

SODIUM CHLORATE

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: Sodium chlorate.
Chemical Family: Chloric acid salt
Chemical Formula: NaClO₃
Product Use: Laboratory reagent
Manufacturers Name and Address: Caledon Laboratories Ltd. 40
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HAZARDOUS INGREDIENTS OF MATERIALS

Ingredients, %, TLV Units, CAS No: Sodium chlorate, > 99, Not established, 7775-09-9

PHYSICAL DATA

Physical State: Solid
Odour and Appearance: White or colourless crystals or granules, odourless.
Odour Threshold (ppm): Not applicable.
Vapour Pressure (mm Hg): Zero
Vapour Density (Air = 1): Not applicable.
Evaporation Rate: Not applicable.
Boiling Point (degrees C): 265 °C (decomposes)
Melting Point (degrees C): 248 °C
pH: Neutral (aqueous)
Specific Gravity: 2.49
Coefficient of Water/Oil distribution: Not available.

SHIPPING DESCRIPTION

UN: 1495
T.D.G. Class: 5.1
Pkg. Group: II

REACTIVITY DATA

Chemical Stability: Stable under normal conditions of use and storage. Slightly hygroscopic. May undergo violent chemical change at elevated temperature and pressure.
Incompatibility with other substances: Mixtures with combustible or flammable materials may ignite readily, explode, or be sensitive to shock or friction. May burn vigorously with phosphorus. Acidic solutions of sodium chlorate are strong oxidizing agents. Mixtures with metal salts, especially copper, may decompose violently. Mixtures with finely divided metals may be explosive. Reaction with metal oxides above 70 °C releases oxygen and may be explosive. Fusion with metal cyanides will explode. Mixtures with ammonium salts, powdered metals, arsenic trioxide, phosphorus, silicon, sulphur or sulphides are easily ignited and may explode. Mixtures with sulphuric acid will explode. Mixtures with organic materials (wood, paper, leather, flour, sawdust, sugar) may be ignited by static sparks, friction or shock.
Reactivity: Avoid elevated temperatures and pressure, shock or friction. Avoid all incompatible, organic, and combustible materials. Avoid generating dust or vapours.

FIRE AND EXPLOSION DATA

Flammability: Not combustible, does not burn, but substance is a strong oxidiser and will enhance the burning rate or cause spontaneous combustion of organic or combustible material. Strong oxidants may explode when shocked or if exposed to heat, flame or friction. May be initiation source for dust or vapour explosions.

Extinguishing Media: DO NOT use dry chemical fire extinguishing agents containing ammonium compounds (some A:B:C agents), (form explosive compounds). DO NOT use carbon dioxide, dry chemical powder or other extinguishing agents that smother flames; not effective for extinguishing fires with oxidizers. Use water as spray or fog to absorb heat, cool containers, and disperse vapours. Fight fire from a safe distance and from upwind. Firefighters should wear self-contained breathing apparatus and protective clothing sufficient to prevent contact.

Flash Point (Method Used): Not applicable.

Autoignition Temperature: Not applicable.

Upper Flammable Limit (% by volume): Not applicable.

Lower Flammable Limit (% by volume): Not applicable.

Hazardous Combustion Products: O₂, ClO₂

Sensitivity to Impact: Sensitivity of pure compound not known. When contaminated with dry organic or other incompatible materials, can explode violently on impact.

Sensitivity to Static discharge: Not sensitive if pure. Under certain conditions, dust/air mixtures can explode if in contact with an electrostatic spark or other ignition source.

NFPA Hazard Class: Health: 2 ; Flammability: 0 ; Reactivity: 3

TOXICOLOGICAL PROPERTIES AND HEALTH DATA**Toxicological Data:**

LD50: (oral, rat) 1,200 mg/kg; (adult, human, est.) 210 mg/kg - 430 mg/kg; (dermal, rabbit) > 10 g/kg

LC50: (rat) > 28 g/m³/1h

Effects of Acute Exposure to Product:

Inhaled: Does not form vapour. No specific human or animal inhalation information available. Dust is unlikely to be inhaled since it absorbs moisture from the air and forms a pasty solid. Airborne dust or mists may cause mild, temporary irritation of nose and throat, with coughing and sneezing.

In contact with skin: No human information available. Based on animal information solid or concentrated solution may cause mild temporary irritation.

In contact with eyes: No human information available. Based on limited animal information, dusts or mists may cause mild, temporary irritation, redness, tearing, and pain.

Ingested: Toxic. Causes nausea, vomiting, abdominal pain, diarrhea. May cause severe intestinal bleeding, destruction of red blood cells, formation of inactive hemoglobin (methemoglobinemia). May cause kidney damage or failure, with bloody urine, and then cessation of urination. May cause liver damage, laboured breathing, convulsions, coma. Estimated human adult lethal dose is 10 g to 30 g, but death has occurred at as little as 7.5 g, and recovery has been effected after a dose of over 40 g (with vigorous treatment). Recovery from non-lethal dose may take several weeks and may not be complete.

Effects of Chronic Exposure to Product: Prolonged contact may cause dermatitis. Prolonged or repeated inhalation or ingestion may cause abdominal pain, internal bleeding, hemolytic anemia, lung damage causing edema and cyanosis, liver damage causing jaundice, kidney damage causing bloody urine.

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Carcinogenicity: No human or animal information available.

Teratogenicity: No human information available. No significant effects in one animal study

Reproductive Effects: No human information available. No effects in one animal study

Mutagenicity: No human information available. Some effects in animal testing.

Synergistic Products: None known.

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation required.

Respiratory Protection: Dust mask. In high or unknown concentrations, as in fire or spill conditions, NIOSH approved respirator or self-contained breathing apparatus.

Eye Protection: Chemical safety goggles, face shield.

Skin Protection: Chemical resistant gloves. Other protective clothing, sleeves, apron, boots, or coveralls, sufficient to prevent contact.

Other Personal Protective Equipment: Safety shower and eye wash fountain readily available in work area.

Leak and Spill Procedure: Evacuate area. Eliminate all sources of ignition. Keep combustibles (wood, paper, oil, etc...) away from spilled material. Do not touch spilled material. Remove all sources of ignition and all combustible material. Use non-sparking tools. Cleanup personnel must be thoroughly trained in the handling of hazardous materials, and must wear protective equipment and clothing sufficient to prevent any contact or inhalation. Wet if necessary to avoid generating dust. Absorb on inert absorbent and collect for disposal. Handle contaminated material with the same caution as you do the chemical itself. Site of spillage should be washed thoroughly to remove all traces of oxidant.

Waste Disposal: Dispose of in compliance with local, provincial and federal regulations.

Handling Procedures and Equipment: OXIDIZER, TOXIC, IRRITANT. Workers using this chemical must be properly trained in its hazards and its safe use. Wear appropriate protective clothing and equipment. Keep away from combustible or organic materials, and all sources of ignition. Use non-sparking tools. Avoid contact. Avoid inhalation. DO NOT SHOCK. Use the smallest amount possible for the purpose in an area with adequate ventilation. Keep well away from combustible and incompatible materials. Keep containers tightly closed. Empty containers may contain hazardous residues; treat with caution. Wash thoroughly after handling.

Storage Requirements: Store in cool, dry, well-ventilated area, out of direct sunlight, and away from heat or ignition sources and incompatible materials. DO NOT SHOCK. Storage facilities (shelves, floors) should be constructed of non-combustible materials. Keep away from heat and sources of ignition. Keep containers tightly closed. Protect from damage; inspect regularly for signs of damage.

FIRST AID MEASURES**Specific Measures:**

Eyes: Do not allow victim to rub eyes, Immediately flush eyes with gently running water for at least five (5) minutes, or until no trace of chemical remains, holding eyelids open during flushing. If irritation persists, get medical attention.

Skin: Remove contaminated clothing. Flush affected areas with soap and running water for at least twenty (20) minutes. If irritation persists, get medical attention. Decontaminate clothing before reuse. Clothing contaminated with this chemical can burn spontaneously.

Inhalation: Remove to fresh air. Give oxygen and get medical attention for any breathing difficulty.

Ingestion: If victim is alert and NOT convulsing, rinse mouth, give several glasses of water to drink to dilute. Do not induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Get medical attention immediately.

REFERENCES USED

Budavari: The Merck Index, 12th ed., 1997

CCINFO disc: Cheminfo

Sax: Dangerous Properties of Industrial Materials, 5th ed., 1979

Sax, Lewis: Hawleys Condensed Chemical Dictionary, 11th ed., 1987

Suppliers Material Safety Data Sheets:

ADDITIONAL INFORMATION

Date Issued: 15-Jul-91

Revision: May 2015

Proposed WHMIS Designation: C; D1B

Prepared by: Caledon Laboratories Ltd. (905) 877-0101