INTRODUCTORY INFORMATION

**MATERIAL NAME AND FORMULA:** OXALIC ACID;  $\text{HO}_2\text{C}-\text{CO}_2\text{H}$  or  $(\text{HO})_2\text{C}-\text{C}-\text{C}(\text{OH})_2$  (Dihydrate)

**SYNONYMS:** Ethanedioic Acid, Dicarboxylic Acid, Ethane-di-Acid, Ortho-Oxalic Acid (Dihydrate)

**CAS NUMBER:** 0144-62-7

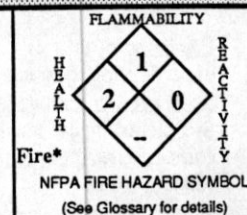
**INGREDIENTS:** Oxalic Acid; ca 100%

**MANUFACTURERS:** Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number toll-free. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

**DESCRIPTION:** Oxalic acid is a white, odorless, crystalline solid. It is hygroscopic when anhydrous.

### PRELIMINARY INFORMATION:

This material is toxic by ingestion or inhalation. It is also a strong irritant and is therefore considered a contact hazard. It can undergo a number of reactions to yield hazardous products. Most common area of use would be in the chemistry lab, but it may also be found in products you use for cleaning radiators, metal, and equipment.



\* NFPA Nonfire Rating  
is 1, 1, 0, -. (H, F, R)

## SECTION 2. USE AND STORAGE INFORMATION

### -- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- For safety, contact lenses should not be worn in the laboratory; soft lenses may absorb irritants and all lenses may concentrate them. Particles can also adhere to contact lenses and cause corneal damage.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Rubber gloves (natural or synthetic) are recommended when working with this material.
- If solid oxalic acid is to be heated or a water solution boiled, high atmospheric concentrations of oxalic acid can result, which will require efficient exhaust ventilation to keep below the TLV.

### -- USAGE PRECAUTIONS AND PROCEDURES --

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- After working with this material, always wash hands and face before eating, drinking, or smoking.
- Avoid creating airborne dust conditions. Do not breathe dust or mists.
- Use protective equipment to prevent skin and eye contact.
- Do not ingest!
- When heated it can decompose to  $\text{CO}$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$  and formic acid.
- Reacts with concentrated sulfuric acid ( $\text{H}_2\text{SO}_4$ ) to yield  $\text{CO}$ ,  $\text{CO}_2$ , and  $\text{H}_2\text{O}$ .

### -- ADDITIONAL INFORMATION --

- Material does not polymerize. Both the anhydrous and dihydrate forms are stable at room temperature.
- Incompatible with strong oxidizers, chlorites and hypochlorites (reacts explosively), alkalis (reacts vigorously), furfuryl alcohol. Reacts with some silver compounds to form explosive silver oxalate.
- Keep away from strong oxidizing agents and other incompatibles. c
- Slightly stronger than phosphoric acid.

### -- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Smoking should not be permitted in areas where chemicals are stored.
- Purchase only amounts equivalent to one year's needs.
- Store with compatible materials on sturdy shelving or in acid storage cabinet. Keep away from alkalis, chlorites, hydrochlorites.

## SECTION 3. SPILLS AND DISPOSAL PROCEDURES

### IF MATERIAL IS SPILLED:

- Ventilate area of spill. Avoid creating airborne dust conditions.
- Cleanup personnel should wear personal protective equipment as necessary to prevent skin or eye contact and inhalation of dust.
- Carefully scoop up spilled material and collect in a suitable container (with secure lid) for disposal or reclamation.
- Cleanup methods such as vacuuming (with appropriate filter) or wet mopping will minimize dust dispersion. Neutralize solid residues and pick up. For liquid (solution) spills, neutralize with soda ash or sodium bicarbonate, then cover material with an inert solid absorbent (vermiculite, dry sand, etc.) and scoop into an appropriate container (with secure lid) for disposal in accordance with existing regulations. Dike with inert absorbent material, as needed to contain and limit spill area.

### DISPOSAL OF SMALL QUANTITIES:

- Contact your supplier or a licensed disposal contractor for specific treatment/disposal procedures.
- Neutralizes to form insoluble calcium oxalate. Dispose in California Class I type landfill (be sure strong oxidizing agents are not present).

**DISPOSAL OF LARGER AMOUNTS:** Contact a licensed disposal company.

\*\*\* FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL \*\*\*

## SECTION 4: HEALTH HAZARDS

Current OSHA PEL and ACGIH TLV: 8-hr. TWA: 1 mg/m<sup>3</sup> (STEL is 2 mg/m<sup>3</sup>)

- TLV set at a level to prevent mucous membrane irritation.

- Human, Oral, LDLo: 71 mg/kg
- Rat, Oral, LD<sub>50</sub>: 375 mg/kg

- Inhalation of dust or mist may cause irritation to mucous membranes. Chronic exposure may cause inflammation of the upper respiratory tract.
- Skin, eyes, and mucous membrane contact with dust or mist has a corrosive effect.
- Symptoms appear readily on ingestion of concentrated solutions with burns, nausea, gastroenteritis, shock, and convulsions. Ingestion of 5g has caused death within hours. Renal damage can occur due to formation of excess calcium oxalate.
- Dilute solution (ingested) can cause delayed symptoms including gastrointestinal injury, muscle twitching, cramps, or CNS depression.
- Symptoms of toxic exposure are due to hypocalcemia, which is due to affinity of oxalic ion to calcium.
- Prolonged skin contact with extremities can cause dermatitis, cyanosis of fingers, discoloration of fingernails, and possible ulceration.
- Oxalic Acid has not been identified as a known or suspected carcinogen by the NTP, IARC, or OSHA.

## SECTION 5: FIRST AID PROCEDURES

**Eye contact:**

- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.\*

**Skin contact:**

- Wash exposed areas of skin with soap and water. Remove contaminated clothing promptly.
- Contact medical personnel.\*

**Inhalation:**

- Remove victim to fresh air; restore and/or support breathing as necessary. Rinse mouth.
- Contact medical personnel.\*

**Ingestion:**

- Give 2 to 3 glasses of water (not milk) to drink if available. (Gastric lavage will probably be indicated.) Get prompt medical attention.\*
- Never give anything by mouth to a person who is unconscious or convulsing.

\* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

## SECTION 6: FIRE PROCEDURES AND DATA

- Combustible solid below 215°F (101.6°C). Sublimes with partial decomposition at 300-320°F (148-160°C), emitting toxic and irritating fumes (see below).
- Extinguishing media: carbon dioxide, dry chemical, water spray, or alcohol type of foam. Foam or water on molten oxalic acid may cause frothing.
- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

THERMAL DECOMPOSITION PRODUCTS: CO<sub>2</sub>, carbon monoxide, H<sub>2</sub>O, formic acid

FLASH POINT AND METHOD(S) ... Not Applicable

AUTOIGNITION TEMPERATURE ... Not Applicable

FLAMMABILITY LIMITS IN AIR (vol. %): Not Found

## SECTION 7: PHYSICAL DATA

\*All data for anhydrous acid except as noted.

SOLUBILITY IN WATER (wt. %) (@ 20°C) ... 8.34 (ca 11.7 for dihydrate)

pH OF AQUEOUS SOLUTION (0.1 M @ 20°C) ... 1.3

SPECIFIC GRAVITY (18°/4°C) ... 1.9 (1.65 for dihydrate)

MELTING POINT ... 373.1°F [189.5°C] (Decomposes);  
[101°C (Decomposes) for dihydrate]

MOLECULAR WEIGHT ... 90.04

SUBLIMATION @ 1 Atm. ... 314.6°F (157°C)\*\*

\*\* Dihydrate decomposition and sublimation of oxalic acid begins at about 212°F (100°C).

Above 314.6°F (157°C) decomposition of oxalic acid becomes significant.

DATA SOURCES: Genium Industrial MSDS #328 (2/81) and references 1-12, 20, 23-26, 34, 38, 43, 82, 501, 503, 506, 509-11, 518  
(see glossary for titles)

Judgements as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corp. extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

F

Approvals:

Author

Indust. Hygiene/Safety

Medical Review

Sup