

SAFETY DATA SHEET

1. Identification of the substance/preparation and the company/undertaking

<p><i>Manufacturer/supplier</i> Eka Chemicals AB SE-445 80 Bohus Sweden Tel: +46 31 587000 Fax: +46 31 587730 E-mail: sds-ppe@akzonobel.com Internet: www.eka.com Emergency Response Center (ERC) Sweden: 020 996000 International: +46 8 3377043</p>	<p><i>Product name</i> Purate®</p> <p><i>Chemical/Technical description</i> Sodium chlorate/Hydrogen peroxide as a stabilised aqueous solution.</p> <p><i>Intended use</i> Reagent feed for Chlorine dioxide generation.</p> <p><i>Product code</i> NACE/SIC: 21 UC62: 39</p>	<p><i>ID: 800</i></p>
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2. Hazards identification

<i>Classification</i>	O: R8 Xn: R22 R32 Xi: R36 N: R51/53
<i>Health effects</i>	Harmful if swallowed. Irritating to eyes. May cause damage to the eyes. May cause skin irritation. Contact with acids liberates very toxic gas.
<i>Environmental effects</i>	Harmful for plants and toxic for brown algae. May cause long-term adverse effects in the environment. See Section 12.
<i>Other effects</i>	Oxidizing. Contamination from various metals or organic materials may cause rapid decomposition, resulting in oxygen gas release. Assists combustion. Purate® reacts violently with strong acids, producing very toxic and potentially explosive gases, e.g. Chlorine dioxide and/or Chlorine. Contaminated clothing will become highly combustible if allowed to dry, and may be ignited by friction or heat.

3. Composition/information on ingredients

See Section 16 for R-phrase text

This product is a preparation as defined by 99/45/EC.

<u>Hazardous ingredients</u>	<u>CAS No</u>	<u>EEC No</u>	<u>Classification</u>	<u>R-phrases</u>	<u>% in product</u>
Hydrogen peroxide	7722-84-1	231-765-0	C, Xn, O	R5, R8, R20/22, R35	< 8 %
Sodium chlorate	7775-09-9	231-887-4	Xn, O, N	R9, R22, R51/53	40 % ca.

4. First aid measures

<i>Inhalation</i>	Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Ensure access to fresh air if chlorine dioxide has been inhaled. Get immediate medical attention.
<i>Skin contact</i>	Wash off immediately with soap and plenty of water. Remove all contaminated clothing and shoes and soak them in water to prevent risk of fire.
<i>Eye contact</i>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Contact lenses should not be worn when working with Purate®. Get medical attention immediately.
<i>Ingestion</i>	Never give anything by mouth to an unconscious person. Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting! Obtain medical attention immediately.

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<i>Notes to Medical staff</i>	<p>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.</p> <p>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.</p> <p>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.</p>
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5. Fire fighting measures

<i>General Fire Hazards</i>	Non-flammable. If involved in a fire it will support combustion.
<i>Extinguishing media</i>	USE WATER ONLY.
<i>Unsuitable extinguishing media</i>	For Purate® do NOT use dry foam, powder or carbon dioxide type extinguishers.
<i>Special protective equipment</i>	<p>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.</p> <p>Self-contained breathing apparatus and full protective clothing should be worn in fire conditions. 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.</p>
<i>Special exposure hazards</i>	The product will sustain combustion due to release of oxygen (upon thermal decomposition). 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.

6. Accidental release measures

<i>Environmental cleanup procedures</i>	<p>Contain and adsorb with sand or another suitable inert(non-combustible) material (NOT sawdust, cork or similar owing to the risk of fire). Contact experts in case of large spillages. Avoid the solution coming in contact with inappropriate material such as certain metals and organic materials. Do NOT allow releases to acidic drains or other acidic environment as Chlorine Dioxide gas could be liberated. Prevent the product from reaching sewage and water courses in large quantities. Notify appropriate authorities.</p>
<i>Personal precautions</i>	See Section 8.

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7. Handling and storage

<i>Handling</i>	Avoid contact with skin and eyes. Working areas and methods should be organized in such a way that direct contact is avoided. Use only in well-ventilated areas. Avoid contamination and contact with incompatible chemicals and materials. Do not handle the product near sources of heat. Keep containers closed when not in use. When using this material, do not eat, drink or smoke.
<i>Storage</i>	Store in a cool, dark, dry, ventilated and fireproof area, preferably in a well sealed original package. Don't contain the product in unvented vessels or between valves. Keep away from combustible materials. Keep away from strong acids. Do not store on wooden floors or pallets.
<i>Materials to avoid</i>	Incompatible materials and chemicals such as organic materials, alkaline substances, strong acids, phosphorus, sulphur, sulphides, sulphites and metal/ammonium salts. Contaminated organic materials ignites readily if allowed to dry. Oxygen gas is generated if Purate® is in contact with strong acids and certain metals. Avoid contact with mild steel.

8. Exposure controls/personal protection

<i>Personal Protective Equipment General</i>	Wear personal protective equipment.
<i>Respiratory protection</i>	Not applicable under normal conditions of use. However, good ventilation should be provided in working areas.
<i>Hand protection</i>	Avoid skin contact. Use neoprene/nitrile/natural rubber or PVC gloves. Do not allow gloves to become impregnated with Purate®, as they will become highly combustible if allowed to dry, and may be ignited by friction or heat.
<i>Skin protection</i>	Use full working clothes or boots. Use of impervious boots is recommended. Emergency shower or jump tank needed. Do not allow clothing or boots to become impregnated with Purate®, as they will become highly combustible if allowed to dry, and may be ignited by friction or heat. Contaminated clothing should be washed thoroughly with water immediately! Where contact is likely, wear chemical-resistant gloves, a chemical suit, rubber boots.
<i>Eye protection</i>	Goggles for normal handling conditions. Face shield for open handling. Do not wear lenses. Eye wash station needed.
<i>Occupational exposure limits</i>	Hydrogen peroxide: UK (WEL/2005): 1 ppm/1.4 mg/m ³ (LTEL, 8 hr TWA), 2ppm/2.8 mg/m ³ (STEL, 15 min). SE - HGV/NGV: 1,4 mg/m ³ , HGV/TGV: 3 mg/m ³ . DE - MAK: 1.4 mg/m ³ . FR - VLR/VME: 1.5 mg/m ³ . Sodium chlorate: None listed.

9. Physical and chemical properties

(These values are typical for the product and should not be considered as a specification)

<i>Form</i>	Liquid.
<i>Colour</i>	Colourless- slight blue.
<i>Odour</i>	Slightly pungent.
<i>pH</i>	2 ca.
<i>Density/Bulk density</i>	1370 kg/m ³ ca.
<i>Melting/boiling point</i>	-29°C / 111°C.
<i>Viscosity</i>	1.8 mPa.s (20°C).
<i>Solubility</i>	Miscible (water).
<i>Vapour pressure</i>	6.7 kPa (40°C, 40% Sodium chlorate solution).
<i>Partition coefficient (Log Pow)</i>	Not applicable.

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Flash point	Not applicable, see Section 10.
Explosion limits upper/lower	Not applicable.

10. Stability and reactivity

Hazardous decomposition	Purate® is a strong oxidant and may easily release oxygen gas. 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.
Conditions to avoid	Avoid heat, flame, strong UV light and other sources of ignition. Exposure to sunlight. Elevated pH (>4) can enhance rapid decomposition of the Hydrogen Peroxide. Strong acids should NOT be used for pH control.
Materials to avoid	Contact with organic materials e.g. textiles, wood or leather may cause fire, if allowed to dry. Contamination from various metals or organic materials may cause rapid decomposition, resulting in oxygen gas release and pressure build-up if not properly vented.
Hazardous reactions	Purate® reacts intensively with strong acids e.g. hydrochloric acid and produces toxic and explosive gases such as chlorine dioxide and/or chlorine. Decomposes in contact with certain metals and alkalis which generates oxygen gas.
Incompatibility	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.

11. Toxicological information

**Estimated from analogous products*

Acute toxicity	Sodium Chlorate: LD50/oral/rat: 1200 mg/kg. LDLo/oral/human: 214 mg/kg. Ingestion of large doses of sodium chlorate will result in methemoglobinemia and kidney damage. Hydrogen Peroxide: LD50/oral/rat: >5000 mg/kg (10%).
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Health effects

Inhalation	Inhalation of vapours and mist is irritating to the mucous membranes. Has an oxidizing effect and oxidizes haemoglobin in the blood to methaemoglobinemia, which has a reduced ability to transport oxygen. This leads to lack of oxygen in the body tissue.
Ingestion	Decomposes to oxygen in the stomach. Rapid liberation of oxygen gas may cause gastric distension and bleeding and may lead to severe damage to the stomach. The first symptoms may occur after several hours.
Skin contact	May cause irritation.
Eye contact	Severely irritating. Contact with eyes may cause corneal injury and irreversible damage.
Sensitisation Data	Sodium chlorate: Not sensitizing to the skin in animal testing. Hydrogen peroxide: Not sensitizing to the skin in animal testing.
Carcinogenicity/mutagenicity & long term effects	Sodium chlorate: Not considered to be carcinogenic or mutagenic. Hydrogen peroxide: Mutagenicity: In vitro: Mutagenic without metabolic activation and generally not mutagenic with metabolic activation. In vivo: No effect has been observed after oral administration. Carcinogenicity: Animal experiments did not show clear evidence of carcinogenicity in different species. Topical application did not induce skin tumours. IARC, OSHA and ACGIH do not list hydrogen peroxide as a carcinogen.

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12. Ecological information

*Estimated from analogous products

<i>Aquatic toxicity</i>	<p>Sodium chlorate: Fish: LC50/48 h/Oncorhynchus mykiss = 2750 mg/l. Crustacean: EC50/24 h/Daphnia magna = 880 mg/l. Algae: IC50/long term study/Fucus Vesiculosus = 0.080 mg/l. Clear inhibitory effect for Scenedesmus at 7 mg/l.</p> <p>Hydrogen peroxide: Fish: LC50/96 h/Various species = 16-37 mg/l. Crustacean: EC50/24 h/Various strains = 2.4-7.7 mg/l. Algae: Reduction of chlorophyll at 1.7 mg/l.</p>
<i>Biodegradability</i>	<p>Sodium chlorate: Slow degradation in soil under aerobic conditions. More rapid degradation to sodium chloride and oxygen in anaerobic conditions (microbiological degradation). Hydrogen peroxide: Readily biodegradable. Transforms into non-toxic substances (water and oxygen).</p>
<i>Bioaccumulative potential</i>	<p>Sodium chlorate: Chlorate is converted into chlorite in plants. Chlorite is accumulated in the cells until toxic concentrations are reached and the plant dies. There is no evidence of accumulation in animals. Hydrogen peroxide: Unlikely to happen due to chemical/physical properties.</p>
<i>Mobility</i>	<p>Low volatility. Can be leached out from the soil. The product stays dissolved in water and has therefore a high mobility.</p>
<i>Other effects</i>	<p>Sodium chlorate is harmful to plants, however toxic to brown algae. Bacteria involved in ammonification, nitrification and denitrification are especially sensitive to sodium chlorate.</p>
<i>Water hazard class</i>	<p>WGK2</p>

13. Disposal considerations

<i>Product disposal</i>	<p>Small residues can be diluted with large amounts of water and disposed of via the sewerage system. For large amounts contact the authorities. Purate® is not to be thrown on landfill or in watercourses.</p>
<i>Packaging disposal</i>	<p>Clean empty packaging from Purate® residues. Consult local authorities.</p>

14. Transport information

<i>Transport summary</i>	Classified as dangerous for transport.		
<i>Proper shipping name</i>	Sodium chlorate, aqueous solution		
<i>UN/ID No.</i>	2428	<i>Packaging group</i>	II
<i>ADR/RID (Road Rail)</i>	Class: 5.1; Code: O1.		
<i>IMDG (Sea)</i>	Class: 5.1; EmS: F-H, S-Q; Stowage: Cat.B; Marine pollutant: No.		
<i>IATA/ICAO (Air)</i>	Class: 5.1; ERG: 5L.		

15. Regulatory information

<i>EU regulations</i>	<p>Classification according to European directive on classification of hazardous preparations 1999/45/EC.</p>
<i>Hazardous ingredient(s)</i>	<p>Sodium chlorate (EC: 231-887-4) Hydrogen peroxide (EC: 231-765-0)</p>

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Labelling symbol(s)



<i>Product Cas No</i>	Preparation	
<i>R-phrases</i>	R8	Contact with combustible material may cause fire.
	R22	Harmful if swallowed.
	R32	Contact with acids liberates very toxic gas.
	R36	Irritating to eyes.
	R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
<i>S-phrases</i>	S3/14	Keep in a cool place away from combustible material.
	S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
	S46	If swallowed, seek medical advice immediately and show this container or label.
	S50	Do not mix with acids.
	S61	Avoid release to the environment. Refer to special instructions/safety data sheets.

16. Other information

R-phrase text used in Sections 2 and 3 of this document.

R5(Heating may cause an explosion.), R8(Contact with combustible material may cause fire.), R9(Explosive when mixed with combustible material.), R20/22(Harmful by inhalation and if swallowed.), R22(Harmful if swallowed.), R32(Contact with acids liberates very toxic gas.), R35(Causes severe burns.), R36(Irritating to eyes.), R51/53(Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.)

Use Only for industrial use.

Training requirements As with all hazardous chemicals, all persons handling this product should be trained in the correct methods and precautions to be used.

Other information This Safety Data Sheet was prepared to comply with the following EU Directives: 67/548/EEC; 1999/45/EC; 2001/58/EC; 2006/8/EC.

Revised sections

- 03: Classification
- 03: Health effects
- 03: Other effects
- 04: Eye contact
- 04: Ingestion
- 04: Inhalation
- 05: Extinguishing media
- 05: Special exposure hazards
- 06: Environmental cleanup procedures
- 07: Handling
- 07: Materials to avoid
- 07: Storage
- 08: Eye protection
- 08: Hygiene measures
- 08: Respiratory protection
- 08: Skin protection
- 10: Conditions to avoid
- 10: Hazardous decomposition
- 10: Hazardous reactions

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Revised sections

- 11: Acute toxicity
- 13: Packaging
- 13: Product disposal
- 15: R-phrases

The information provided in this safety data sheet relates only to this specific product and may not be valid for the product if used with other materials in any process. The information is, at the time of publication, to the best of the Company's knowledge and belief, accurate and reliable. However, no warranty, guarantee or representation is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability for his own purpose.

Issue Date: 14-Nov-2008

Replaces: 21-Feb-2008 Print date: 14-Nov-2008

Approved by: John Murray Issued by: John Murray