

MATERIAL SAFETY DATA SHEET**IODINE**

PRODUCT CODE NUMBER(S): 4220-1

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Iodine, Iodine resublimed*
Chemical Family: *Halogen*
Chemical Formula: I_2
Product Use: *Laboratory reagent*
Manufacturer's Name and Address:
Caledon Laboratories Ltd.
40 Armstrong Avenue
Georgetown, Ontario L7G 4R9
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HAZARDOUS INGREDIENTS OF MATERIALS

<i>Ingredients</i>	<i>%</i>	<i>TLV Units</i>	<i>CAS No.</i>
<i>Iodine resublimed</i>	<i>>99</i>	<i>0.1 ppm</i>	<i>7553-56-2</i>

PHYSICAL DATA

Physical State: *Solide*
Odour and Appearance: *Bluish-black to purple crystals with metallic lustre; distinctive, irritating odour.*
Odour Threshold (ppm): *Not available*
Vapour Pressure (mm Hg): *0.3 mm Hg at 20°C*
Vapour Density (Air = 1): *8.75*
Evaporation Rate: *Not available*
Boiling Point (degrees C): *184°C*
Melting Point (degrees C): *114°C*
pH: *Not applicable*
Specific Gravity: *4.930*
Coefficient of Water/Oil distribution: *Not available*

SHIPPING DESCRIPTION

UN: *Not regulated*
T.D.G. Class: *Not regulated*
Pkg. Group: *Not regulated*

REACTIVITY DATA

Chemical Stability: *Normally stable.*
Incompatibility with other substances: *Reacts with gaseous ammonia, ammonia salts and ammonium hydroxide (in solution) to form explosive or shock sensitive compounds. Reacts violently or explosively with acetylene, sodium phosphinate, antimony, phosphorus, active metals, reducing materials, oils, turpentine. Corrodes iron and steel. Corrodes copper alloys at elevated temperatures.*
Reactivity: *Avoid excessive heat, generation of dust or mist, all incompatible materials.*
Hazardous Decomposition Products: *Iodine vapours, hydrogen iodide*

FIRE AND EXPLOSION DATA

Flammability: *Non combustible but reacts with many other materials to produce explosive and flammable compounds.*
Extinguishing Media: *Use extinguishing material appropriate to the surrounding material. Water spray or fog can also be used to cool containers and disperse vapours or flush spills away from ignition sources. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment (positive-pressure, full face-piece self-contained breathing apparatus) and clothing (chemical splash suit) sufficient to prevent inhalation and 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: *Emits toxic and irritating fumes under fire conditions*
Sensitivity to Impact: *Iodine is not sensitive, but it reacts with ammonia to form shock-sensitive compounds*
Sensitivity to Static discharge: *None*

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

LD₅₀: *(oral, rat) 14 mg/kg; (oral, rabbit) 10 mg/kg*
LD_{Lo}: *(oral, hum) 28 mg/kg (iodine compounds)*
LC₅₀: *Not available*

Effects of Acute Exposure to Product:

May be fatal if inhaled, swallowed or absorbed through skin.

Inhaled: *Severe irritant. Extremely destructive to tissue. Occupational reports indicate that 0.1 ppm are tolerable, but 0.15 and 0.2 ppm are irritating enough to make work difficult. Symptoms include tightness in the chest, sore throat, headache, difficult breathing. May be fatal as a result of inflammation, spasm of the upper respiratory tract, pulmonary edema, the onset of which may be delayed several hours.*

In contact with skin: *Toxic; crystals or solutions are severe irritants. Can cause corrosive tissue destruction. Individual susceptibility varies widely. Readily absorbed through the skin. Death has occurred after the application of iodine in alcohol to one-third of the body surface.*

In contact with eyes: *Vapour, solutions, and solid are extremely destructive to tissue. Severe lachrymator. May cause corneal burns and permanent damage to eyes.*

Ingested: *Corrosive. Can cause severe burning and pain on the mouth, throat, and stomach, abdominal pain, nausea, vomiting, diarrhea, shock, fever, delirium, stupor and death from kidney failure.*

Effects of Chronic Exposure to Product:

Prolonged low level exposure to iodine compounds may produce "iodism" with symptoms of an unpleasant brassy taste in the mouth, salivation, coryza, lacrimation, edema of the

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eyelids, conjunctivitis, sneezing, bronchitis, stomatitis, parotitis, laryngitis, glottal edema, headache, and fever. Various skin rashes, possibly with erythema, acne, and urticaria are possible. Anorexia, weight loss, gastrointestinal changes, thyroid hyperfunction, sleeplessness, and nervous symptoms may occur. The use of iodides for asthma in pregnancy has resulted in fetal death, severe goiter and cretinoid appearance of the newborn. Effects on the newborn, fertility and the reproductive system of females have been reported from chronic feeding to animals. Symptoms are normally reversible with cessation of exposure. Iodine solutions are recognized skin sensitizing agents.

Carcinogenicity: No human information available. No evidence of carcinogenicity in animal testing.

Teratogenicity: No information available

Reproductive Effects: No information available

Mutagenicity: No information available

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation required

Respiratory Protection: Up to 1 ppm: NIOSH approved supplied-air respirator. Up to 2 ppm: continuous-flow 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/ face shield.

Skin Protection: Tychem™ SL gloves; for short periods (up to 4 h), polyethylene is adequate. 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 or mist. Collect in suitable, labelled, covered containers for disposal. Material in the elemental state should be recovered for reuse. Flush area of spill with water and detergent. Contaminated absorbent may pose the same hazards as the chemical; treat with 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 with this product. Handle with extreme care. Prevent release of vapours, mists or dusts into workplace air. Avoid all contact. Use the smallest possible amount for the purpose, in designated areas with adequate ventilation. Keep containers closed when not in use and when empty. Empty containers may contain hazardous residues; treat with caution.

Storage Requirements: Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight. Store away from incompatible materials. Use corrosion-resistant structural materials, and systems. Keep

containers tightly closed when not in use and when empty. Protect from damage, and inspect frequently for signs of leaking. Limit amount of material in storage.

FIRST AID MEASURES

Specific Measures:

Eyes: Immediately flush eyes thoroughly with copious amounts of running water for at least sixty (60) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves to avoid contact during first aid procedures. Get medical attention immediately.

Skin: Remove contaminated clothing under running water, including watches, rings, belts, and shoes. Wear protective gloves to avoid contact. Flush affected areas with running water for at least thirty (30) minutes. Get medical attention immediately. Decontaminate clothing completely before reuse, or discard.

Inhalation: Remove to fresh air. Give oxygen and get medical attention for any breathing difficulty. If breathing has stopped, give artificial respiration and get medical attention immediately. Pulmonary edema may occur up to 72 hours after exposure; unless exposure is minor, the victim needs to be monitored for several hours for shortness of breath, foamy sputum, cyanosis, dizziness.

Ingestion: Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Rinse mouth thoroughly with water. **DO NOT INDUCE VOMITING.** Have victim drink 1 to 2 glasses of water with milk of magnesia or milk. Get medical attention immediately. If spontaneous vomiting occurs, have victim lean forward to avoid aspiration of vomitus, rinse mouth, and give more water to drink.

REFERENCES USED

CCINFO disc: MSDS's, May 2007

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

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

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: February 20, 1990

Revision: May 2010

MSDS: 4220-1

Proposed WHMIS Designation: D1A; D2B; E

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