



Material Safety Data Sheet


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Section 1 - Product and Company Identification

Product name : Oxalic Acid, 3.4%(Aqueous solution)(ITO-Etch)	
Other names : --	
Product use : cleanser for car radiators, metals and instruments ; purified reagent ; chemical intermediates ; reagents ; catalytic agents ; decolorants ; bleaching agents °	
Supplier's name : San Fu Chemical Co., Ltd., Shan Hua Plant	
Supplier's address : 340 Hsiao Hsin Li, Shan Hua, Tainan Hsien,Taiwan, R.O.C.	
Supplier's phone : 06-5837608	Emergency phone : 06-5837608
FAX. : 06-5839498	

Section 2 - Hazards Identification

Classification :	
1. Acute Toxicity	Category 4 (Ingestion)
2. Skin Corrosion / Irritation	Category 3
3. Serious Eye Damage/Eye Irritation	Category 2
The Most Important Hazards and effect	
Label element :	
■ Hazard symbol : Exclamation Mark	
■ Signal word : Warning	
Hazard statement :	
1. Harmful if swallowed	
2. May cause moderate skin irritation	
3. May cause eyes irritation	
Precautionary statement :	
1. Wear splash goggles or safety glasses.	
2. Avoid skin and eye contact	
Others Hazard : --	

Section 3 - Composition/Information On Ingredients

Chemical name : 3.4% ITO-Etch
Synonyms :
Oxalic acid dihydrate 、Ethanedioic acid 、Ethanedionic acid 、Dicarboxylic acid
CAS No. : 144-62-7
Ingredient contributing to the hazard(%) : 3.4 %

Section 4 - First Aid Measures

The First-aid Information :
■ Inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.



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- Skin Contact : 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, shoes, and leather products. Wash clothing thoroughly before reuse. Call a physician immediately.
- Eye Contact : Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Try not to contaminate the unaffected area. Call a physician immediately.
- Ingestion : **DO NOT INDUCE VOMITING!** Give large quantities of limewater or milk to drink. Never give anything by mouth to an unconscious person. Call a physician immediately.

The Most Important Symptoms and Hazardous Effects : --

Protection of First-aiders : Wear self-contained breathing apparatus with full face piece in positive pressure mode and proper protective clothing.

Notes to a Physician : inform the exposed way

Section 5 - Fire Fighting Measures

Extinguishing Media : Water spray, dry chemical, or carbon dioxide.

Specific Hazards when Fire-fight : Burning may produce carbon monoxide, or carbon dioxide.

Specific Fire-fighting Procedure :

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Specific Protection of Firefighters : As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH and full protective gear

Section 6 - Accidental Release Measures

Personal Precautions :

1. Wear appropriate personal protective equipment as specified in Section 8.
2. Keep unnecessary and unprotected personnel from entering.
3. Do not inhale the dust.
4. Restrict access to area until completion of clean up.
5. Minimize dust generation and accumulation.
6. Well ventilate the area.

Environmental Precautions :

1. Remove all sources of ignition.
2. Ventilate area of leak or spill.

Methods for Cleaning up :

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



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Section 7 - Handling and Storage

Handling :
<ol style="list-style-type: none">1. Protect against physical damage.2. Keep the container closed while not use.3. Well ventilation.4. No specific temperature requirement for the storage area.
Storage :
<ol style="list-style-type: none">1. Keep in a tightly closed container, store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities.2. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8 - Exposure Controls & Personal Protection

Engineering measures :			
<ol style="list-style-type: none">1. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.2. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.			
Control parameters			
TWA	STEL	Ceiling	Biological standards
--	--	--	--
Personal protective equipment :			
<ul style="list-style-type: none">■ Hand Protection : Consider imperative gloves.■ Eye Protection : Wear chemical splash goggles and mask.■ Respiratory protection : Required Dust mask.■ Skin and Body Protection : Wear appropriate protective gloves to prevent skin exposure.■ Clothing: Wear appropriate protective clothing to prevent skin exposure.			
Hygiene measures :			
<ol style="list-style-type: none">1. Immediately take off the contaminated clothes after handling.2. Clean thoroughly before reuse or disposal.3. Must advise the danger to the laundry worker.4. Smoking and eating are prohibited in the work area.5. Wash hand thoroughly after handing <ol style="list-style-type: none">1. Maintain the cleanness of the workplace.			

Section 9 - Physical & Chemical Properties

Appearance : Liquid	Odor : odorless
Colour : Colorless	Melting Point: --
pH value : 1.0	Boiling point/boiling range : --
Flammability: --	Flash point : --
Decomposition temp : --	Test method : () open () close
Autoignition temp : --	Explosion properties : --
Vapor pressure : --	Vapor density : --



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Density : 1.02 g/cm ³ (20°C)	Solubility : 102g/L H ₂ O ; Alcohol , Miscible.
log Kow : --	Evaporation Rate : --

Section 10 - Stability & Reactivity Data

Stability : Stable under ordinary conditions of use and storage. Heat will contribute to instability.
Possible hazardous reactions under specific conditions : 1. Reacts with strong alkalis, strong oxidizing materials, chlorites, and hypochlorites. 2. Strong oxidizers, silver compounds, strong alkalis, chlorites
Conditions to avoid : Heat, ignition sources and incompatibilities.
Materials to avoid : Alkalis, chlorites, hypochlorites, oxidizing agents, furfuryl alcohol and silver compounds.
Hazardous decomposition products : Carbon dioxide and carbon monoxide may form when heated to decomposition. May also form formic acid.

Section 11 - Toxicological Information

Route of exposure : Eye , Skin , Ingestion , Inhalation
Symptoms : sore throat, coughing, respiratory distress, headache, nausea and irritation.
Immediate Toxicity : <ul style="list-style-type: none">■ Skin:<ol style="list-style-type: none">1. 5~10% solution causes moderate skin irritation and possible corrodes.2. An excess of Oxalic Acid can change the skin color and change the fingernail become blue.■ Eyes: May cause severe eye irritation. May result in corneal injury.■ Inhalation:<ol style="list-style-type: none">1. Causes respiratory tract irritation.2. It may also affect behavior/central nervous system (nausea and headache)■ Ingestion:<ol style="list-style-type: none">1. May be harmful if swallowed.2. 10% solution or solid causes gastrointestinal irritation3. A less of oxalic acid causes headache and spasm; a lot of oxalic acid causes weakness, arrhythmia and low blood pressure; an excess of oxalic acid causes spasm and coma, even death● LD₅₀: 375 mg/kg (Rat, inhalation)● LC₅₀:--● Eye irritation test (rabbit): 250 ug/24H severe irritation.● Skin irritation test (rabbit): 500 mg/24H mild irritation.
Specific effects : no information available

Section 12 - Ecological Information

Ecotoxicology : <ul style="list-style-type: none">■ LC₅₀(fish) : --■ EC₅₀(Aquatic Invertebrates) : 25mg/l/96 (water flea)
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■ Bioconcentration factor (BCF) : --
Persistence and degradability : <ul style="list-style-type: none">■ Half-Life (Air) : --■ Half-Life (Water surface) : --■ Half-Life (Groundwater) : --■ Half-Life (Soil) : --
Bioaccumulative potential : Oxalic acid is naturally contained as the potassium or calcium salt in plants, vegetables, human urine, animal urine, and kidney stones. It is also the product of the metabolism of many molds. Oxalic acid may be released to the environment in tobacco smoke, automobile exhaust, rendering, in waste streams from pulp bleaching, and by photochemical oxidations of anthropogenic compounds during long range transport.
Mobility in soil : An estimated Koc value of 5 for oxalic acid indicates high mobility in soil. If released to soil, oxalic acid under environmental conditions (pH 5-9) will be in the form of the oxalate ion (pKa1 and pKa2 of 1.25 and 4.28, respectively) and is expected to leach in soil. Photolysis is expected to be an important fate process; the daytime persistence of oxalic acid on soil surfaces is not expected to exceed a few hours. Based upon screening biodegradation tests, biodegradation in soil is expected to be important.
Other adverse effects : If released to water, oxalic acid will not volatilize, adsorb to sediment, bioconcentrate in aquatic organisms, oxidize or hydrolyze. The predominant aquatic fate processes are expected to be photolysis in surface waters and aerobic and anaerobic biodegradation. If released to the atmosphere, removal from air via wet deposition, dry deposition, and photolysis is likely to occur. Exposure of the general population to oxalic acid is expected to occur through consumption of foods in which it is naturally contained, inhalation of contaminated air, and consumption of contaminated groundwater. In occupational settings, exposure to oxalic acid may occur through inhalation of vapors and through eye and skin contact.

Section 13 - Disposal Considerations

Methods of disposal : Follow ROC Environmental Laws and Regulations.

Section 14 - MSDS Transport Information

UN classification number : 2249
Proper D.O.T Shipping Name : CORROSIVE,SOLID,ACIDIC,ORGANIC N.O.S. (OXALIC ACID,DIHYDRATE)
Hazard Class : Hazard Class 8
Packing Group : II
Marine pollution : NO
Specific precautionary transport measures and conditions : --

Section 15 - Regulatory Information

Regulations : <ol style="list-style-type: none">1. Labor Safety and Health Facility Regulations2. Toxic Chemical Substances Labeling and Safety Data Regulations3. Road Traffic Safety Regulations
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| 4. Industrial Waste Storage and Disposal Regulations |
| 5. Permissible Exposure Limits of Hazardous Substances in the Work Environment |

Section 16 - Other Information

Literature references	1. CHEMINFO Database, CCINFO Disc, 2005-3 2. RTECS Database, TOMES PLUS Disc, Vol.65 , 2005 3. HSDB Database, TOMES PLUS Disc, Vol.65 , 2005 4. ChemWatch Database, 2005-1		
Prepared by	Supplier : San Fu Chemical Co., Ltd. Shan Hua Plant		
	Address : 340 Hsiao Hsin Li, Shan Hua, Tainan Hsien, Taiwan, R.O.C.		
	TEL : 06-5837608		FAX : 06-5839498
	Name : Chunfel Chang		
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