SAFETY DATA SHEET

This SDS adheres to the standards and regulatory requirements of the United States 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), 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
Address	5700 Hunt Road Valdosta Ga 31606 USA
Telephone	(229)-293-1005
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 solids	Category 1
Health hazards	Acute toxicity, oral	Category 3
	Acute toxicity, inhalation	Category 3
	Eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

Environmental hazards Not currently regulated by OSHA, refer to Section 12 for additional information.

OSHA defined hazards This mixture does not meet the classification criteria according to OSHA HazCom 2012.

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. Wear protective gloves, eye protection, face protection. Wear fire resistant or flame retardant clothing. Wash hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid breathing dust, fume, gas, mist, vapors, spray. Use only outdoors or in a well-ventilated area.
Response	**IF SWALLOWED:** Immediately call a POISON CENTRE/doctor Call a POISON CENTRE/doctor if you feel unwell **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 so. 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 water to extinguish. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
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

Chemical name	Common name and synonyms	CAS number	Conc. % By Weight
Sodium Chlorate	Chlorate of Soda	7775-09-9	> 99 w/w%

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 Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Get medical attention/advice 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 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. Immediately call a POISON CENTER or doctor/physician.

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 (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 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. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Do not allow run-off from firefighting to enter drains or water courses. Dike for water control.
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.
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. 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. 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.
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 ~500°F /260°C)
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	> 500 °F (> 265 °C)
Viscosity	Not Available
Other information	
Bulk density	1300 - 1500 kg/m3
Density	2.50 g/cm^3

Dynamic viscosity	7.78 mPa.s
Dynamic viscosity temperature	485.6 °F (252 °C)
Explosive properties	Oxidizer, may have explosive properties
Molecular formula	$NaClO_3$
Molecular weight	106.45 g/mol
Oxidizing properties	Strong oxidizer - contact with other material may cause fire.
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	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	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, labored 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.

Eye irritation: Category 2A. 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	LC_{50}	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 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.
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

DOT

UN number	UN1495
UN proper shipping name	Sodium chlorate
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Label(s)	5.1
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	A9, IB8, IP2, IP4, N34, T3, TP33
Packaging exceptions	152
Packaging non bulk	212
Packaging bulk	240

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.

DOT

IATA; IMDG

15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
SARA 302 Extremely hazardous substance	No
SARA 311/312 Hazardous chemical	No
SARA 313 (TRI reporting)	Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated

Safe Drinking Water Act (SDWA)	Contaminate candidate list

US state regulations

US. Massachusetts RTK - Substance List	Sodium Chlorate (CAS 7775-09-9)
US. New Jersey Worker and Community Right-to-Know Act	Not regulated.
US. Pennsylvania RTK – Hazardous Substances	Sodium Chlorate (CAS 7775-09-9)
US. Rhode Island RTK	Not regulated.
US. California Proposition 65	California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

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

Issue date	3/31/2022
Revision #	7
Revision Indicator	Clarified precautionary statements and address updated.
List of abbreviations	ACGIH: American Conference of Governmental Industrial Hygienists CAS: Chemical Abstract Services CERCLA: Comprehensive Environmental Response, Compensation and Liability Act of 1980 CFR: Code of Federal Regulations DOT: Department of Transportation EPA: Environmental Protection Agency EPCRA: Emergency Planning and Community Right-to-Know Act ERG: Emergency Response Guidebook HSDB® - Hazardous Substances Data Bank IARC: International Agency for Research on Cancer IATA: International Air Transport Association IBC: Intermediate Bulk Container IDLH: immediately dangerous to life or health IMDG: International Maritime Dangerous Goods LC: Lethal Concentration LD: Lethal Dose NIOSH: National Institute of Occupational Safety and Health NOEC: No observable effect concentration NTP: National Toxicology Program OECD: Organisation for Economic Co operation and Development OEL: National occupational exposure limits OSHA: Occupational Safety and Health Administration PEL: Permissible exposure limit RCRA: Resource Conservation and Recovery Act RQ: Reportable Quantity RTECS: Registry of Toxic Effects of Chemical Substances SAR: supplied-air respirator SCBA: self-contained breathing apparatus SDS: Safety Data Sheet STEL: Short Term Exposure Limit TWA: Time Weighted Average UN: United Nations
References	ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices (2014) Canadian Centre for Occupational Health and Safety, CCInfoWeb Databases, 2014 (Chempendium, RTECs, HSDB, INCHEM) International Agency for Research on Cancer Monographs (2014) Material Safety Data Sheet from manufacturer. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2014.

Disclaimer

Information presented in this SDS is furnished in accordance with OSHA's Hazard Communication Standard (HCS) 2012.

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