

I. Product and Company Identification

1.1 Identification of the substance or preparation:

SODIUM CHLORITE SOLUTION 25% (Sodium Chlorite Solution)

1.2 Company Identification: Odour Control Systems Limited
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Hawarden Industrial Park
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Hawarden,
Deeside.
CH5 3PP.
Tel: 01244 536700 Fax: 01244 535184

II. Composition/Information on Ingredients

2.1 Chemical Name	% Range	OSHA PEL
Sodium Chlorite	25 - 40%	None Established
Sodium Chloride	1 - 6%	None Established
Sodium Hydroxide	0 - 1%	None Established
Sodium Chlorate	0 - 3%	None Established
Sodium Carbonate	0 - 1%	None Established
Water	48 - 74%	None Established

III. Hazards Identification

3.1 Emergency Overview Clear, water white to slightly yellow liquid, slight chlorine odour
DANGER! Causes skin and eye irritation or burns. Harmful if swallowed.

3.2 Potential Health Effects

Inhalation: Inhalation of vapours or mists may cause irritation of the mucous membranes and respiratory tract.

Symptoms may include coughing, bloody nose and sneezing.
Severe over exposures may cause lung damage.

Skin: Direct contact may cause irritation and/or burns with symptoms of redness, itching, swelling and possible destruction of tissue.

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Eye:	Direct contact may cause irritation and/or burns with symptoms of redness, itching, swelling and possible destruction of tissue.
Ingestion:	Ingestion may cause gastroenteritis with any or all of the following symptoms: nausea, vomiting, lethargy, diarrhoea, bleeding or ulceration. Acute ingestion of large quantities may cause anaemia due to the oxidising effects of the chemical.
3,3 Medical Conditions Aggravated by Exposure:	Deficiency in G6PD enzyme and other red blood cell diseases.
3.4 Interactions with other Chemicals which Enhance Toxicity:	None known or reported.

IV. First Aid Measures

4.1 Inhalation:	Move patient to fresh air and monitor for respiratory distress. If cough or difficulty in breathing develops, administer oxygen, and consult a physician immediately. In the event that breathing stops, administer artificial respiration and obtain emergency medical assistance immediately.
4.2 Skin:	Remove contaminated clothing. Immediately flush exposed skin areas with large amounts of water for at least 15 minutes. Consult a physician if burning or irritation of the skin persists. Contaminated clothing must be laundered before reuse.
4.3 Eyes:	Immediately flush eyes with large amounts of water for at least 15 minutes while frequently lifting the upper and lower eyelids. Consult a physician immediately
4.4 Ingestion:	DO NOT induce vomiting. Drink large quantities of water. Consult a physician immediately. DO NOT give anything by mouth if the person is unconscious or having seizures.
4.5 Notes to Physician:	Chlorine Dioxide vapours are emitted when this products contacts acids or Chlorine. If these vapours are inhaled, monitor patient closely for delayed development of pulmonary oedema which may occur upto 48-72 hours post-inhalation. See section 11 for toxicological information.

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V. Fire Fighting Measures

- 5.1 Flash Point: Not applicable
- 5.2 Autoignition Temperature: Not applicable
- 5.3 Flammable Limits In Air:
(Percent In Volume) Not applicable
- 5.4 Extinguishing Media Not applicable – choose extinguishing media suitable for surrounding materials
- 5.5 Fire Fighting Instructions
- Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Use flooding quantities of water as fog or spray. This product becomes a fire or explosion hazard if allowed to dry, so use water spray to keep fire exposed containers cool. Extinguish fire-using agent suitable for surrounding fire.
- Fire fighters should wear full protective clothing (Chemically impermeable, full encapsulated suit) and positive pressure self-contained breathing apparatus. This product becomes a fire or explosive hazard if allowed to dry; see section 10

VI. Accidental Release Measures

- 6.1 Evacuation procedures must be placed into effect. Evacuate all non-essential personnel. Hazardous concentrations in air may be found in local spill area and immediately downwind. Utilise emergency response personnel protective equipment prior to the start of any response. This product may represent an explosion hazard, in the form of explosive Chlorine Dioxide gas if it contacts acid or Chlorine. Remove all sources of ignition, such as flames, hot glowing surfaces or electric arcs. Stop source of spill as soon as possible and notify appropriate personnel.

Notify all down stream water users of possible contamination.

Create a dyke or trench to contain all liquid material. Spill materials may be absorbed using clay, soil or non flammable commercial absorbents. Continue to keep damp. If allowed to dry, dried material can ignite in contact with consumable materials. Do not place spill materials back in their original containers. Containerise and label all spill materials properly. Decontaminate all clothing and, if permitted, the spill area using strong detergent and flush with large amounts of water.

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VII. Handling And Storage

- 7.1 Handling Do not get in eyes, or on skin, or on clothing. Do not taste or swallow. Do not handle with bare hands. Use only thoroughly clean, dry utensils when handling. Avoid breathing fumes. This product becomes a fire hazard if allowed to dry. Remove and wash contaminated clothing to avoid fire.
- This solution contains Sodium Chlorite. Dry Sodium Chlorite is a strong oxidising agent. Mix only into water. Contamination may start a chemical reaction with generation of heat, liberation of hazardous gases (Chlorine Dioxide is a poisonous, explosive gas), and possible fire and explosion. Do not contaminate with garbage, dirt, organic matter, household products, chemicals, soap products, pain product, solvents, acids, vinegar, beverages, oils, pine oil, dirty rags, or other foreign matter.
- 7.2 Storage
Storage Conditions Do not store at temperatures above 100°C (212°F)
Do not expose to direct sunlight or ultraviolet light.
- Avoid contact with combustible or readily oxidisable materials;
Sulphur containing rubber.
- 7.3 Shelf Life Limitations 2 years.
- 7.4 Incompatible Materials
for Storage or Transport Acids, reducing agents, combustible material, oxidisers
(such as hypochlorites), paints, sulphur, solvents.

VIII. Exposure Controls/Personal Protection

- 8.1 Engineering Controls
- Ventilation Local exhaust ventilation is recommended if vapours, mists or aerosols are generated. Otherwise, use general exhaust ventilation.
- 8.2 Personal Protective Equipment
- Eye And Face Protection Wear chemical goggles. A face shield should be worn in addition to goggles where splashing or spraying is a possibility.
- Skin Protection Wear neoprene gloves, boots and apron.
- Respiratory Protection Wear a NIOSH/MSHA approved respirator plus dust/mist pre filters if any exposure to dust or mist is possible.
- General Emergency eyewash and safety showers must be provided in the immediate work area. Thoroughly wash all contaminated clothing.
- 8.3 Exposure Guidelines None established

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IX. Physical and Chemical Properties

9.1 Chemical Formula	NaClO ₂
Molecular Weight	90.45
Appearance and Odour	Clear, white water to slightly Yellow liquid, slight Chlorine odour
Specific Gravity	1.3 - 1.4 at 25/25°C
Vapour Pressure	No data
pH @25°C	>12
Solubility in Water	Complete

X. Stability and Reactivity

10.1 Chemical Stability	Stable
10.2 Conditions to Avoid	Temperatures above 175°C (347°F) (dry material) Evaporation to dryness; dried material can ignite upon contact with combustibles. Exposure to sunlight or ultraviolet light can reduce product strength.
10.3 Incompatibility with other Materials	Acids, reducing agents, combustible materials, oxidisers (such as hypochlorites), Sulphur-containing rubber, dirt, soap, solvents, paints. Contamination with acids, Chlorine or organic materials. Avoid contact with heat or flame source.
10.4 Hazardous Decomposition Products	Explosive and toxic Chlorine Dioxide gas will be generated on contact with acids or Chlorine.
10.5 Hazardous Polymerization	Will not occur

XI. Toxicological Information

11.1 Acute Toxicity

Inhalation	Inhalation may cause irritation of the mucous membranes and respiratory tract. Symptoms may include coughing, bloody nose, and sneezing. Severe over exposures may cause lung damage
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Animal Toxicology	Inhalation LC50: No available data
	Dermal LD50: >2 g/kg (rabbit)
	Oral LD50: 165 mg/kg (rat)

11.2 Chronic Toxicity

Inhalation	There is no data available on the chronic effects of inhaling Sodium Chlorite.
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Skin	There are no studies or reports on the repeated effects of dermal exposure to Sodium Chlorite. Because of the acute effects, repeated direct contact may be unlikely.
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Ingestion

The chronic ingestion of low concentrations of this product has been studied in laboratory animals. Concentrations in the drinking water of 100ppm and higher have been shown to cause mild anaemia and a minor suppression of thyroid functions in laboratory animals. All effects were reversible after cessation of treatment.

Clinical studies of communities using Sodium Chlorite as a disinfectant found no adverse effects in the human population studied. However, other studies have suggested that those individuals deficient in an enzyme (G6PD) utilised in haemoglobin synthesis might be susceptible to the development of anaemia if exposed repeatedly.

Repeated exposures to solutions of Chlorine Dioxide at concentrations of 10-100ppm have produced slight effects upon the thyroid in younger animals and the haematologic system. Exposures to these concentrations can reduce the cellular and blood levels of glutathione, an agent, which is protective against the oxidising effect of this chemical.

Exposure of laboratory animals above 100ppm in the drinking water have shown a decrease in blood cell glutathione, red blood cell count and haemoglobin. In some studies these levels also caused a slight decrease in thyroid hormones, especially in younger animals.

Carcinogenicity

Sodium Chlorite is not listed by NTP, IARC, OSHA, EPA, or any other authority as a carcinogen. Carcinogenicity studies conducted in mice and rats did not show an increase in tumours in animals exposed to Sodium Chlorite in their drinking water.

Mutagenicity

Sodium Chlorite has been evaluated for possible mutagenic effects in several laboratory tests. Sodium Chlorite tested positive in the Ames Salmonella reverse mutation assay without metabolic activators and caused chromosomal aberrations in an in vitro Chinese hamster fibroblast cell line without metabolic activators. Sodium Chlorite also tested positive in the mouse micronucleus assay when administered intraperitoneally (directly into the body cavity), but was not mutagenic when administered orally. The significance of these test results for human health is unclear because the oxidising effects of the chlorite or salting effects of the sodium may significantly affect the ability of these tests to accurately detect mutagens.

Reproductive Toxicity

Sodium Chlorite has not been found to be teratogenic in studies in which animals have been exposed upto 100ppm in the drinking water. Male rats repeatedly exposed to concentrations of 100ppm or greater in the drinking water have shown slight effects on sperm motility. No effects were observed at 10ppm and no effects were observed on fertility rate, histology of the male reproductive system or conception rate of animals exposed at 10ppm or higher.

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Reproductive Toxicity (cont)

The CMA conducted a 2 generation reproductive rat study with developmental neurotoxicity to evaluate the effects of Sodium Chlorite on reproduction and pre and postnatal development when administered orally via drinking water for 2 successive generations. Sodium Chlorite was administered at 0,35,70, and 300ppm in drinking water to male and female Sprague Dawley rats for 10 weeks prior to mating. Dosing continued during the mating period, pregnancy and lactation. The final report conclude that there were no meaningful treatment effects at any dose level for systemic, reproductive/developmental, and developmental neurological end points. Haematological effects and reduced body weight gains were observed in some treatment groups.

XII. Ecological Information

This product is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lake, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to the discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority.

12.1 Environmental Fate

Water:

Sodium Chlorite in water will eventually degrade to Sodium Chloride

Soil:

Sodium Chlorite, in contact with acidic soil could generate Chlorine Dioxide

12.2 Ecotoxicity

Acute TL50 for Rainbow Trout: 50.6 mg/l

Acute LC50 (96 hours) for Rainbow Trout: 290 mg/l

Acute TL50 for Bluegill: 208 mg/l

Acute LC50 (96 hours) for Bluegill: 265 – 310 mg/l

Acute LD50 Mallard Duck: 0.49 – 1.00 g/kg (Gavage)

Acute LD50 Bobwhite Quail: 0.66 g/kg (Gavage)

Acute LC50 (48 hours) for Daphnia Magna: 0.29 mg/l

Sodium Chlorite in the diet of birds was not acutely toxic.

Eight day dietary LC50's in Mallard Ducks and Bobwhite Quail were both greater than 10,000ppm in the diet.

XIII. Disposal Considerations

All disposals of this material must be done in accordance with local, state and federal regulation.

Waste characterisation and compliance with disposal regulations are the responsibilities of the waste generator.

13.1 Spill Residues

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste designation: D002. Also, it will be subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly

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XIV. Transport Information

14.1 UN No:	UN 1908
14.2 Shipping Description(49 CFR 172.101)	CHLORITE SOLUTION, 8,UN 1908, II
14.3 Placard Required	Corrosive, 1908, class 8
14.5 Label Required	Corrosive, Class 8 Label as required by EPA and by OSHA Hazardous Communication Standard, and any applicable state and local regulations
14.6 IMO Requirements	EmS No.: 8.06 MFAG Table No.: 741 IMDG Code Page No.8137

XV. Regulatory Information

15.1 Reportable Quantity (RQ)	Not applicable
15.2 Toxic Substances Control Act	Listed on TSCA Inventory EINECS No.231-836-6
15.3 Sara Hazard Categories (40 CFR 370.2)	HEALTH: Immediate (acute), Delayed (chronic)
15.4 Physical:	Fire

XVI. Other Information

17.1 NFPA Ratings	Health 3, Flammability 0, Reactivity 1
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This information is given in good faith and is based on information and tests believed to be reliable. The suitability of this product for any particular use is not suggested or implied. This document is not a specification and properties shown are not guaranteed.

Information on this form is furnished in compliance with current legislation. It is the responsibility of the recipient to pass on this information to relevant departments/persons involved. Odour Control Systems Limited assumes no responsibility for injury of death and/or third persons, however caused. The user bailee and their respective employees and agents assume all such risks if reasonable safety procedures are not adhered to.

In addition, Odour Control Systems Limited assumes no responsibility for injury or death to the recipient of this material or third persons, or for any loss or damage to property, or for any consequential damage resulting from any abnormal use or theft of the material, and the user, owner, bailee and their respective employees and agents assume all such risks even when caused by negligence, omission, default or error in judgement of Odour Control Systems Limited or its agents.

Each recipient should carefully review this information, data and recommendations in this specific context of its intended use. This product should only be used according to the specific guidelines for use laid out in Odour Control Systems Limited publications. Use of these products is deemed to be acceptance of the above.

Always READ material safety data sheet before use.

preserving the environment

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