MSDS Report

Sample Description: **OxyFect® 8500 Aqueous Solution (8502, 8504, 8505, 8506, 8507, 8508)**

Applicant: **SteriClear (Pty) Limited**

Last Updated: **February 2020**

Section 1 Chemical Product and Company Identification

Product Name: OxyFect® 8500 Series aqueous solution

Identified uses: Disinfection, Sterilization, Odour elimination, Biocide

Applicant: Stericlear (Pty) Limited

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Date of preparation: July 2015, *Reviewed February 2020*

Emergency Contact Number: 0827075905

Section 2 Hazards Identification

Classification of the substance or mixture

GHS Classification:	Skin Irritation: Category 2 Eye Irritation: Category 2B Acute Toxicity – Inhalation: Category 4
Signal Word:	Warning
Pictogram:	
Hazard Statements:	Can cause mild skin dry sensation Can cause temporary mild eye irritation
Precautionary Statements:	Avoid drinking the solution. Avoid handling for prolonged periods without protective gloves Do not breathe fumes of dissolving tablet during the dissolving stage (initial 2 minutes) If on skin: Safe, however wash with water if discomfort sets in. If skin irritation occurs: Wash with water. If in eyes: Safe, however if eye irritation occurs, it should disappear in 5-10 minutes without intervention. If eye irritation persists: Rinse with water or use saline eye drops.

If accidentally ingested: Drink plenty of water.
Call a doctor if you feel unwell.
Specific treatment (see First Aid Measures on this SDS).

Unclassified Hazards:	None
Ingredients with Unknown Toxicity:	None

Section 3 Composition/Information on Ingredients

Hazardous component(s):

Chemical name	Chlorine Dioxide Other names: Chloroperoxyl, Chlorine Peroxide solution
CAS #	10049-04-4
Molecular formula	ClO_2
Concentration	0.01% (100 ppm)

Non-hazardous component(s):

Chemical name	Water
CAS #	7732-18-5
Molecular formula	H_2O
Concentration	> 99.9%

Section 4 First-Aid Measures

Description of first aid measures

Eyes
The product is safe if directly sprayed in eyes accidentally and will only cause temporary discomfort. If symptoms develop, move patient away from the source of exposure and flush eyes gently with water while holding eyelids apart. If symptoms persist or there is any visual difficulty, seek medical attention.

Skin
Do not handle the tablet with wet hands. If this is accidentally done, then rinse hands with plenty of water to dilute the chlorine dioxide solution.

OxyFect® 8500 aqueous solution is safe to be used on hands, however if exposed over an extended period, a dry sensation may become noticeable. This is nothing to worry about.

Because the product is a dissolved gas, it will evaporate naturally and no intervention is necessary. If dryness or skin irritation persists, wash hands with water.

Swallowing

First aid is not normally required when small amounts of the material are ingested. If symptoms develop or if large amounts of material have been ingested, DO NOT induce vomiting. DO NOT give anything by mouth if the patient is unconscious. Drink large quantities of water. Consult a physician immediately. Neutralization and use of activated charcoal are not recommended.

Inhalation

In its dissolved aqueous form, the only way to inhale the product would be by inhaling the sprayed mist. This is not a problem at all, provided that the mist is not continuously inhaled for periods longer than 30 minutes a day.

The gas which is given off during the tablet dissolving process however must NOT be inhaled. If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen. Monitor the patient closely for delayed development of pulmonary edema, which may occur up to 72 hours after inhalation.

Most Important Symptoms, Acute and Delayed

Can cause mild skin and eye irritation. Harmful if dissolving tablet fumes are inhaled.

Immediate Medical Attention Needed

Call poison control center or doctor for treatment advice.

Notes to Physicians

Probable mucosal damage may contraindicate the use of gastric lavage.

Section 5 Fire-Fighting Measures

Extinguishing media

NFPA Rating
Health – 1
Flammability – 0
Reactivity – 1

Flash Point
Not applicable

Auto-ignition Temperature
Not applicable

Explosive Limit
Chlorine dioxide solution is not explosive. Chlorine dioxide gas, which may evolve from chlorine dioxide solution, may spontaneously decompose with a mild energy release at concentrations of 10% in air or greater at standard temperature and pressure (i.e., 76 mm Hg partial pressure). Chlorine dioxide gas may explode with violent force at concentrations of 30% or greater in air at standard temperature and pressure (i.e., 228 mm Hg partial pressure).

Hazardous Products of Combustion
May form hydrochloric acid gas, oxygen on combustion or decomposition.

Fire and Explosion Hazards
There are no special fire hazards known to be associated with the material.

Extinguishing Media
Water

Fire Fighting Instructions
Wear a self-contained breathing apparatus (SCBA) with a full face piece operated in the "positive pressure demand" setting. Use SCBA in conjunction with appropriate chemically resistant personal protective gear. Refer also to the personal protective equipment section of this MSDS.

Section 6 Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures
If run-off occurs, as long as the product is used in the correct dosage it is perfectly safe. If the tablet is dissolved into small amounts of water, the solution will harm aquatic life. If this happens, notify proper authorities of any runoff, as required. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Methods and Materials for Containment and Cleaning Up
Large spills: Flush area with water. Stop spill at source, dike area around spill to prevent spreading, and pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, vermiculite, floor absorbent, or other absorbent material and shoveled into containers. Flush with water the area from which the bulk of the spill has been removed.

Section 7 Handling and Storage

Handling
Do not handle the tablet or powder with wet hands. Pour the powder or add the tablet to the correct dose of water immediately as soon as the tablet or packaging is opened.

Storage
The aqueous solution should ideally be stored indoors or in UV-resistant containers in order to maintain the effectiveness of the product. It has a visual indicator which indicates the effectiveness of the disinfectant: If it is a slight yellow/green colour then the product is active. If the solution has turned clear, then the chlorine dioxide has denatured, and a new tablet/sachet must be added. Storage temperatures should be maintained above 2°C and below 45°C. The material should not be stored outside or exposed to direct sunlight or freezing temperatures (0°C or below). The material should not be heated to temperatures in excess of 60°C. At temperatures above 60°C, the gas concentration in the headspace of the container may reach high, energetically unstable concentrations.

Section 8 Exposure Controls/Personal Protection

Control parameters
The OSHA permissible exposure limit (PEL) for ClO2 gas in air is 0.1 ppm (0.3 mg/m3) as an 8-hour time weighted average. NIOSH recommended exposure limits (REL) and ACGIH threshold limit values (TLV) are also 0.1 ppm.

Note that this is direct gas exposure and not exposure to the aqueous mist

NIOSH and ACGIH short-term exposure limits (STEL) are 0.3 ppm (0.83 mg/m3) for periods not to exceed 15 minutes. The STEL concentration should not be repeated more than 4 times per day and should be separated by intervals of at least 60 minutes.

Exposure Guidelines (vapor)
OSHA PEL ACGIH TLV ACGIH TLV
0.100 ppm – TWA
0.100 ppm – TWA
0.300 ppm - STEL

Eye Protection
Wear splash-proof face and eye protection (PVC is preferred) where chlorine dioxide solution may splash or spray in extremely high concentrations (over 1000ppm). Safety glasses should be in compliance with OSHA regulations.

Skin Protection
Wear waterproof protective clothing (PVC is preferred) where chlorine dioxide solution may splash or spray in extremely high concentrations. Wear resistant gloves, such as Neoprene, to prevent skin contact, wear impervious clothing and boots. Other protective equipment: eyewash station, emergency shower.

Respiratory Protection
Exposures in the workplace should be monitored to determine if worker exposure exceeds the facility-specified exposure "action level" or the use of the material produces adverse health effects or symptoms of exposure. Provide adequate ventilation to maintain all work areas at concentrations below 0.1 ppm chlorine dioxide concentration. If the generation of vapors or mists is possible, use local ventilation. Where gas concentration may exceed 0.1 ppm, only a NIOSH/MSHA approved full-face acid gas respirator should be used. Monitoring results must be used to assess the proper level or respiratory protection necessary. Proper engineering and/or administrative controls should be used to reduce worker exposure. The facility's respiratory protection program must meet the requirements established in 29 CFR 1910.134, which includes a program for medical evaluation. A NIOSH/MSHA approved self-contained breathing apparatus, with full face piece, is required for leaks and emergencies where the concentration may exceed 5 ppm.

Engineering Controls
Provide sufficient mechanical ventilation-- general and/or local exhaust-- to maintain exposure below allowable limits.

Section 9 Physical and Chemical Properties

Appearance and odour:	Yellow-green liquid, with sharp, pungent odor
Odor threshold of gas:	0.1 ppm
pH:	5.0 or lower (depending on age and temperature)
Freezing Point:	0^{O} C (32^{O} F)
Boiling Point:	100^{O} C (212^{O} F)
Flash Point:	Not applicable
Evaporation Rate:	Not established
Flammability:	Not applicable
Flammability Limits:	Not established
Vapor Pressure:	Not established
Vapor Density:	Not established
Liquid Specific Gravity:	1.0 at 0^{O} C
Solubility:	Complete

Partition Coefficient (n-octanol/water):	Not applicable
Auto-ignition Temperature:	Not applicabile
Decomposition Temperature:	No data
Viscosity	0.894 cP (centipoise) at 25 °C

Section 10 Stability and Reactivity Properties

Reactivity
Material is not reactive under normal conditions of storage and use.

Chemical Stability
The material, as solution, is stable in the dark. On exposure to light, the solution may decompose to an aqueous solution of chloride and chlorate ions. In regard to vapor (gas) that may evolve from the material, see "Hazardous Decomposition Products" below.

Possibility of Hazardous Reactions
Material does not undergo hazardous polymerization.

Conditions to Avoid
Storage temperatures should be maintained above 2°C and below 45°C. The material should not be heated to temperatures in excess of 60°F.

Incompatible Materials
Avoid exposure to light. Avoid contact with: metals, reducing agents, strong oxidizing agents, sulfur compounds or sulfur-containing components, carbon monoxide, excessive heat, mercury, organic materials, phosphorus.

Hazardous Decomposition Products
Gas-phase vapors that evolve from the material may decompose on exposure to light, on contact with incompatible materials (see below), or spontaneously at concentrations above 10% in air at standard temperature and pressure (76mm Hg). On decomposition, material may form: Chlorine, hydrochloric acid gas and oxygen.

Section 11 Toxicological Information

Information on Toxological Effects

Chlorine dioxide gas is a mucous membrane and respiratory tract irritant. Primary routes of exposure include ingestion, skin and eye contact and inhalation of vapors which may evolve from the material.

Target Organ Effects
This material may cause mild eye irritation; it is unlikely to cause serious eye irritation or injury.

Digestive Tract
This material may cause nausea, vomiting and diarrhea; it is unlikely to cause serious digestive tract injury. Chlorine dioxide given daily in drinking water at 1-100 ppm caused a decrease in blood glutathione, altered the morphology of erythrocytes, and caused osmotic fragility in laboratory animals.

Respiratory Tract
The fumes from this material may cause respiratory tract irritation, wheezing and difficulty breathing. In extreme cases, it may cause pulmonary damage and death.

Developmental/Reproductive Effects
Available information is insufficient to assess risk to the fetus from maternal exposure to this material during pregnancy. Chlorine dioxide did not cause birth defects in laboratory animals even at very high exposure levels.

Cancer Effects
Available information is insufficient to assess cancer risk (i.e., carcinogenicity) associated with exposure to this material. This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA) United States Environmental Protection Agency (EPA) or American Conference of Industrial Hygienists (ACGIH).

Other Health Effects
No data available on other possible health effects

Section 12 Ecological Information

Toxicity

CAS# 7758-19-2: Fish: Cyprinodon variegatus (sheephead minnow): LC50 = 75mg/l/96h
Daphnia: Daphnia magna (water flea): EC50 = 0.29mg/l/48h
CAS# 77-92-9: Fish: leuciscus : LC50 = 440-760mg/l/96h
Daphnia: Daphnia magna (water flea): EC50 = 14mg/l/15 min
CAS# 77-92-9: Fish: leuciscus : LC50 = 440-760mg/l/96h
Daphnia: Daphnia magna (water flea): EC50 = 300mg/l/96h
CAS# 7647-14-5: Fish: Lepomis macrochirus: LC50 = 265mg/l/48h
Daphnia: Daphnia magna (water flea): EC50 = 1661mg/l/48h

Section 13 Disposal Considerations

Waste from Residues/unused products: chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

Contaminated packaging: Contaminated packaging material should be treated equivalent to residual chemical. Clean packaging material should be subjected to waste management schemes (recovery recycling, reuse) according to local legislation.

Section 14 Transport Information

	IATA	IMDG	RID/ADR
Proper shipping name	Corrosive solid, n.o.s. Chlorine dioxide precursor tablets	Corrosive solid, n.o.s. Chlorine dioxide precursor tablets	Corrosive solid, n.o.s. Chlorine dioxide precursor tablets
Hazard Class	8	8	8
Un Number	UN1759	UN1759	UN1759
Packing Group	II	II	II

Section 15 Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available

Canada
All components of this product are listed on Canada's DSL List

US Federal Toxic Substance Control Act (TSCA)
All components of this product are listed on the TSCA inventory

Section 16 Additional Information

MSDS Creation Date: June 2015
The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not accept any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Text of H-code(s) and R-phrase(s) mentioned in Section 3
Ox. Sol.2: Oxidizing solids (category 2)
Skin Corr.1B: Skin Corrosion (Category 1B)
Acute Tox.3*: Acute toxicity, oral (Category 3)
Acute Tox.2*: Acute toxicity, inhalation (Category 2)
Acute Tox.1*: Acute toxicity, dermal (Category 1)
Aquatic Acute 1: Acute aquatic toxicity (Category 1)
Eye Irrit.2: Eye Irritation (Category 2)
Eye Dam. 1: Serious eye damage (Category 1)
H272 May intensify fire: oxidizer
H301 Toxic of swallowed
H310 Fatal if in contact with skin
H314 Causes severe burns to skin and eye damage
H318 Causes serious eye damage
H319 Causes serious eye irritation
H330 Fatal if inhaled
H400 Very toxic to aquatic life
R8 Contact with combustible material may cause fire
R22 Harmful if swallowed
R24 Toxic in contact with skin

R26 Very toxic inhalation
R34 Causes burns
R36 Irritating to eyes
R41 Risk of serious damage to the eyes
R50 Very toxic to aquatic organisms
Other information:
ACGIH: (American Conference of governmental Industrial Hygienists); CAS: (Chemical Abstracts Service); DSL:(the Domestic Substances List of Canada); EC(European Commission); IARC:(International Agency for Research on Cancer); IATA:(International Air Transport Association); IMDG:(International Maritime Dangerous Goods); ADR:(European Agreement concerning the Internal Carriage of Dangerous Goods by Road); RID:(European Regulations concerning the International Carriage of Dangerous Goods by Rail); LD50:(Lethal dose, 50% kill)