



PUROGENE[®]

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Product Identifier:

Purogene[®]

Other means of Identification:

CAS No. 7758-19-2; 3.35% sodium chlorite solution

Recommended Use:

Purogene[®] is a registered antimicrobial pesticide (EPA Registration Number: 9804-5). Purogene[®] is used in the potato industry. Consult the Purogene[®] label for a complete list of permitted uses.

Chemical Manufacturer:

Bio-Cide International, Inc.
2650 Venture Drive
Norman, Oklahoma 73069
Phone: (405) 329-5556
Fax: (405) 329-2681

Emergency Telephone Number:

Chemtrec for transportation emergencies in the United States, Canada, Puerto Rico, and Virgin Islands 1-800-424-9300; All other areas 1-703-527-3887
American Association of Poison Control Centers 1-800-222-1222
Chemtrec contract number 2749

SECTION 2: HAZARD(S) IDENTIFICATION

Purogene is not classified as hazardous under 29 CFR 1910.1200 (d) and is not subject to GHS / SDS hazard statement requirements

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Substance:	3.35% sodium chlorite	≤ 95.65% water
Formula:	NaClO ₂	H ₂ O
CAS number:	7758-19-2	7732-18-5
EC number:	231-836-6	231-791-2

If the specific chemical identity and/or the exact percentage of an ingredient are not specified, the information has been withheld as a trade secret.

SECTION 4: FIRST-AID MEASURES

The following procedures are recommended as emergency first aid only. They are not intended to replace or supplant the treatment advice of a physician or other authorized health care specialist.

Inhalation: Move person to fresh air. If person is not breathing, call 911 or an ambulance, and then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Skin Contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.

Eye Contact: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

If Swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Chlorine dioxide vapors are emitted when this product contacts acids or chlorine. If these vapors are inhaled move person into fresh air. If not breathing, give artificial respiration. Consult a physician. Monitor patient closely for delayed development of pulmonary edema which may occur up to 48-72 hours post inhalation.

SECTION 5: FIRE-FIGHTING MEASURES

Substance does not burn but supports the combustion of flammable substances through the liberation of oxygen. Water is the preferred extinguishing media when it is compatible with the burning substance. If water is not compatible, use dry powder extinguisher.

Burning will release hydrogen chloride gas (HCl) and oxides of sodium (NaO_x).

Firefighters should wear self-contained breathing apparatus (SCBA) if necessary.

SECTION 6: ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURE

Small spills, involving less than 5 gallons, may be flushed to a designated and permitted sewer system with the amount of water that is about 20 times the amount of the spill.

Large spills, involving more than 10 gallons, should be contained and neutralized using any one of the three neutralizers: i) sodium sulfite, ii) sodium bisulfite, or iii) sodium thiosulfate. The neutralization reaction can be extremely exothermic, and therefore, care should be taken to add the neutralizer in small increments. The contained solution should be first diluted with a volume of water that is approximately four times the volume of the contained spill. Sodium sulfite is the most preferred (least exothermic) neutralizer that can be used in the ratio of 2.1 lb per gallon of spilled material. Sodium thiosulfate can be used in the ratio of 5 lbs of anhydrous salt or 7.7 lbs. of pentahydrate salt per estimated gallon of the spilled material. The neutralized solution can then be flushed to a designated and permitted sewer system with double the amount of water. The product that is not neutralized may be disposed of as chemical waste in the manner indicated below. The vicinity of the spill should be thoroughly flushed with water after clean-up. At no time should the spilled material be allowed to dry to a crystalline salt. Do not discharge this product to storm drains or to any surface or groundwater source unless specifically allowed under a valid NPDES permit. If the neutralizer is not available, volumes larger than 10 gallons should be carefully transferred into a container and taken to an authorized chemical disposal site (Class I or landfill) in accordance with all federal, state, and local regulations. Consult with selected facility regarding the need for prior neutralization of waste.

SECTION 7: HANDLING AND STORAGE

HANDLING:

Use product only as directed by the label. Avoid contact with skin and eyes; avoid breathing any vapors or fumes resulting from product activation. Wash thoroughly after handling. Thoroughly rinse all protective gear and handling equipment, such as transfer pumps and lines, with water prior to reuse or storage. Keep away from children, animals, and unauthorized personnel.

PRODUCT STORAGE:

Store in a cool, dry, well-ventilated location away from acids, chlorine and chlorine compounds, hypochlorite (bleach), organic solvents, sulfur and sulfite compounds, phosphorus, combustible/flammable materials, and direct sunlight. Keep containers tightly closed when not in use and open carefully to prevent spillage. Storage on wooden floors and pallets is not recommended. Do not contaminate water, food or feed by storage or disposal.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

No Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit values (TLV) have been established for this product.

Wear splash proof goggles to protect the eyes. Use gloves and protective clothing to protect against skin contact. Remove contaminated clothing immediately and laundry before reuse.

Use directions for this product typically require its activation by mixing with GRAS (generally regarded as safe) acids. The reaction leads to formation of aqueous chlorine dioxide (ClO₂) gas. ClO₂ has a PEL of 0.1 ppm and a STEL of 0.3 ppm. Applications where activated product is used in confined space or has the potential for exposure to the worker, such as in a fogging or spraying application, respiratory protection is required.

RESPIRATORY PROTECTION:

In accordance with OSHA regulations (29 CFR 1910.134 and 29 CFR 1910.1000) use a NIOSH/MSHA approved air purifying respirators (APR) with cartridges approved for chlorine dioxide (ClO₂)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- (a) **Appearance (physical state, color, etc.);** Clear to pale yellow liquid
- (b) **Odor;** Slight odor of chlorine
- (c) **Odor threshold;** Not determined
- (d) **pH;** 8.0 – 8.5
- (e) **Melting point/freezing point;** 23°F (-5°C)
- (f) **Initial boiling point and boiling range;** 213°F (100.5°C)
- (g) **Flash point;** Not applicable
- (h) **Evaporation rate;** Comparable to water
- (i) **Flammability (solid, gas);** Not flammable
- (j) **Upper/lower flammability or explosive limits;** Not flammable
- (k) **Vapor pressure;** 23.7 mm Hg (25°C)
- (l) **Vapor density;** 0.02 kg/m³
- (m) **Relative density;** 1.030 g/ml (20°C)
- (n) **Solubility(ies);** Miscible (water)
- (o) **Partition coefficient: n-octanol/water;** Not applicable (not a mixture)
- (p) **Auto-ignition temperature;** Not applicable
- (q) **Decomposition temperature;** Not determined
- (r) **Viscosity;** 0.6409 mm²/ sec

SECTION 10: STABILITY AND REACTIVITY

- (a) **Reactivity;** Not reactive under normal temperatures and pressures.
- (b) **Chemical stability;** Stable at normal temperatures and pressures.

(c) Possibility of hazardous reactions; Contact with acids or chlorine can result in the evolution of chlorine dioxide gas (ClO₂)

(d) Conditions to avoid: Avoid heat, flames, sparks and other sources of ignition. Avoid evaporation to dryness. Dried material can ignite upon contact with combustibles. Avoid contamination with foreign materials. Avoid exposure to sunlight or ultraviolet light.

(e) Incompatible materials; Acids, Reducing agents, Combustible material, Oxidizing agents, Hypochlorite, Organic solvents and compounds, Garbage, Dirt, Organic materials, Household products, Chemicals, Soap products, Paint products, Vinegar, Beverages, Oils, Pine oil, Dirty rags, Sulfur-containing rubber, or any other foreign matter

SECTION 11: TOXICOLOGICAL INFORMATION

ANIMAL TOXICOLOGY

Inhalation LC₅₀: >5.61 mg/l
Dermal LD₅₀: >2,020 mg/kg (rabbit)
Oral LD₅₀: 4,360 mg/kg (rat)

CARCINOGENICITY

Active ingredients are not listed by ROTECS, OSHA, IARC, NTP or EPA. No evidence to date implicating product as a carcinogen or tumor promoter.

MUTAGENICITY

Though product active ingredient is a chemical oxidant, no evidence to date for mutagenicity from whole animal or in vitro studies.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY

No known effects to date.

SECTION 12: ECOLOGICAL INFORMATION

Purogene[®] is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, rivers or streams. Do not discharge effluent containing this product to sewer systems without first notifying the sewage treatment plant.

Purogene[®] does not bio-accumulate and is biodegradable.

Purogene[®] does not migrate in soil.

SECTION 13: DISPOSAL CONSIDERATIONS

Product Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Do not reuse or refill this container. Offer for recycling if available. Offer for reconditioning if appropriate. Triple rinse container, or equivalent, promptly after emptying.

Triple rinse as follows: Empty remaining contents into application equipment or mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip the container on its side and roll it back and forth, ensuring at least one complete revolution for 30 seconds. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this process two more times.

SECTION 14: TRANSPORT INFORMATION

Not regulated in transport

Environmental Hazards: Toxic to fish and aquatic organisms. Not a marine pollutant. In case of spill, flush with copious amounts of water. Do not allow to dry to crystalline form.

SECTION 15: REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:

This material is not considered hazardous by the OSHA Hazard Communication standard (29CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

Not regulated.

SARA EHS Chemical (40 CFR 355.30):

Not regulated

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):

Not regulated

EPCRA SECTION 313 (40 CFR 372.65):

Not regulated.

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):

Not regulated

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA):

All components are listed or exempt.

TSCA 12(b):

This product is not subject to export notification.

Canadian Chemical Inventory:

All components of this product are listed on either the DSL or the NDSL

STATE REGULATIONS

California, Proposition 65:

Cancer WARNING: Not Listed

CRT List – Male reproductive toxin: Not Listed

CRT List – Female reproductive toxin: Not Listed

Massachusetts Right to Know Hazardous Substance List: Listed

New Jersey Right to Know Hazardous Substance List: listed 1689

New Jersey Special Health Hazards Substance List: Listed 1689

New Jersey Environmental Hazardous Substance List: Not Listed

Pennsylvania Right to Know Hazardous Substance List: Listed

Pennsylvania Right to Know Special Hazardous Substances: Not Listed

Pennsylvania Right to Know Environmental Hazard List: Not Listed

Rhode Island Right to Know Hazardous Substance List: Not Listed

WHMIS - Classifications of Substances:

Not classified

FIFRA Regulations:

Registered pesticide under 40 CFR 152.10, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA Reg. No. 9804-5 (Purogene®)

FIFRA Labeling Requirements:

This chemical is a pesticide product registered by the United States Environmental Protection Agency and it subject to certain labeling requirement under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

FIFRA Signal Word – CAUTION

Corrosive

Harmful if swallowed

Avoid Breathing vapor or spray mist

Causes moderate eye irritation

Remove contaminated clothing and wash clothing before reuse

Wash thoroughly with soap and water after handling

Handlers applying chlorine dioxide must wear gloves

This pesticide is toxic to fish and aquatic invertebrates

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 1 Flammability: 0 Reactivity: 1 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard rating primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

NOTICE: Manufacturer believes the information contained herein is accurate; however we make no guarantees with respect to such accuracy and assume no liability in connection with the use of the information contained herein by any party. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED FOR A PARTICULAR PURPOSE OR OTHERWISE

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