



MATERIAL SAFETY DATA SHEET

PureCide[®] E

This MSDS is supplied by PureLine Treatment Systems as a service to clients.

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PureLine Treatment Systems, LLC

707 S. Vermont St.
Palatine, IL 60067
Phone: (847) 963-8465
Fax: (847) 963-8466

PureCide[®] E

Product Name: PureCide[®] E

Major Update: 01/23/06

CAS#: 7758-19-2

Minor Revision: 02/02/2010

MSDS Code: PureLine PureCide[®] E

Chemical Name: Sodium chlorite, sodium chlorite solution

Product Use: Generation of chlorine dioxide for use as a disinfectant or for use as an oxidant. Bleaching of textiles, wood pulp bleaching, water treatment as biocide for control of microorganisms and algae, oxidation of sulfides in wastewater, bleaching and deodorising of fats and oils, and odor control. PureCide[®] E solution is also used in PureLine's proprietary electrochemical ClO₂ generation systems.

Emergency Contact:

CHEMTREC 800-424-9300 (US/N America) -
703-527-3887 (outside US-collect calls accepted)

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>% Range</u>	<u>CAS NO.</u>
Sodium Chlorite	15-34%	7758-19-2
Sodium Chloride	1 - 6%	7647-14-5
Sodium Chlorate	0 - 3%	7775-09-9
Sodium Sulfate	0 - 2%	7757-82-6
Water	59-74%	7732-18-5

* Denotes chemical subject to reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372

SECTION 3 – HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Clear, water white to slightly yellow liquid, slight chlorine odor
DANGER! Corrosive. Causes skin and eye irritation or burns.
Harmful if swallowed. Causes digestive tract burns.

POTENTIAL HEALTH EFFECTS

INHALATION

Breathing of vapor or mist is possible if this material is heated or sprayed.
Breathing this material causes irritation of the throat and lungs with cough and difficult breathing.

SKIN

Causes severe skin irritation with redness, and itching or burning feeling, and/or swelling of the skin. May cause skin damage. Note: May cause skin burns and permanent skin damage.

EYE

Causes severe eye irritation with tearing, redness, or a stinging or burning feeling. May cause swelling of the eyes with blurred vision. Can injure eye tissue. Effects may become more serious with repeated or prolonged contact. Note: May cause burns and permanent injury to eye tissue.

INGESTION

Swallowing this material may be harmful or cause death. Harmful effects include burns and permanent damage to the digestive tract, including the mouth, throat, stomach and intestines. Symptoms may include severe abdominal pain and vomiting of blood. Blood loss through damaged tissue can lead to low blood pressure and shock.

SIGNS AND SYMPTOMS OF EXPOSURE

Depending upon level and duration of exposure, other possible signs and symptoms from breathing, swallowing, and/or entry of this material through the skin may include nosebleeds, hoarseness, sore throat, wheezing, cough with phlegm, bronchitis, tightness of the chest, pulmonary edema (high levels) irritation of the nose, throat, airways, and lungs with cough and difficult breathing, burns or ulceration of the gastrointestinal tract, including stridor, drooling, and vomiting.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Preexisting disorders of the following organs or systems, which may be aggravated by exposure to this material include : respiratory system (including asthma and other

breathing disorders), gastrointestinal system, skin and blood (anemia, G6PD deficiency)

EFFECTS FOLLOWING REPEATED EXPOSURE

This material may cause the following effects: respiratory tract damage (nose, throat, airways), lung damage, gastrointestinal damage, and skin damage. Observations in animal studies include: blood disorders and male reproductive effects. The relevance of these observations to humans is not clear at this time.

SECTION 4 – FIRST AID MEASURES

INHALATION

Remove individual to fresh air and get immediate attention. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration.

SKIN

Wash exposed skin well with plenty of soap and water. Remove contaminated clothing and shoes. Wash clothing and thoroughly clean shoes before reuse. If symptoms develop, get medical attention.

EYES

Hold the eyelids apart and flush the eye gently with a large amount of water for at least 15 minutes. Get immediate medical attention.

INGESTION

Have person drink a glass of water immediately if able to swallow. Get immediate attention. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN

Chlorine dioxide vapors are emitted when this product contact acids or chlorine. If these vapors are inhaled, monitor patient closely for delayed development of pulmonary edema which may occur up to 48-72 hours post-inhalation.

Following ingestion, neutralization and use of activated charcoal is not indicated.

See Section 11 for Toxicological Information

SECTION 5 – FIRE FIGHTING MEASURES

FLAMABLE PROPERTIES

Flash Point	Not applicable
Flammable Limits (Lower)	Not applicable
Flammable Limits (Upper)	Not applicable
Auto Ignition Temperature	Not applicable
Extinguishing Media	Not applicable-Choose extinguishing media suitable for surrounding materials.

FIRE FIGHTING INSTRUCTIONS

Approach fire from upwind to avoid hazardous vapors 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.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Isolated spill area and deny entry to unnecessary or unprotected personnel. 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. Cleanup personnel must wear proper protective equipment (refer to Section 8). Notify all downstream water users of possible contamination.

Create a dike 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 combustible materials.

This product may represent an explosion hazard if it contacts acids or chlorine. If such contact is possible, 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.

Do not place spill materials back in their original container. Containerize and label all spill material properly. Decontaminate all clothing and, if permitted, the spill area using strong detergent and flush with large amounts of water.

For all transportation accidents, call CHEMTREC at 800/424-9300.

SECTION 7 – HANDLING AND STORAGE

HANDLING

Do not get in eyes, or on skin, or clothing. Do not taste or swallow. Avoid breathing mists or fumes. Do not handle with bare hands. This product becomes a fire hazard if allowed to dry. Remove and wash contaminated clothing to avoid fire.

Carefully monitor handling, use and storage to avoid spills and leaks. Follow protective controls set forth in Section 8 when handling this product. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom.

This solution contains sodium chlorite. Dry sodium chlorite is a strong oxidizing agent. Mix only into water. Contamination may start a chemical reaction with generation of heat, liberation of hazardous gases (chlorine dioxide a poisonous, explosive gas), and possible fire and explosion. Do not contaminate with garbage, dirt, organic matter, household products, chemicals, soap products, paint products, solvents, acids, vinegar, beverages, oils, pine oil, dirty rags, or any other foreign matter.

STORAGE

STORAGE CONDITIONS

Store in closed, properly labeled tanks or containers. Do not store at temperatures above 100°C (212°F). Do not remove or deface labels or tags. Do not expose to direct sunlight or ultraviolet light. Do not drop, roll or skid drums. Keep drums upright.

Avoid contact with combustible or readily oxidizable materials; sulfur-containing rubber.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT

Acids, reducing agents, combustible material, oxidizers (such as hypochlorites), paints, sulfur and solvents.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS

VENTILATION

Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.

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 possible.

SKIN PROTECTION

Wear Neoprene gloves, boots and apron.

RESPIRATORY PROTECTION

Wear NIOSH/MSHA approved acid gas respirator plus dust/mist pre-filters if any exposure to dust or mist is possible.

GENERAL

Safety shower and eye wash station must be provided in the immediate work area. Protective equipment and clothing should be selected, used, and maintained according to applicable standards and regulations. For further information, contact the clothing or equipment manufacturer.

EXPOSURE GUIDELINES

None established

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Chemical Formula	NaClO ₂
Molecular Weight	90.45
Appearance and Odor	Clear, water white to slightly yellow liquid, slight chlorine odor
Specific Gravity	1.23-1.30 at 25/25°C
Vapor Pressure	No Available Data
Density	10.1-10.6 lbs./gal @ 25°C
PH @ 25°C	>12
Volatiles, Percent By Volume	59-74%
Crystallization Point	5°C
Solubility In Water	Complete

SECTION 10 – STABILITY AND REACTIVITY

CHEMICAL STABILITY

Stable

CONDITIONS TO AVOID

Temperature 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.

INCOMPATIBILITY WITH OTHER MATERIALS

Acids, reducing agents, combustible materials, oxidizers (such as hypochlorites), sulphur-containing rubber, dirt, soap, solvents, paints.
Contamination with acids, chlorine or organic materials. Avoid contact with heat or flame source.

HAZARDOUS DECOMPOSITION PRODUCTS

Explosive and toxic chlorine dioxide gas will be generated on contact with acids or chlorine.

HAZARDOUS POLYMERIZATION

Will not occur

SECTION 11 – TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION

ANIMAL TOXICOLOGY

Inhalation LC ₅₀ :	No available data
Dermal LD ₅₀ :	>2g/kg (rabbit)
Oral LD ₅₀ :	165 mg/kg (rat)
Oral LD ₅₀ :	350 mg/kg (mouse)

EFFECT FOLLOWING PROLONGED OR REPEATED EXPOSURE

The chronic ingestion of sodium chlorite in drinking water has been studied in laboratory animals and to a limited extent in humans. Concentrations of 100 ppm and higher have been shown to cause mild anemia and other blood red blood cell effects in laboratory animals, including G6PD deficiency. In a reproduction study, decreased serum levels of the thyroid hormones, T3 and T4, were observed on days 21 and 40 in both male and female pups exposed to 100 ppm of sodium chlorite. In a more recent study, methemoglobin levels were increased with high doses of sodium chlorite (70 ppm), as well as decreased liver weights. In general, clinical studies of communities using sodium chlorite as a disinfectant found no adverse effects in the human population studied.

CARCINOGENICITY

Sodium chlorite is not listed by NTP, IARC, OSHA, EPA, or any other authority as a carcinogen. Dermal and oral carcinogenicity studies conducted in mice and rats did not result in significant carcinogenic effect. According to the USEPA and IARC sodium chlorite is not classifiable because of inadequate animal and human data.

MUTAGENICITY

Sodium chlorite has been evaluated for possible mutagenic effects in several laboratory tests. It has 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 oxidizing effect of the chlorite or salting effect of sodium may significantly affect the ability of the test to accurately detect mutagens.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY

Groups of male rats exposed to 100 or 500 ppm sodium chlorite in drinking water ad libitum showed a significant increase in the percentage of morphologically abnormal sperm as well as a significant decrease in sperm motility. No effects on reproduction were reported. Sodium chlorite has not been found to be teratogenic in studies in which animals have been exposed up to 100 ppm in the drinking water.

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

SECTION 12 – ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

This product is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, 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.

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.

ECOTOXICITY

Acute TL₅₀ for rainbow trout: 50.6 mg/l (as 80% NaClO₂)

Acute LC₅₀ (96 hrs.) for rainbow trout: 290 mg/l (as 80% NaClO₂)

Acute TL₅₀ for bluegill: 208 mg/l (as 80% NaClO₂)

Acute LC₅₀ (96 hrs.) for bluegill: 265-310 mg/l (as 80% NaClO₂)

Acute TD₅₀ mallard ducks: 0.49-1.00 g/kg (gavage) (as 80% NaClO₂)

Acute LD₅₀ bobwhite quail: 0.66 g/kg (gavage) (as 80% NaClO₂)

Acute LC₅₀ (48 Hours) for daphnia magna: 0.29 mg/l (as 80% NaClO₂)

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 10,000 ppm in the diet.

SECTION 13 – DISPOSAL CONSIDERATIONS

All disposals of this material must be done in accordance with Federal, state and local regulations. Waste characterization and compliance with disposal regulations are the responsibilities of the waste generator.

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.

As a hazardous liquid waste, it must be disposed of in accordance with Federal, state, or local regulations in a permitted waste management facility. Do not dump into any sewers, on the ground, or into any body of water.

SECTION 14 – TRANSPORT INFORMATION

DOT IDENTIFICATION NO.

UN 1908

DOT SHIPPING DESCRIPTION (49 CFR 172.101)

Chlorite solution, 8, UN 1908, II

PLACARD REQUIRED

Corrosive, 1908, Class 8

LABEL REQUIRED

Corrosive, Class 8

Label as required by EPA and by OSHA Hazard Communication Standard, and any applicable state and local regulations.

IMO REQUIREMENTS

EmS No.: 806 MFAG Table No.: 741

SECTION 15 – REGULATORY INFORMATION

US FEDERAL REGULATIONS

REPORTABLE QUANTITY (RQ)

Not Applicable

TOXIC SUBSTANCES CONTROL ACT

Listed on TSCA Inventory

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III

Components identified with an asterisk (*) in Section 2 are subject to the reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372.

SARA HAZARD CATEGORIES (40 CFR 370.2)

HEALTH: Immediate (Acute), Delayed (Chronic)

PHYSICAL: Fire

INTERNATIONAL REGULATIONS

CANADA

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) CLASSIFICATION

WHMIS Classifications applicable to this product:

E (Corrosive Material) based on assignment to TDG Class 8

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

All components of this product are on the Domestic Substances List (DSL).

HAZARDOUS PRODUCTS ACT

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR).

EUROPE

EINECS No.: 231-836-6

STATE REGULATIONS

CALIFORNIA PROPOSITION 65

Sodium Chlorite does not appear on the California Proposition 65 list.

SECTION 16 – OTHER INFORMATION

National Fire Protection Association (NFPA) Rating

Health 3, Flammability 0, Instability 1

Date of Preparation: January 24, 2006

Sections Revised: Section 1 (Company Name, Logo, Product Name)

FOR FURTHER INFORMATION CONTACT:

Chenniah Nanjundiah, PureLine Treatment Systems,LLC
Phone :760-431-1200 or 949 285-1666

IMPORTANT: The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. **NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, SUITABILITY, STABILITY OR OTHERWISE.** The information included herein is not intended to be all-inclusive as to the appropriate manner and/or conditions of use, handling and/or storage. Factors pertaining to certain conditions of storage, handling, or use of this product may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended to, and nothing herein shall be construed as a recommendation to, infringe any existing patents or violate any laws, rules, regulations or ordinances of any governmental entity.