SAFETY DATA SHEET

This SDS adheres to the standards and regulatory requirements of Canada and may not meet the regulatory requirements in other countries.

1. Identification

Product identifier	**Sodium Chlorate Solution 20%-50%**
Other means of identification	Sodium Chlorate Aqueous Solution, Chlorate of Soda, ERCOCIDE S, ERCOCIDE SP, R8 Solution, R2 Solution, $NaClO_3$
Chemical Family	Inorganic compound
Recommended use	Oxidizing agent, pulp bleaching, defoliant and herbicide.
Recommended restrictions	None known

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	ERCO Worldwide LP
Address	5050 Satellite Drive Mississauga, ON L4W 0G1 Canada
Telephone	(416) 239-7111 (M- F: 8:00 am – 5:00pm EST)
Website	http://www.ercoworldwide.com
E-mail	productinfo@ercoworldwide.com
Emergency phone number	Canada & USA: 1-800-424-9300 (CHEMTREC)

Supplier Refer to Manufacturer

2. Hazard(s) Identification

Physical hazards	Oxidizing liquids	Category 2
Health hazards	Acute toxicity, oral	Category 4

Environmental hazards Not currently regulated by the Canadian Hazardous Products Regulation (WHMIS 2015), refer to Section 12 for additional information.

Label elements

Signal Word Danger

Hazard statement
May intensify fire; oxidizer.
Harmful if swallowed.

Precautionary statement

Prevention	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials. Wear protective gloves, protective clothing, eye protection, face protection. Wash hands and face thoroughly after handling. Do not eat, drink or smoke when using this product.
Response	**IF SWALLOWED:** Call a POISON CENTER/physician if you feel unwell. Rinse mouth. In case of fire: Use water to extinguish.
Storage	Does not apply.
Disposal	Dispose of contents and containers in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	May cause mild skin and eye irritation.
Supplemental information	Not applicable

3. Composition/Information on Ingredients

Substances

Chemical name	Common name and synonyms	CAS number	Conc. % By Weight
Sodium Chlorate	Chlorate of Soda; ERCOCIDE C	7775-09-9	20-50 w/w%
Dihydrogen oxide	Water	7732-18-5	Balance

Chemical name of impurities, stabilizing solvents and/or additives: None

4. First-Aid Measures

Inhalation	Remove person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin Contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Call a POISON CENTER or doctor/physician if you feel unwell.
Eye Contact	Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion	Rinse mouth. Do not induce vomiting. Never give anything by mouth to a victim who is unconscious or is having convulsions. If the patient is conscious, give one or two glasses of water to dilute stomach contents. Call a POISON CENTER or doctor/physician if you feel unwell.
Most important symptoms/effects, acute and delayed	May cause mild eye irritation. Symptoms may include redness and itching. May cause irritation to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing. May be harmful or fatal if swallowed. Symptoms may include cyanosis (bluish discoloration of the skin), nervous system damage, lung inflammation and pulmonary edema (fluid accumulation). Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. Prolonged or repeated exposure may cause blood system effects. Prolonged or repeated overexposure may cause kidney effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically.
General information	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-Fighting Measures

Suitable extinguishing media	Water spray, fog (flooding amounts).
Unsuitable extinguishing media	DO NOT use dry chemical fire extinguishing agents containing ammonium compounds (such as some A:B:C agents), since an explosive compound can be formed. DO NOT use carbon dioxide, dry chemical powder or other extinguishing agents that smother flames, since they are not effective in extinguishing fires involving oxidizers.
Specific hazards arising from the chemical	Strong oxidizer - contact with other material may cause fire. May cause fire or explosion; strong oxidizer.
Special protective equipment and precautions for firefighters:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Avoid use of leather products.
Firefighting equipment/instructions:	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. In the event of fire, cool tanks with water spray. Move containers from fire area if you can do so without risk. Containers should be cooled with water

to prevent vapor pressure build up. Do not allow run-off from firefighting to enter drains or water courses. Dike for water control.

Specific methods Cool containers exposed to flames with water until well after the fire is out.

General fire hazards May intensify fire; oxidizer.

Hazardous combustion products Pure sodium chlorate decomposes explosively under intense fire conditions. It initially decomposes to sodium perchlorate and begins to liberate oxygen at about 265°C. Besides oxygen, other compounds formed in a fire include chlorine, hydrogen chloride and sodium oxide.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Immediately evacuate personnel to safe areas. Ensure clean-up is conducted by trained personnel only. Wear appropriate protective equipment and clothing during clean-up. Ventilate the contaminated area. Do not breathe mist or vapor. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Ventilate the contaminated area. Wear appropriate protective equipment and clothing during clean-up. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if you can do it without risk. Dike far ahead of spill for later disposal. Absorb in vermiculite, dry sand or earth and place into containers. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Avoid discharge into drains, water courses or onto the ground.

7. Handling and Storage

Precautions for safe handling Do not handle or store near an open flame, heat or other sources of ignition. No smoking in the area. Avoid contamination with organic materials. Avoid breathing mist or vapor. Avoid contact with eyes, skin and clothing. Keep away from acids and other incompatibles. Keep containers closed when not in use. Label containers appropriately. Wash hands after handling and before eating. Wear protective gloves and eye/face protection.

Conditions for safe storage, including any incompatibilities Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Storage areas should not be constructed of wood or other organic materials. Do not store wood or other organic materials in areas that could come in contact with this material. Keep away from combustible or readily oxidizable materials and acids. Store in a

closed container away from incompatible materials (see section 10 of the SDS). Keep quantity stored as small as possible. Post "NO SMOKING" signs in area. Stored containers should be periodically checked for general condition and leakage. Protect against physical damage. Keep empty containers in separate storage area. Empty containers may contain hazardous residues. Keep closed. Have appropriate fire extinguishers and spill clean-up equipment in storage area.

8. Exposure Controls/ Personal Protection

Occupational exposure limits No exposure limits noted for ingredient(s).

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. In case of insufficient ventilation, wear suitable respiratory equipment. Do not use combustible material of construction where sodium chlorate will be used or stored.

Individual protection measures, such as personal protective equipment:

Eye/face protection Wear safety glasses with side shields (or goggles). Eye wash fountain and emergency showers are recommended.

Skin protection

Hand protection Avoid skin contact. Use nitrile, PVC or neoprene gloves. Do not use gloves made of leather, cotton or other organic absorbing materials. If gloves become contaminated they will become a significant fire hazard.

Other Wear suitable protective clothing. Wear flame resistant (FR) clothing. Change clothing at the end of each work shift or when it may be contaminated. Keep contaminated clothing wet between taking it off and washing it. For exposures with a high potential of contact, wear PVC or rubber rain suit, hard hat, rubber or plastic gloves, rubber boots, and safety glasses or goggles. Do not wear leather boots or gloves.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume/mists at levels exceeding the exposure limits. Seek advice from respiratory protection specialists.

General hygiene considerations When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before

eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and Chemical Properties

Appearance	Clear to pale yellow mobile liquid.
Physical state	Liquid.
Form	Liquid.
Colour	Clear to light yellow.
Odor	None.
Odor threshold	Not available.
pH	7-9
Melting point/Freezing point	-8 °C (17.6 °F) (20% solution) -18 °C (-0.4 °F) (40% solution)
Initial boiling point and boiling range	102 °C - 108 °C (215.6 °F - 226.4 °F)
Flash point	Not applicable
Evaporation rate	Not available
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits	
Flammability limit – lower (%)	Not applicable
Flammability limit – upper (%)	Not applicable
Explosive limit – lower (%)	Not Available
Explosive limit – upper (%)	Not Available
Vapor pressure	Not available
Vapor density	Not available
Relative density	Not available
Solubility (ies)	
Solubility (water)	Soluble
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not applicable
Decomposition temperature	> 265 °C (> 500 °F)
Viscosity	Not available
Other information	
Density	1.15 - 1.45 g/cm^3
Explosive properties	Oxidizer, may have explosive properties
Molecular formula	Cl-Na-O_3
Molecular weight	106.45 g/mol
Oxidizing properties	Strong oxidizer - contact with other material may cause fire.
Percent volatile	Not available.
Specific gravity	1.15 – 1.45

10. Stability and Reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport. Can form shock-, heat- or friction-sensitive mixtures with finely divided metals, metal salts, ammonium salts, non-metals, strong reducing agents and sulfides. Low pH (acidic) solutions can decompose to

	form corrosive and dangerously reactive chlorine dioxide. Decomposes above 265°C releasing oxygen.
Chemical stability	Stable at normal temperatures and pressure. At low pH, solutions decompose forming corrosive and dangerously reactive chlorine dioxide. In intense fire situations there have been several cases of violent explosions attributed to sodium chlorate by itself.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to Avoid	Heat, sparks, friction, shock, impact, open flames, contact with combustible materials and acidic pH.
Incompatible materials	Combustible material. Organic compounds. Organic lubricants. Strong acids. Ammonium salts. Reducing agents. Powdered metals.
Hazardous decomposition products	Pure sodium chlorate decomposes explosively under intense fire conditions. It initially decomposes to sodium perchlorate and begins to liberate oxygen at about 265°C. Besides oxygen, other compounds formed in a fire include chlorine, hydrogen chloride and sodium oxide.

11.Toxicological Information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system.
Skin contact	Causes mild skin irritation.
Eye contact	May cause mild eye irritation.
Ingestion	Harmful if swallowed.

Delayed and immediate effects and chronic effects from short-term and long-term exposure

Effects of short-term (acute) exposure:	Symptoms may include cyanosis (bluish discoloration of the skin), nervous system damage, lung inflammation and pulmonary edema (fluid accumulation). Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. May cause mild eye irritation. Symptoms may include redness and itching. May cause mild skin irritation. Symptoms may include redness and itching. May cause irritation to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing.

Effects of long-term (chronic) exposure:	Prolonged or repeated exposure may cause blood system effects. Prolonged or repeated overexposure may cause kidney effects.

Information on toxicological effects

Acute toxicity See data for individual ingredient acute toxicity data.

Product	**Species**	**Test Results**
Sodium Chlorate Solution 20%-50%		
Acute		
Other		
LD_{50}	Rat	2400 mg/kg (Calculated ATE)

Components	**Species**	**Test Results**
Sodium Chlorate (CAS 7775-09-9)		
Acute		
Dermal		No information available.
Inhalation		
LC_{50}	Rat	> 7 mg/l (4 hour)
Oral		
LD_{50}	Rat	1200 mg/kg
LD_{50}	Mouse	8350 mg/kg
	Rabbit	7200 mg/kg

Skin corrosion/irritation	Direct contact with concentrated solutions can cause mild irritation.
Serious eye damage/eye irritation	May cause mild eye irritation. Symptoms may include redness and itching.
Respiratory or skin sensitization	
Respiratory sensitization	Not expected to be a respiratory sensitizer.
Skin sensitizer	Not expected to be a skin sensitizer.
Germ cell mutagenicity	Not expected to be mutagenic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.
Reproductive toxicity	Not classifiable as a reproductive toxin.

Specific target organ toxicity - single exposure	Hazardous by OSHA criteria. Specific Target Organ Toxicity (STOT), Single Exposure Category 3 May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Not classified as a specific target organ toxicity - repeated exposure.
Aspiration toxicity	Not expected to be an aspiration hazard.
Chronic effects	Repeated and prolonged exposure of the skin can cause dermatitis and blood system effects. Repeated exposure by inhalation or ingestion may result in toxic effects, which appear gradually over weeks. Initially there may be abdominal pain, followed by internal bleeding, destruction of red blood cells, lung damage, liver damage, and kidney damage. The skin may be bluish.

12. Ecological Information

Ecotoxicity Not expected to be harmful to aquatic organisms.

Components		Species	Test Results
Sodium Chlorate (CAS 7775-09-9)			
Aquatic			
Acute			
Crustacea	EC50	Water flea (Daphnia magna)	> 1000 mg/l, 48 hours
Fish	LC50	Rainbow trout, Donaldson trout (Oncorhynchus mykiss)	> 1000 mg/l, 96 hours
Chronic			
Algae	NOEC	Green algae (Selenastrum capricornutum)	> 500 mg/l, 72 hours
Crustacea	EC50	Water flea (Daphnia magna)	> 500 mg/l, 21 days
Fish	NOEC	Zebra danio (Danio rerio)	> 500 mg/l, 35 days

Persistence and degradability	Readily biodegradable. Sodium chlorate degrades very slowly in soil under aerobic conditions. May decompose by microbial degradation more rapidly under anaerobic conditions.
Bio accumulative potential	No data available.
Mobility in soil	High water solubility indicates a high mobility in soil. Sodium chlorate can be leached out of soil. Chlorate accumulates in plant cells until toxic concentrations are reached and the plant dies.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal Considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents and containers in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

TDG

Shipping Name (TDGR)	UN Number	Hazard Class	Packing Group
Sodium Chlorate, Aqueous Solution	2428	5.1	II

IATA

UN number	UN 2428
UN proper shipping name	Sodium Chlorate, Aqueous Solution
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Packing group	II
Environmental hazards	No
ERG Code	5L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed
Cargo aircraft only	Allowed

IMDG

UN number	UN 2428
UN proper shipping name	Sodium Chlorate, Aqueous Solution
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No
EmS	F-H, S-Q
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available.

IATA; IMDG; TDG

15. Regulatory Information

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16.Other Information

Issue date	4/7/2022
Revision #	11
Revision Indicator	Company logo and address updated.
List of abbreviations	ACGIH: American Conference of Governmental Industrial Hygienists CAS: Chemical Abstract Services CFR: Code of Federal Regulations DSL: Domestic Substance List EINECS: European Inventory of Existing Commercial chemical Substances EPA: Environmental Protection Agency HSDB® - Hazardous Substances Data Bank IARC: International Agency for Research on Cancer IATA: International Air Transport Association IBC: Intermediate Bulk Container IMDG: International Maritime Dangerous Goods LC: Lethal Concentration LD: Lethal Dose NIOSH: National Institute of Occupational Safety and Health NTP: National Toxicology Program OECD: Organization for Economic Cooperation and Development OSHA: Occupational Safety and Health Administration PPE: Personal Protective Equipment RTECS: Registry of Toxic Effects of Chemical Substances SDS: Safety Data Sheet TWA: Time Weighted Average WHMIS: Workplace Hazardous Materials Information System

Disclaimer

Information presented in this SDS is furnished in accordance with the Workplace Hazardous Materials Information System (WHMIS).

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