

Material Safety Data Sheet

1.0 Chemical Product and Company Identification

Resonant BioSciences, LLC
 1400 16th St., Ste. 400
 Denver, CO 80202
 Toll Free: 866.933.0408
 Fax: 303.933.3594
 www.puremash.com

Product name: **MashGuard One®**

Emergency Phone

888.299.3899
 CHEMTREC 800.424.9300
 CHEMTREC International 1.703.527.3887



Chemical Type

Sodium chlorate and hydrogen peroxide as a stabilized aqueous solution.

Intended Use

Reagent feed for PureMash® chlorine dioxide generation

2.0 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* is not listed as a possible carcinogenic by OSHA, IARC or NTP.

Routes of Exposure

Inhalation, 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
Eye	May cause severe eye irritation, tearing and blurring of vision, with irreversible corneal damage, and possible blindness in instances of overexposure
Inhalation	May cause irritation of the upper respiratory passages; nausea, headache, or weakness
Target organs	Skin, eyes, mucous membranes, and renal system
Chronic effects	No information
Medical conditions aggravated by exposure	None documented

3.0 Composition / Information on Ingredients

Component	CAS #	% Wt / Wt	
<i>Hydrogen peroxide</i>		7722-84-1	< 8%
ACGIH - Threshold limits values – Time weighted Averages (TLV-TWA)	1 ppm TWA		
<i>Sodium chlorate</i>		7775-09-9	40%
Ingredient information	Exposure limits not established for <i>sodium chlorate</i> solution		

4.0 First Aid Measures

Ingestion	If victim is conscious, give plenty of water to dilute stomach contents. Do not induce vomiting without medical advice. Seek immediate medical attention.
Skin	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.
Eye	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 five minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.
Inhalation	Remove to well-ventilated area. If necessary, give artificial resuscitation and seek medical attention.
Notes to physician	<i>Sodium chlorate</i> poisoning is rare, but is associated with a high mortality rate with death generally occurring from massive intravascular hemolysis, and acute renal failure. <i>Sodium thiosulfate</i> (2 to 5 gm in 200 ml of 5% <i>sodium bicarbonate</i>) is a specific antidote that can be given orally or by I.V. DO NOT treat with methylene blue because of risk of methemoglobinemia. <i>Sodium chlorate</i> is freely dialyzable, and early treatment by peritoneal or hemodialysis is recommended. Direct contact of <i>hydrogen peroxide</i> 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.

5.0 Firefighting Measures

Flammable properties	Non-flammable liquid
Extinguishing Media	
Suitable extinguishing media	USE WATER ONLY
Unsuitable extinguishing media	If allowed to evaporate, solid <i>sodium chlorate</i> could be formed. Solid <i>sodium chlorate</i> 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 <i>sodium chlorate</i> . DO NOT USE CO ₂ , Halon, dry chemical or powder fire extinguishers, or fire blankets in the event solid <i>sodium chlorate</i> is involved as these are totally ineffective, and may confine the heat and create a worse situation.

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5.0 Firefighting Measures ...continued

Protection of Firefighters

Protective equipment for firefighters	Avoid all bodily contact. Wear self-contained breathing apparatus, pressure demand, MSHA / NIOSH-approved and full protective gear. Do not allow clothing, shoes, or gloves to become impregnated with <i>sodium chlorate</i> 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 <i>sodium chlorate</i> and <i>hydrogen peroxide</i> 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 <i>sodium chlorate</i> 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 100° F (38° C).

6.0 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 <i>CHLORINE DIOXIDE</i> GAS CAN BE LIBERATED. Contain runoff, and contact appropriate local spill response personnel. 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.
Methods for clean-up	Local authorities should be advised if significant spillages cannot be contained.

7.0 Handling and Storage

Handling procedures	Prevent possible eye and skin contact by wearing protective clothing and equipment. AVOID PRODUCT CONTACT WITH ACIDIC MEDIA WHICH CAN LIBERATE <i>CHLORINE DIOXIDE</i> GAS.
Storage procedures	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.

8.0 Exposure Controls / Personal Protection

Exposure guidelines	No TLVs have been established for this mixture. The PEL for <i>hydrogen peroxide</i> is 1 ppm. The PEL for <i>sodium chlorate</i> is: total dust = 15 mg / m ³ ; respirable fraction = 5 mg / m ³ .
Engineering controls	Use site specific diking / spill control to avoid uncontrolled releases. Eyewash facility, emergency shower, or jump tank should be in close proximity.

Personal Protective Equipment

Eye / Face	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.
Skin	Use impervious clothing to avoid skin contact. Avoid all bodily contact. Wear self-contained breathing apparatus, and appropriate protective equipment. Do not allow clothing, shoes, or gloves to become impregnated with <i>sodium chlorate</i> 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 <i>sodium chlorate</i> and <i>hydrogen peroxide</i> solution with plenty of water.
Respiratory	Not applicable under normal conditions of use. For vapor or mist concentration in excess of 10 ppm, a self-contained breathing apparatus should be used. DO NOT USE OXIDIZABLE SORBANTS.
Hygiene measures	Do not wear leather gloves

9.0 Physical and Chemical

Appearance

Form	Aqueous solution	Vapor pressure	< 0.1 KPa at 40° C and at 80° C
Color	Faint blue to colorless	Vapor density	Not available
Odor	Faint	Specific gravity	1.37
Odor threshold	Not available	Solubility (H ₂ O)	Not applicable
Physical state	Liquid	Coefficient of water / oil distribution	Not available
pH	1.7	Octanol / H ₂ O coeff	Not available
Melting point	Not applicable	Auto ignition temperature	Not available
Freezing point	Not available	Decomposition temperature	Not available
Boiling point	104° C	Viscosity	Water-like
Flash point	Not available	Bulk density	1370 @ 20° C
Evaporation rate	> 1 (butyl acetate = 1)	Density	1.37 G / cm ³ at 20° C
Flammability	Not available		
Upper / lower flammability	Not available		

10.0 Chemical Stability and Reactivity Information

Conditions to avoid	Avoid heat, flame, strong UV light, and other sources of ignition. ELEVATED pH > 4 CAN ENHANCE MORE RAPID DECOMPOSITION OF THE <i>HYDROGEN PEROXIDE</i> .
Incompatible materials	MashGuard One 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, <i>manganese dioxide</i> , <i>potassium cyanide</i> , and thiocyanates. MashGuard One 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.
Hazardous decomposition products	MashGuard One will react with strong mineral acids liberating <i>chlorine dioxide</i> gas. Contamination from various metals or organic materials may cause rapid decomposition of the <i>hydrogen peroxide</i> , resulting in oxygen gas release, and pressure buildup if not properly vented.
Possibility of hazardous reactions	Strong mineral acids, organic materials, and powdered metals. Polymerization will not occur.

11.0 Toxicological Information

Acute effects	The oral LD ₅₀ in rats for <i>sodium chlorate</i> is greater than 5000 mg / kg (practically nontoxic). The oral LD ₅₀ for a 10% concentration of <i>hydrogen peroxide</i> in rats ranges from 1500 mg / kg to greater than 5000 mg / kg (moderately toxic to practically nontoxic). Ingestion of large doses of <i>sodium chlorate</i> will result in methemoglobinemia, and kidney damage.
Component analysis – LD ₅₀	Chromium compounds and perchlorate are created as byproducts in the process for the electrolytic production of chlorates. <i>Hexavalent chromium</i> is a carcinogen present at an average level of < 10 ppm and perchlorate, which can affect the thyroid gland, is present at an average of < 300 ppm.
Inhalation effects	The LC ₅₀ of <i>sodium chlorate</i> is greater than 5.6 mg / l. There was no mortality in rats following a four hour exposure to <i>hydrogen peroxide</i> at the minimal attainable concentration of 122 ppm. Acute: Rat LC ₅₀ : > 5.6 mg / l Lethal Concentration: NOAEL:
Irritation to skin	<i>Sodium chlorate</i> was not irritating to rabbits. <i>Hydrogen peroxide</i> at concentrations of less than 35% is not considered irritating. Acute: Rabbit LD ₅₀ : > 2000 mg/kg Lethal Dose: NOAEL:
Irritation to eye	<i>Sodium chlorate</i> was mildly irritating to rabbits. <i>Hydrogen peroxide</i> at concentrations greater than 10% is considered severely irritating and corrosive.

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Toxicological Information ...continued

Routes of entry	<i>Hydrogen peroxide</i> at concentrations greater than 10% is considered severely irritating and corrosive
Sensitization data	<i>Sodium chlorate</i> was not sensitizing to guinea pigs. <i>Hydrogen peroxide</i> was not sensitizing to guinea pigs at a concentration of 6%.
Carcinogenicity / mutagenicity and long-term effects	<i>Sodium chlorate</i> and <i>hydrogen peroxide</i> are not considered carcinogenic
Rhode Island – Hazardous Substance List	
<i>Hydrogen peroxide</i>	7722-84-1 Toxic; flammable
Neurotoxicity	No data available for this product
Reproductive days toxicity / teratogenicity	<i>Sodium chlorate</i> was not teratogenic to rats at doses up to 1000 mg / kg / day during 6-15 of gestation. Sufficient data is not available for evaluation of <i>hydrogen peroxide</i> .
Epidemiology	No information

12.0 Ecological Information

Ecotoxicity

Fish	Rainbow trout EC50: > 1000 mg / l, 96 hours Fish NOAEL: 16.4 – 37.4 mg / l, 96 hours
Aquatic toxicity	The 96-hour LC ₅₀ in rainbow trout for <i>sodium chlorate</i> is greater than 1000 mg / l (practically nontoxic). The 96-hour LC ₅₀ values for <i>hydrogen peroxide</i> in fish range from 16.4 - 37.4 mg/l (slightly toxic).
Environmental effects	<i>Hydrogen peroxide</i> occurs naturally as a result of photochemical processes in living organisms
Persistence / degradability	<i>Hydrogen peroxide</i> is readily biodegradable and does not bioconcentrate
Bioaccumulation / accumulation	Not known
Mobility in environmental media	No information

13.0 Disposal Considerations

Disposal instructions	In accordance with municipal, provincial, state, and federal regulations. D002
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14.0 Transport Information

Basic Shipping Description Material DOT HMR Information

Proper shipping name	<i>Sodium chlorate</i> , aqueous solution
Hazard class	5.1
Subsidiary hazard class	
Identification number	2428
Packaging group	II
Marine pollutant identifier	
Severe marine pollutant identifier	
Labels required	Oxidizer

15.0 Regulatory Information

US federal regulations	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.
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CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

<i>Hydrogen peroxide</i>	7722-84-1 1000 lb TPQ (concentration > 52%)
OSHA regulated	Eye / skin irritant as defined in 29 CFR 1910.1200
SARA 302	Not subject to SARA Section 302
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. D002 – RCRA corrosive waste This product contains a chemical known to the State of California to cause cancer, or reproductive harm: chromium by product Cr(VI) 0.05 mg / m ³ ACGIH TLV TWA NTP: Cr(VI) compounds: known human carcinogen IARC: Cr(VI) Group 1 carcinogen.

16.0 Other Information

HMIS ratings Health: 2
 Fire: 0
 Reactivity: 2
 Pers. Prot: X

NFPA hazard ratings Health: 2
 Fire: 0
 Reactivity: 2
 Special Hazards: OXY

Special hazards 0 = Insignificant
 1 = Slight
 2 = Moderate
 3 = High
 4 = Extreme

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