

SAFETY DATA SHEET

Section 1: Identification

Product Name: TwinOxide 0.005% aqueous solution

Chemical Name/Synonyms:

Company: TwinOxide International B.V., De Tongelreep 17 NL-5684 PZ Best

Telephone: +31 499 32 92 42 Fax: +31 499 32 96 20

Email: Info@twinoxide.com

Internet: www.twinoxide.com

TwinOxide is a biocide and oxidizing agent for water purification. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

In emergency call 911. Or 24/7 # 1-800-424-9300

www.twinoxide.com/ GIZ Nord Tel.: +49 (0) 551 - 1 92 40

This number is only available during office hours.

USA Tel: 303-877-3684 Joe Nieusma, PhD toxicologist

Section 2: Hazard(s) Identification

Hazard Classification: slight potential eye irritation

Signal Word(s): Caution. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Hazard Statements: No adverse effects from labeled usage expected

Pictograms: none required

Precautionary Statements: Chlorine dioxide solution in concentrations of 0.005% or less is possibly irritating to the eyes. It is quickly broken down into other chlorine derivatives such as chlorate, chlorite and chloride.

IF IN EYES: Rinse with water for a few minutes. Remove contact lenses, if present, continue rinsing.

If eye irritation persists: Get medical attention.

Description of other hazards: No other hazards are expected for the 0.005% or less solution of chlorine dioxide. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Section 3: Composition/ Information on Ingredients

Components

CAS No	Chemical name	Quantity
10049-04-4	Chlorine dioxide	0.005 %

Potential for eye irritation.

This liquid product is made of TwinOxide component A and component B.

At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Section 4: First-Aid Measures

1. Description of first aid measures General information

First aider: Pay attention to self-protection.

Symptoms of exposure may develop several hours following exposure. No adverse effects expected from 0.005% solution. Remove affected person to a well-ventilated area. Drink plenty of water. If symptoms of exposure persist for several days, see a physician.

After inhalation

No adverse effects expected from 0.005% solution. Remove person to fresh air if chlorine dioxide has been inhaled. Drink plenty of water.

After contact with skin

No adverse effects expected from 0.005% solution. After contact with skin, wash immediately with plenty of water and soap. Eventually, take off contaminated clothing and wash it before reuse. In a rare case of skin irritation, seek medical treatment.

After contact with eyes

No adverse effects expected from 0.005% solution. In case of contact with eyes, rinse immediately with plenty of flowing water for a few minutes holding eyelids apart.

After ingestion

No adverse effects expected from 0.005% solution. Rinse mouth and drink plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting.

2. Most important symptoms and effects, both acute and delayed

Small potential for eye irritation.

Section 5: Fire-Fighting Measures**1. Suitable extinguishing media**

Water is recommended since chlorine dioxide is soluble in water and the toxic effects are reduced on dilution. Foam. Dry extinguishing powder. Carbon dioxide (CO₂).

2. Advice for firefighters

Wear self-contained breathing apparatus. Full protective suit. Use water spray jet to protect personnel and to cool endangered containers. Suppress gases / fumes with water spray jet. No chemical-specific hazards are expected from 0.005% TwinOxide in the event of a fire as product is >99% water. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Section 6: Accidental Release Measures

1. Provide adequate ventilation. No adverse effects of release expected. Avoid contact with eyes. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

2. Environmental precautions

Chlorine dioxide at 0.005% is not an environmental hazard. Spills of chlorine dioxide solutions should be diluted to a low concentration using large volume of water. Rinse spills away to drain. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

3. Methods and material for containment and cleaning up very large volume spills:

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Section 7: Handling and Storage**Advice on safe handling**

Store for use in closed containers. No adverse effects of handling 0.005% solution expected. Handle and open container with care. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Advice on protection against fire and explosion

Gaseous chlorine dioxide is emitted on heating. Chlorine dioxide solutions are not flammable or explosive at 0.005%. Usual measures for fire prevention. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Further information on handling

At the diluted use levels, it is noncorrosive. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

1. Conditions for safe storage, including any incompatibilities**Requirements for storage rooms and vessels**

Store in closed container or well-ventilated area. Keep/Store only in original container. Keep container tightly closed. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Advice on storage compatibility

Keep away from: acid. Alkalis (alkalis). Oxidizing agents, strong. Reducing agents. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Further information on storage conditions

Keep in a cool, well-ventilated place. Handle and open container with care. Protect against direct sunlight. Keep away from heat. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

2. Specific end use(s)

Storage stability: at room temperature at least 4 weeks; cool and protected from light stability is up to 9 months. More Identified uses: biocides and oxidizing agents. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Section 8: Exposure Controls/Personal Protection

Chemical Name	OSHA PEL	OSHA PEL (ceiling)	ACGIH OEL (TWA)	ACGIH OEL (STEL)
Chlorine dioxide	0.1 ppm	0.3 ppm	0.1 ppm	0.3 ppm

Exposure controls protective and hygiene measures

Do not eat, drink or smoke. Do not breathe vapor. Avoid contact with eyes. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Eye/face protection

Eyeglasses with side protection (DIN EN 166)

Hand protection

Hand protection is not required for 0.005% solution.

Skin protection

Skin protection is not required for 0.005% solution. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Respiratory protection

Respiratory protection is not required for 0.005% solution. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Environmental exposure controls

Environmental exposure protection is not required for 0.005% solution. At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Section 9: Physical and Chemical Properties

Form: slight yellow liquid

Odor: slight to mild chlorine pool odor

Odor threshold: not determined

pH: ~6-6.7

Melting point/melting range: -2 °C Water

Boiling point/boiling range: ~102 °C Water

Flash point: not applicable

Evaporation rate: not determined

Flammability: not applicable

Upper/lower flammability or explosive limits: not applicable

Auto ignition temperature: not applicable

Danger of explosion: at very high levels of >12% in air

Vapor pressure: not determined

Vapor density: ~1.10 g/cm³

Relative density: not determined

Partition coefficient: n-octanol/water: not determined

Decomposition temperature: 180 degrees F

Solubility in/Miscibility with water: completely miscible

Viscosity: Not determined

Section 10: Stability and Reactivity

1. **Reactivity**

No hazardous reaction when handled and stored according to provisions.

2. **Chemical stability**

The product is stable under storage at normal ambient temperatures. Chlorine dioxide has higher solubility at colder temperatures enhancing stability.

3. **Possibility of hazardous reactions**

No known hazardous reactions.

4. **Conditions to avoid**

High heat (slow decomposition). Avoid direct sunlight.

5. **Incompatible materials**

Acid. Oxidizing agents, strong. Reducing agents. Non-corrosive to metals when diluted with water. No corrosive initiation or propagation of existing corrosion expected at concentrations less than 100 PPM

with a 10 day continuous exposure.

6. Hazardous decomposition products

Chlorine compounds.

Section 11: Toxicological Information

At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

Acute toxicity: Rat Oral LD50 93.86 mg/kg BW

Potential routes of exposure/potential health effects

Skin: skin protection is not required for 0.005% solution.

Eye: potential eye irritant.

Inhalation: respiratory irritation not expected for 0.005% solution.

Ingestion: mucous membrane irritation not expected for 0.005% solution.

Carcinogenic effects: No information available

Mutagenic effects: No information available

Reproductive toxicity: No information available

Sensitization: No information available

Target organs: Eyes

Section 12: Ecological Information (non-mandatory)

At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

1. Toxicity of concentrated chlorine dioxide

CAS 10049-04-4 Chlorine dioxide

Acute fish toxicity LC50 2.563 mg/l 96 h Brachydanio rerio (zebra-fish)

Fish toxicity NOEC 2.063 mg/l 2 d Brachydanio rerio (zebra-fish)

2. Persistence and degradability: Inorganic product which is not eliminable from water through biological cleaning processes.

3. Bioaccumulative potential: Not relevant.

4. Mobility in soil: The product has not been tested.

5. Results of PBT and vPvB assessment: The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

6. Other adverse effects: No expected adverse effects of 0.005% solution.

Section 13: Disposal Considerations (non-mandatory)

At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

13.1. Waste treatment methods

Waste disposal number of waste from residues/unused products

190899 WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTEWATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE; wastes from wastewater treatment plants not otherwise specified; wastes not otherwise specified

Contaminated packaging

Wash with plenty of water. Completely emptied packages can be recycled.

Section 14: Transport Information (non-mandatory)

At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

DOT regulations: no known restrictions

- **Hazard class:** no known restrictions

Section 15: Regulatory Information (non-mandatory)

At 0.005% (50 ppm) TwinOxide is a nonhazardous liquid.

US Federal Regulations

SARA Section 355 (extremely hazardous substances): no known restrictions

SARA Section 313 (specific toxic chemical listings): no known restrictions

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs): no known restrictions

TSCA (Toxic Substances Control Act): no known restrictions

Section 16: Other Information

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. TwinOxide, Inc. assumes no responsibility for injury to the operator or others nearby caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, TwinOxide, Inc. assumes no responsibility for injury to the operator or others nearby caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, operator assumes the risk in their use of the material.

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Written by Joe Nieusma, PhD toxicologist phone 303-877-3684