

SAFETY DATA SHEET 99.5%

Oxalic Acid

(OXALIC ACID DIHYDRATE)

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. PRODUCT IDENTIFIER

Product name: Oxalic Acid

Product No.: OX

CAS-No.: 6153-56-6

EU index No: 607-006-00-8

EC No.: 205-634-3

Synonym: Ethanedioic acid dihydrate

Chemical Name: OXALIC ACID DIHYDRATE

Chemical Formula: C₂H₂O₄ 2H₂O

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Use of the substance/mixture: In textile,

As a rust remover,

In electrical engineering as an auxiliary agent for electrolytic

oxidation of aluminium,

In beekeeping for the control of Varroa destructor mites,

Removal of ink stains,

In dyeing and powders for cleaning sanitary devices,

For whitening wood and cleaning.

Recommended use: Laboratory chemicals

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

HD Chemicals LTD UNIT 9 Scott Business Park PL2 2PB Plymouth UK

Contact Person responsible for SDS: Mr PeterKonefal, e-mail: contact@hdchemicals.co.uk



SECTION 2: HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Classification (EC 1272/2008)

Physical and Chemical Hazards: Category 1

Human health: Acute oral toxicity; Category 4

Skin Corrosion/irritation; Category 4

Serious Eye Damage/Eye Irritation; Category 1

Environment: Based on available data, the classification criteria are not met

Classification (67/548/EEC) H312 H302

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 2.2.

General Hazard

May cause kidney damage. Harmful if swallowed, inhaled, or absorbed through the skin. Causes burns by all exposure routes. Possible risk of harm to the unborn child. Target Organs: Kidneys, heart, eyes, skin, brain, nerves, mucous membranes.

2.2. LABEL ELEMENTS



SIGNAL WORDS

Danger

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



HAZARD PHRASES

H290 May be corrosive to metals

H302 Harmful if swallowed

H312 Harmful in contact with skin

H318 Causes serious eye damage

PROTECTION PHRASES

P264 Wash (...) thoroughly after handling

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection

P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting

P302 + P352 IF ON SKIN: Wash with plenty of soap and water

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact

lenses, if present and easy to do. Continue rinsing

P313 Get medical advice/ attention

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)

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

THIS SUBSTANCE IS NOT CLASSIFIED AS PBT OR VPVB ACCORDING TO CURRENT EU CRITERIA.

Composition information – main constituents

Substance name	Mol. Formula	Typical conc. (%w/w)	EC No.	CAS No.
Oxalic Acid Anhydrous	C ₂ H ₂ O ₄	≥99.99%	205-634-3	144-62-7
Oxalic Acid Dihydrate	C ₂ H ₂ O ₄ 2H ₂ O	≥99.5%	205-634-3	6153-56-6



SECTION 4: FIRST AID MEASURES

4.1. DESCRIPTION OF FIRST AID MEASURES

First-aid measures general: If symptoms persist, call a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If

breathing is difficult, give oxygen. Get medical aid.

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.

Skin contact: 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.

Eye contact: In case of contact, immediately flush eyes with plenty of water for at least

15 minutes. Get medical aid immediately.

Note to physician/Antidote: Intravenous administration of calcium gluconate or calcium chloride may

be required if hypocalcemia or hypocalcemic tetany occur.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Cough, Shortness of breath, agitation, spasms, Nausea, Vomiting, collapse, Circulatory collapse. The following applies to oxalates in general: nausea and vomiting after swallowing. Mucosal irritations, coughing, and dyspnoea after inhalation. Systemic effect: drop in the blood calcium level, toxic effect on kidneys, cardiovascular disorders. Irritation and corrosion. Risk of serious damage to eyes.

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.

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.

Skin contact: 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 colour, and the nails brittle and

yellow.

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

Chronic Potential: 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 carcleaners in Norway who were heavily exposed to oxalic acid solutions and vapors revealed 53% prevalence of urolithiasis (the formation of urinary stones), compared

to a rate of 12% among unexposed workers from the same company.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Notes to Physician Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. EXTINGUISHING MEDIA

Suitable extinguishing media: The product is not flammable. Extinguish with alcohol-resistant

foam, carbon dioxide, dry powder or water fog. Use fire-

extinguishing media suitable for the surrounding fire.

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

5.2. Special Hazards arising from the substance or mixture

Specific hazard: This product is toxic

Hazardous combustion Thermal decomposition or combustion products may include the

products: following substances: Toxic gases or vapours.

5.3. Advice for fire-fighters

Protective actions during fire fighting: Avoid breathing fire gases or vapours. Evacuate area. Cool

containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify

appropriate authorities.



Special protective equipment:

Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus(SCBA) and appropriate protective clothing. Fire fighters clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid contact with skin and eyes.

6.2. Environmental precautions

Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Methods for cleaning up: Clear up spills immediately and dispose of waste safely. Provide adequate ventilation. Collect spillage with a shovel and broom, vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Wear protective clothing as described in this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

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.



7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Heat-ignition: KEEP SUBSTANCE AWAY FROM: heat sources.

Prohibitions on mixed storage: Store away from incompatible materials.

Storage area: Keep only in the original container. Keep container tightly closed, in

a cool, well ventilated place. Keep containers upright. Protect containers from damage. Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible

substances.

7.3. SPECIFIC END USE(S)

See section 2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. CONTROL PARAMETERS/EXPOSURE GUIDELINES

Occupational Exposure Limit Values:

List source(s): EU - Commission Directive 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. UK - EH40/2005 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement. IRE - 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority

Component	EU	UK	France	Belgium	Spain
Oxalic acid	TWA: 1 mg/m3 8 hr	STEL: 2 mg/m3 15 min TWA: 1 mg/m3 8 hr	TWA / VME: 1 mg/m3 (8 heures). indicative limi	TWA: 1 mg/m3 8 uren STEL: 2 mg/m3 15 minuten	TWA / VLA-ED: 1 mg/m3 (8 horas)

Component	Italy	Germany	Portugal	Netherlands	Finland
Oxalic acid	TWA: 1 mg/m3 8 ore. Media Ponderatanel Tempo	TWA: 1 mg/m3 (8 Stunden). AGW - exposure facto	STEL: 2 mg/m3 15 minutos TWA: 1 mg/m3 8 horas	TWA: 1 mg/m3 8 uren	TWA: 1 mg/m3 8 tunteina STEL: 3 mg/m3 15 minuutteinalho



Component	Austria	Denmark	Switzerland	Poland	Norway
Oxalic acid	Haut MAK-TMW: 1 mg/m3 8 Stunden	TWA: 1 mg/m3 8 timer	TWA: 1 mg/m3 8 Stunden	STEL: 2 mg/m3 15 minutach TWA: 1 mg/m3 8 godzinach	TWA: 1 mg/m3 8 timer STEL: 1 mg/m3 15 minutter

Component	Bulgaria	Croatia	Ireland	Czech Republic	Estonia
Oxalic acid	TWA: 1.0 mg/m3	TWA-GVI: 1 mg/m3 8 satima.	TWA: 1 mg/m3 8 hr. STEL: 3 mg/m3 15 min	TWA: 1 mg/m3 8 hodinách. Potential for cutaneous absorption Ceiling: 5 mg/m3	TWA: 1 mg/m3 8 tundides. STEL: 2 mg/m3 15 minutites.

Component	Gibraltar	Greece	Hungary	Iceland	Sweden
Oxalic acid	TWA: 1 mg/m3 8 hr	TWA: 1 mg/m3	TWA: 1 mg/m3 8 órában. AK	TWA: 1 mg/m3 8 klukkustundum. Ceiling: 2 mg/m3	STV: 2 mg/m3 15 minuter LLV: 1 mg/m3 8 timmar

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.

Protective equipment:



Respiratory equipment:

Ensure all respiratory protective equipment is suitable for its intended use and is 'CE'-marked. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with European Standard EN14387. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140.

Skin and body protection:

Wear appropriate protective gloves to prevent skin exposure. Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect



hands from chemicals, gloves should comply with European Standard EN374. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes

are recommended. Synthetic apron.

Eye/Face protection: Unless the assessment indicates a higher degree of protection is required,

the following protection should be worn: Tight-fitting safety glasses (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).

Inspect gloves before use. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. Remove gloves with care avoiding skin contamination. Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly.

Large scale/emergency use: Use a NIOSH/MSHA or European Standard EN 136 approved

respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Recommended Filter type: Particulates

filter conforming to EN 143.

Small scale/Laboratory use: Use a NIOSH/MSHA or European Standard EN 149:2001 approved

respirator if exposure limits are exceeded or if irritation or other

symptoms are experienced.

Recommended half mask: Particle filtering: EN149:2001; Valve filtering: EN405; or; Half mask:

EN140; plus filter, EN 141When RPE is used a face piece Fit Test

should be conducted.

Environmental exposure controls: Keep container tightly sealed when not in use. Emissions from

ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be

necessary to reduce emissions to acceptable levels.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Crystalline powder



Colour: White

Odour: Odourless

Solubility: 138 g/L (20°C)

Initial boiling point (°C): 157°C 1013 hPa

Melting point (°C): 98 - 102 °C / 208.4 - 215.6 °F

Freezing point: No information available

Relative density: 1.9 g/cm3 25°C

Specific gravity / density: 1.653 @ 18.5°C

Vapour density: 4.62

Vapour pressure: 21.5 mbar @ 50 °C

pH-Value, Diluted Solution: 1.3 (0.1M soln)

Flash point (°C): No information available.

Molecular mass: 126.04

Auto-ignition temperature: No information available

Decomposition temperature: 157 °C

Molecular formula: $C_2H_2O_4$ $2H_2O$

SECTION 10: STABILITY AND REACTIVITY

10.1. REACTIVITY

None known, based on information available.

10.2. CHEMICAL STABILITY

Stable under normal temperatures and pressures. Stable when used as recommended. Stable under the prescribed storage conditions.

10.3. Possibility of Hazardous reactions

No potentially hazardous reactions known.

10.4. CONDITIONS TO AVOID

Avoid dust formation. Incompatible products. Excess heat. Water, moisture.



10.5. INCOMPATIBLE MATERIALS

Strong oxidizing agents. Strong bases. Metals: Massive, solid metal/ Powdered metal/ Alkali metals. Acid chlorides. Mercury, hypochlorite, silver, strong alkalies, chlorites, furfuryl alcohol.

10.6. HAZARDOUS DECOMPOSITION

Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Toxic gases or vapours; Carbon monoxide (CO). Carbon dioxide (CO_2).

10.7. HAZARDOUS POLYMERIZATION

Has not been reported.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Component	LD50 Oral	LD50 Dermal
Oxalic Acid Dihydrate	LD50 = 375 mg/kg (Rat)	
Oxalic Acid Anhydrous	375 mg/kg (Rat)	LD50 = 20000 mg/kg (Rat)

Skin corrosion/irritation: Based on available data, the classification criteria are not met

Serious eye damage/irritation: Category 1

Respiratory or skin sensitization: Respiratory: Based on available data, the classification criteria are

not met

Skin Based on available data, the classification criteria are not met

Germ cell mutagenicity: Based on available data, the classification criteria are not met

Reproductive toxicity: Based on available data, the classification criteria are not met

STOT-single exposure: Based on available data, the classification criteria are not met

STOT-repeated exposure: Based on available data, the classification criteria are not met

Target Organs: No information available.

Aspiration hazard: Not applicable

Carcinogenicity: Oxalic acid, anhydrous - Not listed as a carcinogen by ACGIH, IARC,

TP, or CA Prop 65. Oxalic acid dihydrate - Not listed as a carcinogen

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.

Reproductive toxicity: 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.

SECTION 12: ECOLOGICAL INFORMATION

Eco toxicity: Not regarded as dangerous for the environment. However, large or

frequent spills may have hazardous effects on the environment.

12.1. TOXICITY

Toxicity Based on available data the classification criteria are not met

Acute toxicity - fish LC_0 , 50: 1580 : mg/l, Marinewater fish

Fish: Bluegill/Sunfish: LC50 = 4000 mg/L; 24 Hr.; Static Conditions

Fish: Mosquito Fish: LC50 = 1350 mg/L; 24 Hr.; Static Conditions

Acute toxicity - aquatic plants EC₀, 50 >790 : mg/l, Marine water algae

12.2. Persistence and degradability

The product is biodegradable.

12.3. BIOACCUMULATIVE POTENTIAL

No data available.

12.4. MOBILITY

No additional information available.

12.5. RESULTS OF PBT AND VPVB ASSESSMENT

Not available.

12.6. OTHER ADVERSE EFFECTS

Not determined.



SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal general information: The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

Disposal methods: Do not empty into drains. Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in an incinerator equipped with an afterburner or scrubber. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor only. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Incineration or landfill should only be considered when recycling is not feasible.

SECTION 14: TRANSPORT INFORMATION

General: The product is not covered by international regulations on the

transport of dangerous goods(IMDG, IATA, ADR/RID).

Environmentally Hazardous Substance/Marine Pollutant: No

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

UN number Not applicable.
UN proper shipping name Not applicable.
Transport hazard class(es) Not applicable.
Packing group Not applicable.

US Transport information:

Transport document description: Corrosive Solid, Acidic, Organic, n.o.s. (Oxalic Acid) UNNA: 3261

UN-No.: UN3261

Shipping Name: CORROSIVE SOLIDS, TOXIC, N.O.S.

Transport hazard class(es): 8
Packing group: III



SECTION 15: REGULATORY INFORMATION

SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

National regulations: Health and Safety at Work etc. Act 1974 (as amended).

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].

EH40/2005 Workplace exposure limits.

EU legislation: Regulation (EC) No 1907/2006 of the European Parliament and of the Council

of 18December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). 2015/830 Commission Regulation (EU) No of 28 May 2015. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16December 2008 on classification, labelling and packaging of substances

and mixtures (as amended).

SECTION 16: OTHER INFORMATION

General information

The information contained in this safety data sheet is provided in accordance with the requirements of the regulations. The product should not be used for purposes other than those shown in section 1 without first referring to the supplier and obtaining written handling instruction. As the specific conditions of use of the product are outside the suppliers control, the user is responsible for ensuring that the requirements of relevant legislation are complied with.

Revision Comments

This information is provided in a revised format to that previously produced.

Revision Date: 01/04/2017

Revision: 01

Safety Data Sheet Status Approved.

Date printed 02/04/2017

Signature Initials P.K.

DISCLAMER:

If this product is re-distributed and re-formulated for sale, details of its hazards and recommended methods for safe handling must be passed to customers. Customers are urged to ensure that the product is entirely suitable for their own purpose. It is the customer's responsibility to ensure that a suitable and sufficient assessment of the risks created by a work activity using this product is undertaken before this product is used.

Note:

The information contained in this Safety Data Sheet does not constitute the users own assessment of workplace risk as required by other Health & Safety Legislation (e.g. the Health and Safety at Work Act,1974;the control of Substances Hazardous to Health Regulations,1988). The data given here is based on current knowledge and experience. The purpose of this data sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the product's properties.