



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name TRONOX® Sodium Chlorate
Version # 01
Revision date 09-29-2009
Product Code Sodium chlorate
MSDS Number B-5012
Product use Non-selective herbicide, raw material and oxidizing agent.
Manufacturer information Tronox LLC
3301 NW 150th Street
Oklahoma City, OK 73134 US
ChemProdSteward@tronox.com
1-405-775-5000 (24-hours)
Emergency CHEMTREC 1-800-424-9300

2. Hazards Identification

Physical state Solid.
Appearance Granular.
Emergency overview DANGER

Oxidizer - contact with other material may cause fire. May produce shock-sensitive mixtures. Thermally unstable at elevated temperature. Not itself combustible but assists fire in burning materials.
May be harmful if swallowed. May irritate the respiratory tract (nose, throat, and lungs) , eyes and skin.

OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.
Eyes May cause eye irritation.
Skin May cause skin irritation. Prolonged skin contact may cause dermatitis.
Inhalation Dusts of this product may cause irritation of the nose, throat, and respiratory tract.
Ingestion Harmful if swallowed. This material may produce methemoglobin which, in sufficient concentration, causes cyanosis, a blue-gray discoloration of the skin and lips caused by a reduced ability of the blood to carry oxygen. Ingesting large quantities can cause abdominal pain, nausea, and diarrhea, possibly with dark blood, cyanosis, possibly progressing to headache, difficulty in breathing, dizziness, seizures, or coma. Overexposure causes kidney and liver damage.

Target organs Blood and/or blood-forming organs. Respiratory system. Eyes. Skin.

Chronic effects May cause thyroid damage based on animal data.

Signs and symptoms Ingesting large quantities can cause abdominal pain, nausea, and diarrhea, possibly with dark blood, cyanosis, possibly progressing to headache, difficulty in breathing, dizziness, seizures, or coma. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Potential environmental effects Toxic to aquatic organisms. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Sodium chlorate	7775-09-9	99.5

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

Eye contact Dust in the eyes: Do not rub eyes. Remove contact lenses, if present and easy to do. Flush eyes immediately with large amounts of water. Get medical attention if irritation develops and persists.

Skin contact	Wash skin thoroughly with soap and water. Get medical attention if irritation develops or persists.
Inhalation	Remove victim to fresh air. If not breathing, clear airway and start mouth-to-mouth artificial respiration or use a bag-mask respirator. Get immediate medical attention. If the victim is having trouble breathing, transport to medical care and if available, give supplemental oxygen.
Ingestion	Immediately give 3-4 glasses of water, and induce vomiting. Give fluids until vomitus is clear. Do not induce vomiting or give anything by mouth to an unconscious or convulsing person. Get immediate medical attention.
Notes to physician	Chemical of exposure is sodium chlorate, a strong oxidizer and methemoglobin former. Cyanosis may be noted within several hours following inhalation or ingestion.
General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties	The product is not flammable. Strong oxidizer - contact with other material may cause fire.
Extinguishing media	
Suitable extinguishing media	Water. Water spray or fog.
Unsuitable extinguishing media	Do not use CO2 or dry chemical. Do not use a fire blanket.
Protection of firefighters	
Protective equipment and precautions for firefighters	For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Firefighters should wear full protective clothing including self contained breathing apparatus. Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.
Special protective equipment for fire-fighters	No specific recommendations.
Specific methods	Use water spray to cool unopened containers. Move container from fire area if it can be done without risk.
Hazardous combustion products	Sodium oxides. Chlorine. Chlorine dioxide.

6. Accidental Release Measures

Personal precautions	Avoid inhalation of dust and contact with skin and eyes. Use personal protection recommended in Section 8 of the MSDS. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Application of sodium carbonate, borax, or calcium chloride as a diluent and absorbent will reduce the fire hazard.
Environmental precautions	Do not contaminate water. Prevent further leakage or spillage if safe to do so.
Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material.
Methods for cleaning up	Avoid dust formation. Shovel into a dry metal container. Keep combustibles away from spilled material. For waste disposal, see Section 13 of the MSDS.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Do not ingest. Avoid inhalation of dust and contact with skin and eyes. Wash hands thoroughly after handling. Wear suitable protective clothing. Clean up spilled material immediately.
Storage	Store in a cool, dry place. Keep away from combustible material. Keep product away from organic solvents and other products containing easily oxidized functional groups. Keep out of reach of children. Keep away from food, drink and animal feeding stuffs.

8. Exposure Controls / Personal Protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Exposure guidelines	ACGIH: OELs (8-hour TLV-TWA) for inhalable dust: 10 mg/m ³ ; respirable dust 3 mg/m ³ . OSHA: OELs (8-hour PEL) for total dust: 15 mg/m ³ ; respirable dust 5 mg/m ³ .
Engineering controls	Ventilate as needed to control airborne dust. Provide easy access to water supply or an emergency shower.
Personal protective equipment	
Eye / face protection	Wear dust-resistant safety goggles where there is danger of eye contact.
Skin protection	Wear protective gloves. Wear easily washable chemical resistant clothing. Chemical resistant boots. Do not wear leather shoes, gloves or belts.

Respiratory protection	When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator for dusts. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use.
General hygiene considerations	Wash clothing after use. Handle in accordance with good industrial hygiene and safety practice. If clothing becomes contaminated, keep wet until washed.

9. Physical & Chemical Properties

Appearance	Granular.
Color	White.
Odor	Odorless.
Odor threshold	Not available.
Physical state	Solid.
Form	Powder.
pH	Not available.
Melting point	478.4 °F (248 °C)
Freezing point	Not available.
Boiling point	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	2.49
Solubility (water)	1010 g/l @ 20°C
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Bulk density	100 lb/ft ³ Approx.

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions and recommended use.
Conditions to avoid	Avoid incompatible materials and intense heat.
Incompatible materials	Reacts violently with combustibles, sulfuric acid, and reducing materials. Explosions may be caused by contact with ammonia salts, ammonium thiosulfate, antimony sulfide, arsenic, carbon, charcoal, organic matter, organic acids, thiocyanates, chemically active metals, oils, metal sulfides, nitrobenzene, powdered metals, sugar. Reacts with many organic materials to form shock-sensitive mixtures, causing explosion hazard.
Hazardous decomposition products	Chlorine. Chlorine dioxide. Sodium oxides.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components

Sodium chlorate (7775-09-9)

Test Results

Acute Oral LD50 Rat: 1200 mg/kg

Acute effects	May be harmful if swallowed. This material may produce methemoglobin which, in sufficient concentration, causes cyanosis, a blue-gray discoloration of the skin and lips caused by a reduced ability of the blood to carry oxygen. Ingesting large quantities can cause abdominal pain, nausea, and diarrhea, possibly with dark blood, cyanosis, possibly progressing to headache, difficulty in breathing, dizziness, seizures, or coma. Overexposure causes kidney and liver damage.
Local effects	May irritate eyes and skin. Inhalation of dusts may cause respiratory irritation.
Sensitization	Not a skin sensitizer.
Chronic effects	May cause thyroid damage based on animal data.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Epidemiology	Based on epidemiological studies, pre-existing respiratory system, digestive tract, blood and kidney disorders may be aggravated by prolonged exposure to high concentrations of sodium chlorates.
Mutagenicity	Knowledge about mutagenicity is incomplete.
Neurological effects	No data available for this product.
Reproductive effects	Knowledge about reproductive effects is incomplete.
Teratogenicity	Not available.
Further information	No other specific acute or chronic health impact noted.

12. Ecological Information

Ecotoxicity	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Sodium chlorate is a non-specific herbicide, which will destroy the vegetation.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Aquatic toxicity	May cause long-term adverse effects in the aquatic environment.
Persistence and degradability	The product is degraded completely by abiotic reduction.
Bioaccumulation / Accumulation	The product is not expected to bioaccumulate.
Mobility in environmental media	The product is water soluble and may spread in water systems.

13. Disposal Considerations

Waste codes	D001
Disposal instructions	Dispose of this material and its container to hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN1495
Proper shipping name	Sodium chlorate
Hazard class	5.1
Packing group	II

Additional information:

ERG number	140
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IATA

Basic shipping requirements:

UN number	1495
Proper shipping name	Sodium chlorate
Hazard class	5.1
Packing group	II
Labels required	5.1

IMDG

Basic shipping requirements:

UN number	1495
Proper shipping name	SODIUM CHLORATE
Hazard class	5.1

Packing group	II
Environmental hazards	
Marine pollutant	No
Labels required	5.1

TDG

Basic shipping requirements:

Proper shipping name	SODIUM CHLORATE
Hazard class	5.1
UN number	UN1495
Packing group	II



DOT



IATA



IMDG



TDG

15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

CERCLA (Superfund) reportable quantity (lbs)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - Yes
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Section 302 extremely hazardous substance	No
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Section 311 hazardous chemical	Yes
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Drug Enforcement Agency (DEA)	Not controlled
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WHMIS status	Controlled
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WHMIS classification	C - Oxidizing D2B - Other Toxic Effects-TOXIC
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WHMIS labeling



Inventory status

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)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - Massachusetts RTK - Substance: Listed substance

Sodium chlorate (CAS 7775-09-9) Listed.

US - New Jersey RTK - Substances: Listed substance

Sodium chlorate (CAS 7775-09-9) Listed.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Sodium chlorate (CAS 7775-09-9) Listed.

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
Health: 2
Flammability: 0
Physical hazard: 2
Personal protection: X

NFPA ratings
Health: 2
Flammability: 0
Instability: 1
Special hazards: OX

Disclaimer The information in the sheet was written based on the best knowledge and experience currently available.

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