1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Name of product

TwinOxide 0.3 % solution

Manufacturer/distributor

TwinOxide International B.V.
De Tongelreep 17, NL-5684 PZ Best
Netherlands
Phone +31 499 32 92 42, Fax +31 499 32 96 20

E-Mail info@twinoxide.com
Internet http://www.twinoxide.com/

Advice

TwinOxide International B.V.
Phone +31 499 32 92 42
Fax +31 499 32 96 20

Emergency advice

GIZ Nord
Phone +49 (0) 5 51 - 1 92 40
This number is only available at office times.

Recommended intended purpose(s)
As a water disinfectant and an oxidizing agent

2. HAZARDS IDENTIFICATION

Classification according to 67/548/EEC or 1999/45/EC
Xi; R36

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
Eye Irrit. 2	**H319**	**Calculation method.**

Information pertaining to special dangers for human and environment
A gaseous phase with 4 Vol % chlorine dioxide is formed over the solution, which possesses the following dangers:
T+, R26 (very toxic by inhalation).
Xi, R36/37/38 (irritating to eyes, respiratory tract and skin).
N, R50 (very toxic to aquatic organisms).
These hazards are to be considered while handling this product!

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description
Aqueous chlorine dioxide solution (ca. 3 g/l chlorine dioxide in water).

CAS No 10049-04-4 **chlorine dioxide ca. 0.3 %**
EC No 233-162-8
Index No 006-089-01-X

Additional advice
This chlorine dioxide solution is manufactured by using TwinOxide components A and B in accordance with manufacturer's instructions.

4. FIRST AID MEASURES

General information
If threatening unconsciousness, position and transport in recovery position
Symptoms of poisoning may not occur for hours, therefore medical supervision for at least 48 hours necessary.
Adhere to personal protective measures when giving first aid.
Take away from danger area and lay down affected person.
In case of breathing difficulties give oxygen.

In case of inhalation
Remove the casualty into fresh air and keep him immobile.
Seek medical treatment immediately.
In case of respiratory standstill give artificial respiration by respirator and send for a doctor.

In case of skin contact
In case of contact with skin wash off immediately with soap and water.
Remove contaminated clothing immediately, even underwear and shoes.
Consult a doctor if skin irritation persists.

In case of eye contact
Eye rinsing with water carefully while protecting unhurt eye.
Medical treatment by eye specialist.

In case of ingestion
Do not induce vomiting.
Call for a doctor immediately.
Rinse out mouth and give plenty of water to drink.

Physician's information / possible symptoms
The following symptoms may occur:
Eye defects
Unconsciousness
Coughing
Shortness of breath
Headache
Nausea
Dizziness
Gastrointestinal complaints

Physician's information / possible dangers
Risk of pulmonary irritation
Risk of pulmonary oedema
As chronic effects illness of respiratory tract (chronical bronchitis) or lung fibrosis is possible.

Treatment (Advice to doctor)
Continue to monitor for pneumonia and pulmonary oedema.
Pre treatment with Corticoid-Spray, e.g. Auxiloson-, Pulmicort-Dosieraerosol.
If swallowed, flush stomach.
Monitor circulation.
Control of heart function and blood parameter

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Foam
Dry fire-extinguishing substance
Carbon dioxide
Water spray jet

Extinguishing media which must not be used for safety reasons
Full water jet

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
In the event of fire the following can be released:
Hydrogen chloride (HCl)
Chlorine (Cl2)
Dioxine
Phosgene

Special protective equipment for fire-fighters
Use breathing apparatus with independent air supply.
Wear full protective clothing.
Do not inhale explosion and/or combustion gases.

Additional information
Cool endangered containers with water spray jet.
Inhalation of dangerous decomposing products may cause severe damages to health.
Keep people away and stay on the upwind side.
Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Ensure adequate ventilation.
Keep people away and stay on the upwind side.
Use personal protective clothing (see chapter 8).
Keep away sources of ignition.

Environmental precautions
Collect contaminated water / firefighting water separately.
Do not discharge into the drains/surface waters/groundwater.

Methods for cleaning up
Send in suitable containers for recovery or disposal.
Use chemical neutralizers.
Take up mechanically and send for disposal.

Additional Information
Information for safe handling see chapter 7.

7. HANDLING AND STORAGE

Advice on safe handling
In case of free handling thoroughly sucking off vapours is necessary.
During filling from containers a chlorine dioxide degassing will happen.
Transport and store containers always upright.
While filling and pouring suck off filling place.
Care for thoroughly room ventilation, if necessary use in well ventilated area with local exhaust ventilation at workplace.
Open and handle container with care!

Advice on protection against fire and explosion
The product is not combustible.
Chlorine dioxide solutions are explosive when exceeding concentrations of 300 g/m3.
Critical concentrations over the aqueous solution expected by heating up (e.g. by sunlight).
Pay attention to general rules of internal fire prevention.

Requirements for storage rooms and vessels
Ventilate store-rooms thoroughly.
Provide solvent-resistant and impermeable floor.
Keep only in original container.

Advice on storage compatibility
Do not store with acids, alkalies or combustible materials.
Do not store with oxidizing agents.
Keep at distance to reducing agents.

Further information on storage conditions
Keep container tightly closed, store at cool and aired place, open and handle carefully.
Protect from direct solar radiation.
Protect from heat/overheating.

Storage group 6.1BL

Fire class B

Information on storage stability
At room temperature chlorine dioxide solutions are stable for 2 - 4 weeks, longer stable at cool and light protected storage.

Recommendation(s) for intended use
As a water disinfectant and an oxidizing agent

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m3]	[ppm]	Spitzenb.	Remark
10049-04-4	chlorine dioxide	WEL, 8 hours	0,28	0,1		
		Short-term	0,84	0,3		

Additional advice
Observe national and local legal requirements.

Respiratory protection
If ventilation insufficient, wear respiratory protection.
Short term: filter apparatus, Filter B

Hand protection
Gloves made of nitril rubber (NBR).
Glove material specification [make/type, thickness, permeation time/life, wetting resistance]:
The personal protection must be chosen workplace-specific due to the dependence on concentration and amount of hazardous substances.
The chemical resistance of the personal protection gloves for this special application should be clarified and confirmed by the supplier.
Recommended protection glove type (use restriction time in hrs):
KCL 741 Dermatril L (splash and full contact; Thickness: 0,11 mm; Break-through time: > 480 min).

Eye protection
Safety goggles with side protection

Skin protection
Light protective clothing, thick material

General protective measures
Do not inhale vapours.
Avoid contact with eyes and skin

Hygiene measures
Clean skin thoroughly after working.
At work do not eat, drink, smoke or take drugs.
Remove soiled or soaked clothing immediately.

Limitation and surveillance of the environment
Do not discharge into the drains/surface waters/groundwater.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	**Color**	**Odor**
liquid	yellow	chlorine-like

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	ca. 3				
boiling point	ca. 102 ° C				water
melting point	ca. -2 ° C				water
Flash point					not applicable
Flammability (gas)					not applicable
Ignition temperature					not applicable
Auto ignition					not applicable
Lower explosion limit					not applicable

	Value	Temperature	at	Method	Remark
Upper explosion limit					not applicable
Vapour pressure					not determined
Density	ca. 1,10 g/l				
Solubility in water					multimiscible
Partition coefficient (log pOW)					not applicable
Viscosity					not applicable
Solvent separation test					not applicable
Solvent concentration					not applicable
Water content	> 95 %				

Oxidizing properties
No data available.

Explosive properties
No data available.

10. STABILITY AND REACTIVITY

Conditions to avoid
Heating (Decomposition!).

Materials to avoid
Reactions with acids and strong oxidizing agents.
Reactions with reducing agents.
Reaction with metals and metal salts.

Hazardous decomposition products
Chlorine compounds

Additional information
No decomposition if used as prescribed.

11. TOXICOLOGICAL INFORMATION

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LD 50 acute oral				not determined
LD 50 acute dermal				not determined
Irritability skin				not determined

	Value/Validation	Species	Method	Remark
Irritability eye				not determined
Skin sensitization				not determined

Experiences made from practice
Long-term irritations of eyes possible.

12. ECOLOGICAL INFORMATION

Data on elimination (persistence and degradability)

	Elimination rate	Method of analysis	Method	Validation
Degradability	not applicable			
Biological eliminability	not determined			
Degradability according to WRMG	not applicable			

Mobility and bioaccumulative potential
not determined

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 100 - 500 mg/l (96 h)	Brachidanio rerio	OECD 203	
Daphnia				not determined
Algae				not determined
Bacteria				not determined

Additional ecological information

	Value	Method	Remark
OC			not determined
COD			not determined
BOD			not determined
AOX			not applicable

General regulation
Product is not allowed to be discharged into aquatic environment, drains or sewage treatment plants without pre-treatment.

13. DISPOSAL CONSIDERATIONS

Waste code No.	Name of waste
19 08 99	wastes not otherwise specified
19 09 99	wastes not otherwise specified

Recommendations for the product
Use Twinoxide Neutralizer (ask your supplier).

Recommendations for packaging
Packaging that cannot be cleaned should be disposed of like the product.

Recommended cleansing agent
Water.

General information
Disposal according to 91/692/EEC.

14. TRANSPORT INFORMATION

Land and inland navigation transport ADR/RID
UN 3287 TOXIC LIQUID, INORGANIC, N.O.S. (chlorine dioxide), 6.1, II, (D/E), Classification code: T4
Marine transport IMDG
UN 3287 TOXIC LIQUID, INORGANIC, N.O.S. (chlorine dioxide), 6.1, II
Air transport ICAO/IATA-DGR
UN 3287 Toxic liquid, inorganic, n.o.s. (chlorine dioxide), 6.1, II

15. REGULATORY INFORMATION

Labeling according to Regulation (EC) No 1272/2008 [CLP/GHS]

GHS07

Product identifiers
Chlorine dioxide 0.3 %

Signal word
Warning

Hazard Statements

H319	Causes serious eye irritation.

Precautionary Statements

P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/attention.

Special rules for supplemental label elements for certain mixtures
Use biocides safely. Always read the label and product information before use.

National regulations

Restriction of occupation
Observe employment restrictions for young people.

Decree for case of interference/remarks No subject to the "Seveso II directive [96/82/EC]".

Technical instruction air remarks
In the delivered state the product is not subject to the TA air (for Germany only).

Water hazard class 1 Mixture-WGK
Self classification according Annex 3, VwVwS.

Other regulations, restrictions and prohibition regulations
To observe: TRGS 514 "Storage of highly poisonous and poisonous substances in packaging and transportable containers"

16. OTHER INFORMATION

Recommended uses and restrictions
Only for industrial users.
Observe national and local legal requirements.

Further information
The information contained in this data sheet is based on our present state of knowledge and experiences. It should not therefore be construed as guaranteeing specific properties of the product described on their suitability for a particular application.

Sources of key data used
GESTIS Substance data base (http://www.hvbg.de/d/bia/fac/zesp/zesp.htm)
IUCLID Data set

Wording of the R-phrases specified in chapter 3 (not the classification of the formulation!)

R 25 Toxic if swallowed.
R 34 Causes burns.
R 50 Very toxic to aquatic organisms.

H301 Toxic if swallowed.
H314 Causes severe skin burns and eye damage.
H319 Causes serious eye irritation.
H400 Very toxic to aquatic life.