

1. Chemical Product and Company Identification

Eka Chemicals Inc.

1775 West Oak Commons Court
Marietta, GA 30062
USA

24 Hour Emergency Number
US CHEMTREC 1-800-424-9300
CANADA CANUTEC 1-613-966-6666

Product Name

PURATE®

Chemical Type

Sodium Chlorate and Hydrogen Peroxide as a stabilized aqueous solution.

Intended Use

Reagent feed for SVP-Pure® Chlorine Dioxide generation

2 Hazards Identification

Emergency Overview

A clear, faintly blue colored, faintly odored solution which may cause moderate skin irritation and severe irritation of eyes and mucous membranes, including possible blindness. Sodium Chlorate is odorless and very soluble in water. Sodium Chlorate not listed as a possible carcinogenic by OSHA, IARC or NTP.

Routes of Exposure

Skin and ingestion

Potential Health Effects

Ingestion

Irritation of the gastrointestinal tract, abdominal pain, gas evolution, and red blood cell destruction.

Skin

May cause moderate skin irritation.

Eyes

May cause severe eye irritation, tearing and blurring of vision, with irreversible corneal damage and possible blindness in instances of overexposure.

Inhalation

Not a normal route of exposure.

Target organs

Skin, eyes, mucous membranes, and renal system.

Chronic Effects

No Information

Medical Conditions Aggravated by Exposure

None documented

3. Composition / Information on Ingredients

<u>Component</u>	<u>CAS #</u>	<u>% Wt/Wt</u>
Hydrogen peroxide	7722-84-1	< 8 %
Eka SC	7775-09-9	40 %

Ingredient Information

Exposure Limits not established for sodium chlorate solution.

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4. First Aid Measures

First Aid

<i>Ingestion</i>	If victim is conscious, give plenty of water to dilute stomach contents. Do not induce vomiting without medical advice. Seek immediate medical attention.
<i>Skin</i>	Wash off immediately with plenty of water for at least 15 minutes. Rinse contaminated clothing with water and launder all clothing prior to use. Call a poison control center or doctor for treatment advice.
<i>Eyes</i>	Immediately flush eyes thoroughly with water for at least 15 minutes. Obtain medical attention if irritation persists. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
<i>Inhalation</i>	Not a normal route of exposure.
<i>Notes to Physician</i>	Sodium chlorate poisoning is rare, but is associated with a high mortality rate with death generally occurring from massive intravascular hemolysis and acute renal failure. Sodium thiosulfate (2 to 5 gm. in 200 ml of 5% sodium bicarbonate) is a specific antidote that can be given orally or by I.V. DO NOT treat with methylene blue because of risk of methemoglobinemia. Sodium Chlorate is freely dialyzable, and early treatment by peritoneal or hemodialysis is recommended. Direct contact of hydrogen peroxide with the eye is likely to cause corneal damage, especially if not washed away immediately. Careful ophthalmologic evaluation is recommended. Attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. In the event of severe distention of the stomach or esophagus due to gas formation, insertion of a gastric tube may be required.

5. Fire Fighting Measures

Flammable Properties Non flammable liquid.

Extinguishing Media

Suitable Extinguishing Media USE WATER ONLY.

Unsuitable Extinguishing Media If allowed to evaporate, solid sodium chlorate could be formed. Solid sodium chlorate does not burn, but if exposed to fire it decomposes to give off oxygen which feeds the fire. Consequently, ONLY WATER is effective in cooling and diluting solid sodium chlorate. DO NOT USE CO₂, Halon, dry chemical or powder fire extinguishers, or fire blankets in the event solid sodium chlorate is involved as these are totally ineffective and may confine the heat and create a worse situation.

Protection of Fire Fighters

Protective Equipment for Fire Fighters Wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH approved and full protective gear. Avoid all bodily contact. Do not allow clothing, shoes, or gloves to become impregnated with sodium chlorate in solution, as they will become highly combustible if allowed to dry, and may be ignited by friction or heat. In case of external fire, cool containers of sodium chlorate and hydrogen peroxide solution with plenty of water.

Specific Hazards Arising From the Chemical DO NOT allow solution to come in contact with any combustible materials. Paper, wood, cloth, and leather impregnated with sodium chlorate solution are highly combustible if allowed to dry, and may be ignited by friction or heat. DO NOT allow the temperature of the storage container to rise above 104 F (40C).

6. Accidental Release Measures

Personal Precautions Protective suit of vinyl, neoprene, PVC or polyethylene; impervious rubber shoes or boots of vinyl or neoprene; safety glasses with side shields or chemical goggles and hard hat with full face shield when appropriate; rubber gloves of vinyl or neoprene. Isolate area. Keep unnecessary personnel away.

Environmental Precautions DO NOT ALLOW RELEASES TO ACIDIC DRAINS AS CHLORINE DIOXIDE GAS CAN BE LIBERATED. Contain runoff and contact appropriate local spill response personnel and/or Eka Chemicals. Do not allow escape into sewers, drains or natural watercourses. Waste disposal in approved chemical disposal area or in a manner which complies with all local, State and Federal regulations.

Methods for Containment Block any potential routes to water systems. Contain spill using noncombustible material such as vermiculite, sand or earth.

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7. Handling and Storage

<i>Handling Procedures</i>	Prevent possible eye and skin contact by wearing protective clothing and equipment. AVOID PRODUCT CONTACT WITH ACIDIC MEDIA WHICH CAN LIBERATE CHLORINE DIOXIDE GAS.
<i>Storage Procedures</i>	Store in properly vented containers or tanks. Do not block vent. Do not store where contact with incompatible materials could occur, even with a spill. Have a clean water source available for dilution. Keep storage containers out of direct sunlight and away from heat, sparks and flames. DO NOT add any other product to storage container. Never return unused product to storage container. Avoid contact with mild steel, aluminum, copper and its alloys.

8. Exposure Controls / Personal Protection

<i>Exposure Guidelines</i>	No TLVs have been established for this mixture. The PEL for hydrogen peroxide is 1 ppm. The PEL for sodium chlorate is: Total Dust = 15 mg/m ³ ; Respirable Fraction = 5 mg/m ³ .
<i>Engineering Controls</i>	Use site specific diking / spill control to avoid uncontrolled releases. Eye wash facility, emergency shower or jump tank should be in close proximity.
Personal Protective Equipment	
<i>Eyes/Face</i>	Wear safety glasses with side shields or chemical goggles. Where appropriate, wear a full face shield. Contact lenses should not be worn when handling this product.
<i>Skin</i>	Use impervious clothing to avoid skin contact. Avoid all bodily contact. Wear appropriate protective equipment. Do not allow clothing, shoes or gloves to become impregnated with sodium chlorate in solution, as they will become highly combustible if allowed to dry, and may be ignited by friction or heat. In case of external fire, cool containers of sodium chlorate and hydrogen peroxide solution with plenty of water.
<i>Respiratory</i>	Not a normal route of exposure.
<i>Hand</i>	Use impervious clothing to avoid skin contact.

9. Physical & Chemical Properties

Appearance

<i>Form</i>	Aqueous solution
<i>Color</i>	Faint blue to colorless
<i>Odor</i>	Faint
<i>Odour Threshold</i>	Not Available.
<i>Physical State</i>	liquid
<i>pH</i>	1.7
<i>Melting Point</i>	N/A
<i>Freezing Point</i>	Not Available.
<i>Boiling Point</i>	219.2 °F (104 °C)
<i>Flash Point</i>	Not Available.
<i>Evaporation Rate</i>	> 1 (butyl acetate = 1)
<i>Flammability</i>	Not Available
<i>Upper/Lower Flammability</i>	Not Available.
<i>Vapor Pressure</i>	< 0.1 kPa at 40 degrees and at 80 degrees C
<i>Vapor Density</i>	Not Available.
<i>Specific Gravity</i>	1.37
<i>Solubility (H₂O)</i>	not applicable
<i>Coefficient of Water/Oil Distribution</i>	No data available

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Octanol/H ₂ O Coeff	Not Available.
Auto Ignition Temperature	Not Available.
Decomposition Temperature	Not Available.
Viscosity	water-like
Bulk Density	1370 @ 20C
Density	1.37 g/cm ³ at 20C

10. Chemical Stability & Reactivity Information

<i>Conditions to Avoid</i>	Avoid heat, flame, strong UV light and other sources of ignition. ELEVATED pH > 4 CAN ENHANCE MORE RAPID DECOMPOSITION OF THE HYDROGEN PEROXIDE.
<i>Incompatible Materials</i>	Purate® solutions may react with acids, organic matter, expanded plastics such as polystyrene or polyurethane, ammonium salts, sulfur or sulfides, phosphorus, arsenic, metals including copper, zinc, aluminum or other metals, manganese dioxide, potassium cyanide, and thiocyanates. Purate® is incompatible with soluble metals and their salts (i.e. iron, copper, chromium, vanadium, tungsten, molybdenum, and platinum), reducing agents, organic materials, as well as flammable and combustible materials.
<i>Hazardous Decomposition Products</i>	Purate® will react with strong mineral acids liberating chlorine dioxide gas. Contamination from various metals or organic materials may cause rapid decomposition of the hydrogen peroxide, resulting in oxygen gas release and pressure buildup if not properly vented.
<i>Possibility of Hazardous Reactions</i>	Strong mineral acids, organic materials, and powdered metals. Polymerization will not occur.

11. Toxicological Information

<i>Acute Effects</i>	The oral LD ₅₀ in rats for sodium chlorate is greater than 5000 mg/kg (practically nontoxic). The oral LD ₅₀ for a 10% concentration of hydrogen peroxide in rats ranges from 1500 mg/kg to greater than 5000 mg/kg (moderately toxic to practically nontoxic). Ingestion of large doses of sodium chlorate will result in methemoglobinemia and kidney damage.
<i>Inhalation Effects</i>	The LC ₅₀ of sodium chlorate is greater than 5.6 mg/L. There was no mortality in rats following a 4 hour exposure to hydrogen peroxide at the minimal attainable concentration of 122 ppm.
<i>Irritation to skin</i>	Sodium chlorate was not irritating to rabbits.
<i>Irritation to eyes</i>	Sodium chlorate was mildly irritating to rabbits.
<i>Sensitization Data</i>	Sodium chlorate was not sensitizing to guinea pigs. Hydrogen peroxide was not sensitizing to guinea pigs at a concentration of 6%.
<i>Carcinogenicity/mutagenicity & long term effects</i>	Sodium chlorate and hydrogen peroxide are not considered carcinogenic.
<i>Neurotoxicity</i>	No data available for this product.
<i>Reproductive toxicity/teratogenicity</i>	Sodium chlorate was not teratogenic to rats at doses up to 1000 mg/kg/day during days 6-15 of gestation. Sufficient data is not available for evaluation of hydrogen peroxide.
<i>Epidemiology</i>	No Information

12. Ecological Information

Ecotoxicity

<i>Fish</i>	rainbow trout	
	EC50:	> 1000 mg/l, 96.00 Hours,
	fish	
	NOEL:	16.4 - 37.4 mg/l, 96.00 Hours,
<i>Aquatic toxicity</i>	The 96 hour LC ₅₀ in rainbow trout for sodium chlorate is greater than 1000 mg/L (practically nontoxic). The 96 hour LC ₅₀ values for hydrogen peroxide in fish range from 16.4 - 37.4 mg/L (slightly toxic).	

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<i>Environmental Effects</i>	Hydrogen peroxide occurs naturally as a result of photochemical processes in living organisms.
<i>Persistence/Degradability</i>	Hydrogen Peroxide is readily biodegradable and does not bioconcentrate.
<i>Bioaccumulation/Accumulation</i>	Not known
<i>Mobility in Environmental Media</i>	No information.

13. Disposal Considerations

<i>Disposal Instructions</i>	In accordance with municipal, provincial, state and federal regulations. EPA Hazardous Waste classification D002. Recycling of containers may be permitted, provided the container is "empty", as described in 40 CFR 261.7(b)(1)", when the container is used within the United States. When the container is used within Canada, the following regulations apply: "A container that has been completely emptied using common practices, and that contains less than 2.5 cm of residue, is typically considered to be an "empty container" and not subject to regulation as a hazardous material or hazardous waste" (see also Ontario - O. Reg. 347, Quebec - O.C. 1091-2004, B.C. - B.C. Reg. 63/88, Alberta - Reg. 192/96, and/or Saskatchewan - E.10.2, Reg. 3, as appropriate).
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14. Transport information

Basic Shipping Description

Material DOT HMR Information

<i>Proper Shipping Name</i>	Sodium chlorate, aqueous solution
<i>Hazard Class</i>	5.1
<i>Subsidiary Hazard Class</i>	
<i>Identification Number</i>	UN2428
<i>Packaging Group</i>	II
<i>Marine Polutant Identifier</i>	
<i>Severe Marine Polutant Identifier</i>	
<i>Labels Required</i>	5.1
<i>Packaging Exceptions</i>	152
<i>Vessel Stowage Location</i>	B
<i>Packaging Non Bulk</i>	202
<i>Packaging Bulk</i>	241
<i>Quan. Limits Passenger</i>	1 L
<i>Quantity Limits Cargo</i>	1 L

15. Regulatory Information

<i>US Federal Regulations</i>	Components of this product have been checked against the non-confidential TSCA inventory by CAS Registry Number. Components not identified on this non-confidential inventory are exempt from listing (i.e. as polymers) or are listed on the confidential inventory as declared by the supplier.
<i>OSHA Regulated</i>	Eye/skin irritant as defined in 29 CFR 1910.1200.
<i>SARA 302</i>	Not subject to SARA Section 302.

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SARA 311/312	Classified as immediate health hazard and fire hazard. Minimum threshold quantity for reporting is 10,000 pounds.
SARA 313	Not subject to SARA Section 313.
Canada DSL	In compliance.
WHMIS Classification	Class E: Corrosive
General	Not subject to Proposition 65. This product contains a chemical known to the State of California to cause cancer or reproductive harm: chromium byproduct Cr(VI) 0.05 mg/m ³ ACGIH TLV TWA NTP: Cr(VI) compounds: known human carcinogen IARC: Cr(VI) Group 1 carcinogen

16. Other Information

HMIS RATINGS

Health	2
Flammability Classification	0
Reactivity	2
Pers. Prot	X

NFPA RATINGS

Health	2
Flammability Classification	0
Reactivity	2
Special Hazards	OXY

Disclaimer

The product is intended for sale only to industrial users. The information in this MSDS is intended to assist these users in determining the suitability of this product for their business applications. Users must inspect and test the product before use to satisfy themselves as to the contents and suitability. Eka Chemicals specifically disclaims all warranties express or implied; specifically, ALL WARRANTIES AS TO SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY OF THIS PRODUCT. The exclusive remedy for all proven claims is replacement of our product. In no event shall Eka Chemicals be liable for any special, incidental, or consequential damages. The information in this MSDS should be provided by the buyer, transporter or other handlers of this product to all who will use, handle, store, transport or otherwise potentially be exposed to this product. The MSDS has been prepared for the guidance of such persons and Eka Chemicals believes this information to be reliable and up-to-date as to the date of publication, but makes no warranty that it is. If the revision date of this MSDS is more than three years old then contact Eka Chemicals for an updated version.

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MSDS Sections Updated

Transportation Information: Product HMR

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