

Product Name: Oxygen Stabilizer

BICI Chemicals

1200 N Peoria
Tulsa, OK 74106
1-918-625-8811



Safety Data Sheet

1 PRODUCT IDENTIFICATION

Product Name **Oxygen Stabilizer**
Synonyms hydrogen dioxide
Material Use sewage treatment

Emergency: 1-800-535-5053

2 HAZARD SUMMARY

GHS Class (Category)	oxidizer (2)	skin irritant (2)	eye corrosive (1)	acute, oral (4)	acute inhalation (4)
Signal Words	WARNING	WARNING	DANGER	WARNING	WARNING
Hazard Statements	may intensify fire, oxidizer (H271)	causes skin irritation (H315)	causes serious eye damage (H318)	harmful if swallowed (H302)	harmful if inhaled (H332)



GHS Precautionary Statements for Labelling

P210, P220	Keep away from heat. Keep away from combustible materials.
P262	Do not get in eyes, on skin or on clothing.
P264	Wash thoroughly after handling.
P280	Wear eye protection, protective gloves & clothing of butyl, neoprene or nitrile.
P301, P302	If swallowed call a poison control center or doctor.
P371, P380, P375	In case of major fire & large quantities, evacuate area. Fight fire remotely due to the risk of explosions.
P313 & P333	If skin irritation or rash occurs, get medical advice/attention.
P304 & P340	If inhaled remove person to fresh air and keep comfortable for breathing.
P305, P351, P338	If in eyes, rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

3 COMPONENTS

	%	TLV ppm / mg/m ³	LD ₅₀ (mg/kg)		LC ₅₀ (ppm)
			ORAL	SKIN	INHALATION
Proprietary Formulation: Oxygen Stabilizer™ (29CFR1910.1200)	30-50%	1 / 1.4	376	1072	1430
Contains strong oxidizers					
Water	50-70%	not toxic	90,000	not toxic	not toxic

4 FIRST AID

SKIN: Wash with plenty of water. Remove contaminated clothing. Do not reuse until thoroughly laundered.
EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
INHALATION: Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If victim's breathing stops, administer artificial respiration and seek medical aid promptly.

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INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below the hips to prevent inhalation of vomited material. Seek medical help promptly.

NOTE: Corrosive substance: first aid must be applied immediately! Inadvertent inhalation of vomited material may seriously damage the lungs. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

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5 FLAMMABILITY & FIREFIGHTING

Flash Point	will not burn – may initiate ignition & accelerate burning of combustibles
Autoignition Temperature	will not burn
Flammable Limits	will not burn
Combustion Products	oxygen – accelerates burning
Firefighting Precautions	as for substances involved in fire; <i>water spray dilutes hydrogen dioxide, decreasing its oxidizing effect on the fire</i> ; firefighters must wear SCBA
Static Charge Accumulation	cannot accumulate a static charge

6 ACCIDENTAL RELEASE MEASURES

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area; remove combustible materials from spill area if safe to do so; recover free liquid with suitable pumps; absorb residue on an inert sorbent (sand, cement dust), sweep, shovel & store in closed containers for disposal

7 STORAGE & HANDLING

Store cool, in original containers (or in Stainless Steel 301, 304, 316, 347), and away from substances listed in Part 10. **This product is a reactive substance!** Be aware of materials present in the workplace & whether these could react with oxidizers. If drums are kept on pallets, avoid wooden pallets. Pallets of polyethylene are acceptable.

Always ensure that containers, whether empty or full, are tightly sealed unless in use. If diluting, add hydrogen dioxide to cold water slowly, stirring. When pouring, be careful to avoid splashing.

Avoid creating or breathing product vapor or mist. Use with adequate ventilation. If dealing with a spill & ventilation is impossible or impractical, wear a suitable respirator with cartridge capable of protecting against hydrogen dioxide.

Never cut, drill, weld or grind on or near this container. Avoid all contact with skin. An eye bath must be available at the workplace; a safety shower should be available nearby.

8 EXPOSURE CONTROL & PERSONAL PROTECTION

ACGIH TLV	1ppm / 1.4mg/m ³	ACGIH STEL	not listed
OSHA PEL	1ppm / 1.4mg/m ³	OSHA STEL	not listed
Ventilation	mechanical ventilation may be required to control airborne titre to regulated limits		
Hands	butyl, neoprene or nitrile gloves – <i>other types may also protect; confirm suitability with supplier</i>		
Eyes	safety glasses with side shields – <i>always protect the eyes</i>		
Clothing	wear impermeable (above) apron, boots, & long sleeves if there is any danger of splashing,		

9 PHYSICAL CHARACTERISTICS

NOTE: for Flash Point, Autoignition Temperature & Flammable Limits see Part 5.

Odor & Appearance	clear, colorless liquid with sharp, irritating “odor”
Odor Threshold	not known
Vapor Pressure	0.38mmHg / 0.05kPa (20°C / 68°F) – <i>partial pressure of H₂O₂ above the solution</i>
Evaporation Rate (Butyl Acetate = 1)	not known – <i>evaporates more slowly than its water solvent, gradually concentrating</i>
Vapor Density (air = 1)	1.2
Boiling Range	108°C / 226°F
Freezing Point	-33°C / -27°F
Decomposition Temperature	no specific value available – <i>decomposition accelerates as temperature rises</i>
Specific Gravity	1.13 (20/20°C)
Water Solubility	complete
Viscosity	1.1centipoise (20°C / 68°F)

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pH	~3 – an acidic pH must be maintained to slow decomposition
Conversion Factor	1ppm = 1.39mg/m ³
Molecular Weight	34grams/mole (H ₂ O ₂); 18grams/mole (H ₂ O)

10 REACTIVITY

Dangerously Reactive With	combustible materials; may explode with strong alkalis, sulphuric acid, nitric acid or potassium permanganate; may react violently with reducing agents such as metal hydrides
Also Reactive With	decomposes on contact with some metals, metal sulphides, metal salts or iodates; corrodes many common metals ¹
Stability	pure solutions are stable; stabilizers ² may be added to prevent spontaneous decomposition; cannot polymerize
Decomposes in Presence of	temperature above 100°C and pH above 4.5
Decomposition Products	oxygen – some of this oxygen may be in the form of highly reactive oxygen radicals
Sensitive to Mechanical Impact	no

(1) Corrosive to carbon steel alloys 1010 and 1020 at any concentration and any temperature. Hydrogen dioxide solutions (35%+) are corrosive to carbon steel alloys 1075, 1095 and 12L14, cast iron (unspecified, grey, 3% nickel and ductile cast iron (any concentration)), nickel base alloys, Hastelloy B and D and Monel, copper and alloys, 70-30 copper-nickel, some brasses (e.g. unspecified, cartridge, naval and leaded red brass), some bronzes (e.g., aluminum, naval and silicon bronze), lead and titanium alloys at room temperature.

(2) NOTE Stabilisers include: sodium pyrophosphate, sodium stannate trihydrate, phosphoric or other mineral acids, alkali metal silicates, combinations of tin salts & phosphates; organic stabilizers such as 8-hydroxyquinoline, pyridine carboxylic acids, tartaric & benzoic acids, acetanilide & acetophenetidin

11 TOXICITY

i. EFFECTS OF ACUTE EXPOSURE

Skin Contact	mild irritant*; potentially corrosive to skin; chemical burns, blistering, ulcers depending on duration of contact
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	corrosive to eyes unless rinsed very promptly; may cause permanent scarring and blindness
Inhalation	if heated or misted, irritation will occur; exposure to 0.59ppm/0.82mg/m ³ resulted in a significant increase of throat irritation, nasal secretion & itching, sneezing & coughing; prolonged exposure to hydrogen dioxide-containing mist may cause life-threatening pulmonary oedema
Ingestion	abdominal pain, foaming at the mouth, vomiting and fever; large amounts are life-threatening; <i>not a route of industrial exposure</i>
Calculated LD ₅₀ (oral)	1173 & 7436mg/kg (rat), 6240mg/kg (mouse)
Calculated LD ₅₀ (skin)	12,667mg/kg (rat), 3344mg/kg (mouse), >1560mg/kg (rabbit)
Calc. LC ₅₀ (inhalation)	4456ppm (rat)

* Contact with protein (skin) causes rapid decomposition of H₂O₂, which may account for the relatively mild irritation usually seen.

ii. EFFECTS OF CHRONIC EXPOSURE

General	prolonged exposure to vapor or mist bleaches skin & hair; lung damage reported in exposed employees who were also smokers, but not in non-smokers
Sensitising	not a sensitiser in humans or animals (<i>one report of sensitization out of 156 hairdressers tested</i>)
Carcinogen/Tumorigen	ACGIH animal carcinogen A3, not classifiable as to human carcinogenicity; <i>mice given hydrogen dioxide in their drinking water developed stomach cancer (not relevant to industrial exposure)</i>
Reproductive Effect	no known effect in humans or animals
Mutagen	no known effect on humans or animals; <i>mutagenic effects in tissue culture, but not whole animals</i>
Synergistic With	not known

12 ENVIRONMENTAL INFORMATION

Bioaccumulation	decomposes rapidly in the environment and cannot bioaccumulate
Biodegradation	cannot biodegrade, not persistent in the environment; ½-life in ground water >1hr; ½-life in waste water depends on cleanliness – minutes in dirty water; seconds in sewage sludge

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Abiotic Degradation reacts with many substances in the environment; ½-life in air 10-20hours
Mobility in soil, water water soluble, but reacts with soil substances so rapidly that it cannot move readily

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12 ENVIRONMENTAL INFORMATION, cont'd

Aquatic Toxicity

LC ₅₀ (Fish, 96hr)	16.4mg/litre (Pimephelas promelas), 37.4mg/litre (Ictalurus punctatus & I. melas) – For short-term exposure (~10 min.) 1000-3000mg/litre is the NOEC (No Observable Effect Concentration)
EC ₅₀ (Crustacea, 24hr)	7.7mg/litre (Daphnia magna), 2.4mg/litre (Daphnia pulex, 48hr), 4.4mg/litre (Gammarus sp.)
EC ₅₀ (Algae)	2.5mg/litre (Chlorella vulgaris), 5mg/litre (Anabena variabilis), 17mg/litre (Chlorella emersonii)
EC ₅₀ (Bacteria)	30mg/litre (Escherichia coli) – many EC ₁₀₀ data available . . .

NOTE: H₂O₂ is toxic to sewage treatment organisms above 200mg/litre

13 DISPOSAL / CONTAINERS

Waste Disposal	do not flush to sewer, may be discharged to sanitary sewer after dilution to below 5% concentration This assumes further dilution & decomposition of H ₂ O ₂ occurs en route to the sewage plant. (See NOTE in Part 12)
Containers	Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use. Pails must be vented and thoroughly dried prior to crushing and recycling. IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5 yrs). Steel containers must be inspected, pressure tested & recertified every 5 yrs. Warning: never cut, drill, weld or grind on or near this container, even if empty.

14 TRANSPORTATION CLASSIFICATION

USA 49 CFR & Canada TDG

Canada TDG PIN	UN3098, Oxidizing Liquid, Corrosive, N.O.S.
AND Shipping Name	hydrogen dioxide (with not less than 20% but not more than 60% hydrogen dioxide)
U.S.A. 49 CFR Class	5.1, 8
Packing Group	II
Marine Pollutant	not a marine pollutant
ERAP	not required



15 REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory

U.S.A. Regulations:

Immediately Dangerous to Life or Health: 75 ppm

Allowable Tolerances: An exemption from the requirement of a tolerance is established for residues of hydrogen dioxide in or on all food commodities at the rate of less than or equal to 1% hydrogen dioxide per application on growing crops and post harvest potatoes when applied as an algacide, fungicide and bactericide.

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 1 ppm (1.4 mg/cu m).

NIOSH Recommendations: Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 1 ppm (1.4 mg/cu m).

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 1 ppm Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded. A3; Confirmed animal carcinogen with unknown relevance to humans.

CERCLA Reportable Quantities: Releases of CERCLA hazardous substances are subject to the release reporting requirement of CERCLA section 103, codified at 40 CFR part 302, in addition to the requirements of 40 CFR part 355.

FIFRA Requirements: As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their future use. Under this pesticide reregistration program, EPA examines health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether they are eligible for reregistration. In addition, all pesticides must meet the new safety standard of the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA, as amended in 1988, were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern and List D pesticides of less concern. Hydrogen dioxide is found on List D. Case No: 4072; Pesticide type: Fungicide, Herbicide, Rodenticide, and Antimicrobial; Case Status: RED Approved 12/93; OPP has made a decision that some/all uses of the pesticide are eligible for reregistration, as reflected in a Reregistration Eligibility Decision (RED) document.; Active ingredient (AI): Hydrogen dioxide; AI Status: OPP has completed a Reregistration Eligibility Decision (RED) document for the case/AI. An exemption from the requirement of a tolerance is established for residues of hydrogen dioxide in or on all food commodities at the rate of less than or equal to 1% hydrogen dioxide per application on growing crops and post harvest potatoes when applied as an algacide, fungicide and bactericide.

FDA Requirements: Hydrogen dioxide is an indirect food additive for use only as a component of adhesives. Substance added directly to human food affirmed as generally recognized as safe (GRAS) only when used to treat the following food within /specific/ limitations: milk, whey, dried eggs, tripe, beef feet, herring, wine, starch, instant tea, corn syrup, colored (annatto) cheese whey, wine vinegar, and emulsifiers containing fatty acid esters. Hydrogen dioxide used as a bleaching agent in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice.

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16 OTHER INFORMATION

Date of Preparation June 2015

Date of Revision -

Prepared for BICI Chemicals, by Peter Bursztyn

Resources: CHEMINFO (Canadian Center for Occupational Health & Safety), Hazardous Substances Data Bank (US National Library of Science), EChA Dossiers (European Union), ESIS European Chemical Substances Information System (European Union), OSHA Database (US Dept. of Labor), and RTECS Database Registry of Toxic Effects of Chemical Substances.

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