

MATERIAL SAFETY DATA SHEET**SODIUM CYANIDE**

PRODUCT CODE NUMBER(S): 7660-1

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: Sodium cyanide;
Hydrocyanic acid sodium salt
Chemical Family: Inorganic salt
Chemical Formula: NaCN
Product Use: Laboratory reagent
Manufacturer's Name and Address:
Caledon Laboratories Ltd.
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HAZARDOUS INGREDIENTS OF MATERIALS

Ingredients	%	TLV Units	CAS No.
Sodium cyanide	>99	5 mg/m ³ (as CN)	143-33-9

PHYSICAL DATA

Physical State: Solid
Odour and Appearance: White granules or flakes, odourless when dry; slight almond-like odour (HCN) when damp
Odour Threshold (ppm): 0.2-5 ppm (HCN). Poor warning properties, neither NaCN or HCN is detectable at concentrations providing a margin of safety.
Vapour Pressure (mm Hg): Essentially 0
Vapour Density (Air = 1): Not applicable
Evaporation Rate: Not applicable
Boiling Point (degrees C): 1496°C
Melting Point (degrees C): 564°C
pH: Strongly alkaline
Specific Gravity: 1.6 at 25°C
Coefficient of Water/Oil distribution: Not available

SHIPPING DESCRIPTION

UN: 1689
T.D.G. Class: 6.1 (9.2)
Pkg. Group: I

REACTIVITY DATA

Chemical Stability: Stable if dry. Absorbs carbon dioxide and moisture from air, and forms toxic concentrations of hydrogen cyanide gas (HCN).
Incompatibility with other substances: Releases toxic and flammable HCN with acids, acid salts, carbon dioxide, water. May react violently or explosively with strong oxidizing agents. Solutions are corrosive to metals such as aluminum, zinc, and their alloys.
Reactivity: Avoid exposure to air and moisture, and all incompatible materials, generation of dust or mist (solutions).
Hazardous Decomposition Products: Hydrogen cyanide gas, CO_x, NO_x, sodium hydroxide, ammonia.

FIRE AND EXPLOSION DATA

Flammability: Not combustible. Will not burn.
Extinguishing Media: Use an extinguisher appropriate to the surrounding material that is burning, and that is not incompatible with NaCN. Do not use CO₂ or acidic dry chemical extinguishers (causes release of toxic/flammable HCN). If using water, do not allow it to contact the chemical. Use it as spray or fog, to cool containers, and disperse vapours. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment and chemical splash suit sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes (Bunker Gear is not sufficient).
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: CO_x, NO_x, NH₃, HCN, NaOH
Sensitivity to Impact: None identified
Sensitivity to Static discharge: None identified

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

LD₅₀: (oral, rat) 6.4 µg/kg; (skin, rabbit) 300 mg/kg
LC₅₀: (rat) 142 ppm/30 min.

Effects of Acute Exposure to Product:

Inhaled: Very toxic; irritating. Dusts or mist can be very irritating. NaCN reacts with moisture to release very toxic hydrogen cyanide vapour (HCN). Inhalation of 20 to 40 ppm HCN may cause headache, weakness, dizziness, confusion, anxiety, nausea and vomiting. More severe exposure can cause rapid and deep breathing which then becomes laboured, followed by weak and irregular heartbeat, bright pink or red skin. Unconsciousness, convulsions, coma and death can follow quickly. Large exposures cause sudden collapse and death. An airborne concentration of 270 ppm can be fatal in one minute.

In contact with skin: Irritating and toxic. Strong solutions are corrosive and can cause ulceration. Dust or liquid can be rapidly absorbed through the skin causing effects as in "Inhaled". HCN vapour can also be absorbed in toxic amounts.

In contact with eyes: Dusts and solutions can be very irritating to eyes, and can also be absorbed through eye tissue, with effects as in "Inhaled". High exposures may damage the retina and nerves for the eye, causing permanent damage and blindness.

Ingested: Very toxic. Rapidly absorbed, causing effects as in "Inhaled". Corrosive to the gastrointestinal tract causing burning in the mouth, throat and esophagus, feeling of numbness in the throat, and stiffness in the lower jaw. Salivation, nausea, vomiting and abdominal pain may follow.

Effects of Chronic Exposure to Product:

Symptoms thought to be caused by long-term, low level (less than 10 ppm) exposure are persistent runny nose,

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weakness, dizziness, giddiness, headache, nausea, vomiting, abdominal pain, throat irritation, changes in taste and smell, muscle cramps, weight loss, enlargement of the thyroid gland. These have not been proven attributable specifically to cyanide exposure. There is concern that prolonged exposure may cause damage to the nerves for the eyes. Prolonged skin exposure may cause dermatitis or sensitization. Persons with pre-existing skin disorders, or impaired liver, kidney, or respiratory systems may be more susceptible to the effects of this substance.

Carcinogenicity: No information available

Teratogenicity: No human information available. Animal information suggests that effects occur at levels toxic to the mother.

Reproductive Effects: Effects in animal testing

Mutagenicity: Effects in animal testing

Synergistic Products: None found

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation required.

Respiratory Protection: Up to 25 mg/m³: NIOSH approved supplied-air respirator or full face-piece self-contained breathing apparatus. Higher or unknown concentrations, as in fire or spill conditions: positive-pressure full face-piece self-contained breathing apparatus or positive-pressure full face-piece supplied-air respirator with auxiliary positive-pressure self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and face shield.

Skin Protection: Natural or nitrile rubber, neoprene, Polyvinyl chloride gloves. Other impervious protective clothing, sleeves, apron, coverall, boots, sufficient to prevent contact.

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

Leak and Spill Procedure: Restrict access to area of spill. 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. **DO NOT TOUCH SPILLED MATERIAL.** Prevent from entering sewers and waterways. Stop or reduce leak if safe to do so. Contain spill with inert material (earth, sand, inert absorbent). Avoid generating dust. Collect in suitable, labelled, covered containers for disposal. Flush area of spill with water containing alkaline material such as sodium carbonate. Contaminated absorbent poses the same hazards as the chemical; treat with extreme caution.

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

Handling Procedures and Equipment: **TOXIC; CORROSIVE.** Workers using this chemical must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective equipment and clothing. Never work alone. Handle with extreme care. Prevent release of vapours, mists or dusts into workplace air. Avoid all contact and inhalation. Use the smallest possible amount for the purpose, in designated areas with adequate ventilation. Avoid generating dust. Keep work area free of extraneous materials. Clean up any spill, however small, immediately. Keep containers closed when not in use and when empty. Empty containers may contain hazardous residues; treat with caution.

Storage Requirements: Store in suitable, corrosion-resistant, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight. Store away from incompatible materials. Keep containers tightly closed when not in use and when empty. Protect from damage, and in-

spect frequently for signs of leaking. Limit amount of material in storage. Keep storage area separated from populated work areas.

FIRST AID MEASURES

Specific Measures:

Eyes: Flush eyes with gently running water for at least twenty (20) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into unaffected eye. Wear protective clothing to protect against contact. **GET MEDICAL ATTENTION.**

Skin: Under running water, remove all contaminated clothing, including watches, rings, belts, and shoes. Drench affected skin with water for at least twenty (20) minutes. Wear gloves to avoid contact with the chemical. Continue as for "Inhalation" if there are any symptoms of poisoning. **GET MEDICAL ATTENTION.** Place clothing in the open air. It must be thoroughly washed before re-use. Discard contaminated leather goods.

Inhalation: **IMMEDIATELY** remove to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes; use buddy system - do not attempt rescue alone). Remove all clothing, placing it in the open air. It must be washed before re-use. **OBTAIN MEDICAL ATTENTION IMMEDIATELY.** If breathing has stopped or shows signs of failing, apply artificial respiration by a method other than mouth-to-mouth (nose). If the casualty is breathing, break capsule of amyl nitrite into a cloth and give to inhale for 15 to 30 seconds of each minute. Use a new pearl every 5 minutes (0.3 mg size) or every 3 minutes (0.18 mg size). While amyl nitrite is being used, monitor the victim's blood pressure. If it drops below 80/60, stop the amyl nitrite. Administer oxygen through a face mask. Give oxygen for breathing difficulty. Keep at rest and comfortably warm.

Ingestion: **DO NOT INDUCE VOMITING.** If the casualty is conscious and not convulsing, rinse mouth thoroughly with water and give 2 to 4 glasses of water to drink to dilute. If spontaneous vomiting occurs, rinse mouth and give more water to drink. Avoid contact with emesis. Continue as for "Inhalation". **OBTAIN MEDICAL ATTENTION IMMEDIATELY.**

REFERENCES USED

CCINFO disc: Cheminfo

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

Royal Society of Chemistry: Chemical Safety Data Sheets. Vol. 2, 1989

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: July 22, 1991

Revision: December 2010

MSDS: 7660-1

Proposed WHMIS Designation: D1A; D2B; E

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