SAFETY DATA SHEET

REV. 4 Issued: July 21, 2017

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 Crystal**
Other means of Identification	Chlorate of Soda (synonym), Technical Sodium Chlorate (solid), ERCOCIDE CP (SOLID), ERCOCIDE C, ERCOCIDE CP
Recommended use	Oxidizing agent, pulp bleaching, defoliant, herbicide
Recommended restrictions	None known

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	ERCO Worldwide, A division of Superior Plus LP
Address	302 The East Mall Suite 200 Toronto, ON M9B 6C7 Canada
Telephone	Information # (416) 239-7111 (Monday – Friday 8:00 am – 5:00pm EST)
Website	http://www.ercoworldwide.com
E-mail	productinfo@ercoworldwide.com
Emergency phone number	24 Hr. #: Canada: 613-996-6666 (CANUTEC) USA: 1-800-424-9300 (CHEMTREC)
Supplier	Refer to Manufacturer

2. HAZARD(S) IDENTIFICATION

Physical hazards	Oxidizing solids	Category 1
Health hazards	Acute toxicity, oral	Category 3
	Acute toxicity, inhalation	Category 3
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
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 cause fire or explosion; strong oxidizer. Toxic if swallowed. Toxic if inhaled. Causes serious eye irritation. May cause respiratory irritation.
Precautionary statement	
Prevention	Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Avoid breathing dust/fume. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/eye protection/face protection.
Response	If swallowed: Immediately call a poison center/doctor. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. In case of fire: Use appropriate water only to extinguish. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
Storage	Store in cool dry fireproof area. Keep away from combustible or readily oxidizable materials and acids.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
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	7775-09-9	>99

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

4. FIRST-AID MEASURES

Inhalation

If dust from the material is inhaled, remove the affected person immediately to fresh air. Oxygen or artificial respiration if needed. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician.

Skin contact

IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Get medical attention if irritation develops and persists.

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

Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms/effects, acute and delayed

Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

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 or fog.

Unsuitable extinguishing media

Dry chemical powder. Carbon dioxide (CO_2).

Specific hazards arising from the chemical

Strong oxidizer – contact with other material may cause fire.

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. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

Specific methods

Water is the only effective extinguishing media for fires involving sodium chlorate. Cool containers exposed to flames with water until well after the fire is out.

General fire hazards

May cause fire or explosion; strong oxidizer. 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

Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of dust.

Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. 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). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Collect waste material in suitable noncombustible container for disposal. Minimize dust generation and accumulation. 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 discharge into drains, water courses or onto the ground.

7. HANDLING AND STORAGE

Precautions for safe handling

Keep away from heat. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Take every precaution to avoid mixing with combustibles. Avoid breathing dust. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Practice good housekeeping.

Conditions for safe storage, including any incompatibilities

Keep away from heat. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Do not store near combustible materials or readily oxidizable materials and acids. Guard against dust accumulation of this material.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

Biological limit values

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

Appropriate engineering controls

Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling. Provide eyewash station. 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 eye/face protection. Use tight fitting goggles if dust is generated. Wear a full-face respirator, if needed.

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. For intermittent exposures with a higher likelihood of exposure to sodium chlorate, wear PVC or rubber rain suit, hard hat, rubber or plastic gloves, rubber boots and safety glasses or googles. Wash down clothing, gloves and boots after each use to remove traces of sodium chlorate. For continuous use with a low likelihood of exposure to sodium chlorate, wear cotton clothing (flame retardant recommended) in lieu of rain suit. However continue to wear rubber boots and gloves, hard hat and safety glasses or googles.

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.

Respiratory protection

Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards

None.

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	White crystals; forms lumps in moist conditions.
Physical state	Solid
Form	Powder
Color	White
Odor	None
Odor threshold	Not Available
pH	7 (1% water solution)
Melting point/freezing point	478.4 °F (248 °C)
Initial boiling point and boiling range	Not applicable (decomposes at ~260°C/500°F)
Flash point	Not Available
Evaporation rate	Not Available
Flammability (solid, gas)	Not Available
Upper/lower flammability or explosive limits	
Flammability limit – lower (%)	Not Available
Flammability limit – upper (%)	Not Available
Explosive limit - lower (%)	Not Available
Explosive limit - upper (%)	Not Available
Vapor pressure	< 0 kPa at 25 °C
Vapor density	Not Available
Relative density	Not Available
Solubility(ies)	
Solubility (water)	~50 wt.% @ 20°C
Partition coefficient (n-octanol/water)	Not Available
Auto-ignition temperature	Not Available
Decomposition temperature	Not Available
Viscosity	Not Available
Other information	
Bulk density	1300 - 1500 kg/m^3

Density	2.50 g/cm^3
Dynamic viscosity	7.78 mPa.s
Dynamic viscosity temperature	485.6 °F (252 °C)
Molecular formula	$NaClO_3$
Molecular weight	106.45 g/mol
Specific gravity	2.5

10.STABILITY AND REACTIVITY

Reactivity

The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability

Material is stable under normal conditions.

Possibility of hazardous reactions

Hazardous polymerization does not occur.

Conditions to avoid

Excessive heat. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

Incompatible materials

Combustible materials and organic matter and acids.

Hazardous decomposition products

When heated above 265°C sodium chlorate will decompose to give oxygen gas (not poisonous, but a hazardous oxidizer) and common salt.

11.TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation

Toxic by inhalation.

Skin contact

Prolonged contact may cause irritation.

Eye contact

Causes serious eye irritation. Dust in the eyes will cause irritation.

Ingestion

Toxic if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

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

Effects of short-term (acute) exposure:

Skin contact: Direct contact with dust or concentrated solutions can cause mild irritation.

Eye contact: Dust or mist may cause temporary eye irritation and mild pain until material is rinsed from the surface of the eye.

I**ngestion**: Non-occupational ingestion has produced death. Initial symptoms include vomiting, diarrhea, nausea, and abdominal pain. After several hours or more, there may be severe intestinal bleeding, destruction of red blood cells and formation of inactive hemoglobin. Urine may be dark with blood clots. Within a day, kidney damage or kidney failure may occur, with cessation of urination. Liver damage, laboured breathing, convulsions, and coma may also develop. Recovery may take several weeks and may not be complete. The human adult lethal dose is estimated at 5 to 10 grams.

Inhalation: Sodium chlorate dust or mist may cause coughing and mild temporary irritation of the nose and throat.

Effects of long-term (chronic) exposure: Repeated and prolonged exposure of the skin can cause dermatitis. 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.

Information on toxicological effects

Acute toxicity

Toxic by inhalation. Toxic if swallowed. May cause respiratory irritation.

Product	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

Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation

Causes serious eye irritation. Dust in the eyes will cause irritation.

Respiratory or skin sensitization

Respiratory sensitization

Not available.

Skin sensitizer

This product is not expected to cause skin sensitization.

Germ cell mutagenicity

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

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

This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure

Respiratory tract irritation.

Specific target organ toxicity - repeated exposure

Not classified.

Aspiration toxicity

Not available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species	Test Results
Sodium Chlorate (CAS 7775-09-9)			
Aquatic			
Fish	LC50	Cherry salmon, Yamame trout (Oncorhynchus masou)	1100 mg/l, 96 hours

Persistence and degradability

Sodium chlorate degrades very slowly in soil under aerobic conditions. May decompose by microbial degradation more rapidly under anaerobic conditions.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

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

Sodium chlorate is classified as a hazardous waste. Contact a waste disposal company for advice for regional regulations. Empty containers may contain residues and should be washed thoroughly prior to disposal. The wash water should be handled as a hazardous waste. 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/container 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.

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	1495	5.1	**II**

IATA

UN number	UN1495
UN proper shipping name	Sodium chlorate
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	UN1495
UN proper shipping name	Sodium chlorate
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 applicable.

IATA; IMDG; TDG

15. REGULATORY INFORMATION

International Inventories

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, INCLUDING DATE OF PREPARATION OR LAST VERSION

Issue date	July 21, 2017
Revision #	4
Revision Indicator	Revised Section 1. Identification, Other means of Identification and Section 4. First Aid Measures, Ingestion.
List of abbreviations	ACGIH: American Conference of Governmental Industrial Hygienists CAS: Chemical Abstract Services CFR: Code of Federal Regulations ERG: Emergency Response Guidebook IATA: International Air Transport Association IARC: International Agency for Research on Cancer IBC: Intermediate Bulk Container IMDG: International Maritime Dangerous Goods LC: Lethal Concentration LD: Lethal Dose MSHA: Mine Safety and Health Administration NFPA: National Fire Protection Association NIOSH: National Institute of Occupational Safety and Health NTP: National Toxicology Program OEL: Occupational Exposure Limit OSHA: Occupational Safety and Health Administration SCBA: self-contained breathing apparatus SDS: Safety Data Sheet TDGR: Transport of Dangerous Goods Regulations UN: United Nations

Disclaimer

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