

SODIUM NITRATE

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: Sodium nitrate; Chile saltpetre
Chemical Family: Inorganic salt, nitrate
Chemical Formula: NaNO₃
Product Use: Laboratory chemical
Manufacturers Name and Address: Caledon Laboratories Ltd. 40
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HAZARDOUS INGREDIENTS OF MATERIALS

Ingredients, %, TLV Units, CAS No: Sodium nitrate, 99, 10 mg/m³,
7631-99-4

PHYSICAL DATA

Physical State: Solid
Odour and Appearance: Colourless, transparent, odourless crystals
Odour Threshold (ppm): Not applicable.
Vapour Pressure (mm Hg): Not available.
Vapour Density (Air = 1): Not available.
Evaporation Rate: Not available.
Boiling Point (degrees C): 380C (decomposes below boiling point)
Melting Point (degrees C): 307C
pH: Aqueous solution is neutral
Specific Gravity: 2.26 at 20C
Coefficient of Water/Oil distribution: Not available.

SHIPPING DESCRIPTION

UN: 1498
T.D.G. Class: 5.1
Pkg. Group: III

REACTIVITY DATA

Chemical Stability: Stable when pure. Hygroscopic. Absorbs moisture from air to form wet solid or solution.
Incompatibility with other substances: Reacts explosively with aluminum, aluminum oxide, antimony, barium thiocyanate, sodium phosphinate, sodium thiosulphate; reacts violently with acetic anhydride; may ignite fibrous organic material, charcoal, etc. on heating; an explosive compound is formed by interaction with sodium; aluminum powder and moisture react at 70C; magnesium powder ignites in the molten salt; amidosulphates or cyanides react violently on heating.
Reactivity: May explode if exposed to heat, shock, friction. Avoid all incompatible materials, ignition sources, combustible materials. Avoid generation of dust.
Hazardous Decomposition Products: Oxygen and nitrogen oxides when heated.

FIRE AND EXPLOSION DATA

Flammability: Not combustible but strong oxidizer. 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: Use flooding amounts of water to blanket fire, cool exposed containers, and to flush solid or vapours away from fire. Fight fire from a safe distance and from upwind. Firefighters must wear protective equipment (full face-piece, positive-pressure self-contained breathing apparatus) and clothing sufficient to prevent inhalation of dusts or vapours, and contact with skin and eyes.

Flash Point (Method Used): Explodes at 537C

Autoignition Temperature: Explodes at 537C

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

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

Hazardous Combustion Products: Emits nitrous oxides when heated to decomposition

Sensitivity to Impact: Explodes if shocked or heated to 537C

Sensitivity to Static discharge: Mixtures of dust with air may be sensitive under certain conditions, particularly when contaminated with organic materials, when ignited by an electrostatic or other high-voltage spark, or other ignition source.

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

LD50: (oral, rat) 1,267 mg/kg; (oral, mouse) 3,500 mg/kg

LDLO: (oral, human) 500 mg/kg; (oral, rat) 200 mg/kg

LC50: Not available.

Effects of Acute Exposure to Product:

Inhaled: Very irritating to the mucous membranes, symptoms may include coughing, sore throat, and shortness of breath. At high temperatures, exposure to toxic nitrogen oxides decomposition products can quickly cause acute respiratory problems. Absorption leads to systemic poisoning with headache, fall in blood pressure, the formation of methemoglobin which decreases the ability of the blood to carry oxygen, causing cyanosis, possible convulsions, coma, and death. Onset may be delayed 2 to 4 hours or longer. Severe overexposure can be fatal.

In contact with skin: Irritating; causes redness, itching and pain. Extent of irritation depends on concentration and duration of exposure.

In contact with eyes: Irritating; causes redness, itching and pain. Extent of irritation depends on concentration and duration of exposure.

Ingested: Ingestion may cause gastro-enteritis, abdominal pains, vomiting, muscular weakness, irregular pulse, convulsions and collapse. 15-30 g in one dose may be fatal. May cause methemoglobinemia and cyanosis (see Inhaled).

Effects of Chronic Exposure to Product: Chronic overexposure to nitrates can lead to methemoglobinemia (see Inhaled), and conversion of nitrate to nitrite in the stomach, causing nausea and vomiting, blood and central nervous system effects, weakness, depression, headache, irregular heart rate; severe overexposure can cause coma and death. Persons with a history of kidney or lung disease may be more susceptible to the effects of nitrates. Prolonged exposure causes blood disorders in infants.

Carcinogenicity: Not listed as a carcinogen by NTP, IARC or OSHA.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: Not known to be mutagenic.

Synergistic Products: None known.

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PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation required.

Respiratory Protection: Dust mask. For dusty conditions, NIOSH/MSHA approved half-face dust/mist respirator or high efficiency particulate respirator; higher or unknown concentrations, as in fire or spill conditions, positive-pressure, full face-piece self-contained breathing apparatus.

Eye Protection: Use chemical safety goggles. Do not wear contact lenses when working with chemicals.

Skin Protection: Rubber or neoprene gloves and additional protection including long sleeves, boots, apron, or coveralls as required to prevent contact.

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

Leak and Spill Procedure: Restrict access to area of spill. Eliminate all sources of ignition and combustible materials. Cleanup personnel must be thoroughly trained in the hazards of this chemical and its safe use, and must wear protective equipment and clothing sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes. Wet if necessary to avoid generating dust. Prevent from entering sewers and waterways. Contain spill with inert material (earth, sand, inert absorbent). Use non-sparking tools to collect material, in suitable, labelled, covered containers for disposal. Contaminated absorbent may pose the same hazards as the chemical; treat with caution. Flush area of spill with copious amounts of running water.

Waste Disposal: Follow all federal, provincial and local regulations for disposal.

Handling Procedures and Equipment: OXIDIZER. Workers using this chemical must be thoroughly trained in its hazards and its safe use and must wear appropriate protective equipment and clothing. Keep away from combustible or organic materials, and all sources of ignition. Use non-sparking tools. Avoid all contact and inhalation. Do not shock. Use the smallest amount possible for the purpose in a designated area with adequate ventilation. Keep work area clean and free of extraneous, particularly combustible, materials. Do not use on porous surfaces (wood); use surfaces that can be easily and thoroughly cleaned. Clean up spills immediately and thoroughly. Keep containers closed when not in use and when empty. Empty containers may contain hazardous residues; treat with caution. Wash hands thoroughly after use.

Storage Requirements: Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight, and away from incompatible, combustible or organic materials. Storage facilities (shelves, floors) should be constructed of non-combustible materials. Keep away from all ignition sources. Keep containers tightly closed when not in use and when empty. Protect from damage, and inspect frequently for signs of leaking; unattended spillage onto combustible materials (wood, paper, etc.) could result in fire.

FIRST AID MEASURES**Specific Measures:**

Eyes: Flush eyes immediately with large amounts of gently running water or normal saline, holding eyelids open, until no evidence of chemical remains (at least 15-20 minutes). Take care not to flush contaminated water into the unaffected eye. Get medical attention.

Skin: Remove contaminated clothing (including rings, watches, belts and shoes). Wash skin with plenty of running water for five to ten (5 to 10) minutes, or until no trace of chemical remains. If irritation develops get medical attention. Decontaminate clothing before reuse, or discard; clothing may become dangerously flammable after contact with this chemical.

Inhalation: Remove to fresh air. Rescuer should take precaution to limit his own exposure. Eliminate all sources of ignition. Give oxygen and get medical attention for any breathing difficulty. Because exposure to nitrates can cause methemoglobinemia, the symptoms of which may be delayed, unless exposure is minor, the victim needs to be monitored for several hours for cyanosis, irregular heart rate, loss of consciousness.

Ingestion: If the victim is alert and not convulsing, rinse mouth thoroughly with water and give 2 to 4 glasses of water to drink to dilute. Do not induce vomiting. Get medical attention immediately.

REFERENCES USED

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

CCINFO disc: Cheminfo, MSDSs, February 2007

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

Suppliers Material Safety Data Sheets:

ADDITIONAL INFORMATION

Date Issued: December 1, 1988

Revision: Feb 2013

Proposed WHMIS Designation: C; D2B

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