MATERIAL SAFETY DATA SHEET

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NO. 114

IODINE

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SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: IODINE
OTHER DESIGNATIONS: I_2, CAS #007 553 562
MANUFACTURER: Available from several suppliers, including:
Mallinckrodt, Inc.
Mallinckrodt and 2nd Street
P.O. Box 5439
St. Louis, MO 63147 Tel: (314) 895-0123

SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Iodine	~100	8-hr TWA 0.1 ppm or 1 mg/m^3 (C)* Dog, Oral LDLo 800 mg/kg
*Current OSHA PEL and ACGIH (1982) TLV.		

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg C(F) --- 184 (363)
(sublimes at 100C - Blue violet vapors)
Vapor pressure, 20C, mm Hg ------ 0.3
Vapor density (Air=1) ---------- 9
Solubility in water, 20C,% ------ 0.03

Specific gravity, (H_2O=1) --- 4.98
Melting point, deg C (F) ---- 113.6 (237)
Molecular weight (I_2) ------- 253.8

Appearance & Odor: Bluish-black or violet elemental solid with a metallic luster. Vaporizes to a blue-violet gas with a characteristic pungent, irritating halogen-like odor. (Odor is considered inadequate for hazardous exposure warning.)

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
Non-combustible				

Use extinguishing media that is appropriate for the surrounding fire. Use water spray to cool fire exposed containers.
Iodine is an oxidizing agent that will support combustion and can react with explosive violence when heated in combination with some materials (see sect V).
Firefighters should wear self-contained breathing apparatus with a full facepiece, operated in a positive pressure mode, along with full protective clothing.

SECTION V. REACTIVITY DATA

This is a stable material in suitable closed containers at room temperature under normal storage and handling conditions. It does not polymerize. Iodine is a strong oxidizing agent, but the least active of the halogens - F_2 >Cl_2 >Br_2 >I_2.
It is incompatible with ammonia, with powdered metals and alkali metals, and with strong reducing agents.
Reaction can be violent or explosive with acetaldehyde and acetylene. Ammonium hydroxide reacts to form iodides which are shock sensitive and explosive when dry.
It can produce iodine vapors and iodide fumes when heated.
Iodine reacts with starch to give a blue-black colored solid - a characteristic effect which is used to identify free iodine.

SECTION VI. HEALTH HAZARD INFORMATION

TLV 0.1 ppm (C) (See Sect II)

Iodine vapors can severely irritate the respiratory tract, mucous membranes, eyes and skin. Excessive tears, tightness in the chest, sore throat, headache and delayed pulmonary edema can result. Iodine as solid, vapor or solution can stain, irritate, damage and penetrate the skin. Allergic sensitization can occur.

Ingestion causes burning sensations, severe corrosive gastroenteristis, abdominal pain, diarrhea, fever, vomiting, stupor and shock. (Fatal dose is 2-4 g.)

Chronic poisoning effects can occur.

FIRST AID:

Eye Contact: Flush with running water for 15 min., including under eyelids. Get medical help.

Skin Contact: Promptly remove contaminated clothing. Wash affected area with soap and water and/or 5% thiosulfate soln. Get medical help if irritation persists.

Inhalation: Remove to fresh air. Restore and/or support breathing as needed. Get medical help. Observe for development of pulmonary edema.

Ingestion: Contact physician. If victim is conscious, give 3 glasses of water, milk or 1% sodium thiosulfate to drink. If medical help is not available, induce vomiting. Repeat.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel. Provide optimum ventilation. Clean-up personnel need protection against inhalation or contact. Carefully pick up as much solid as possible. Cover spill area with excess reducing agent (hypo, bisulfate, or ferrous salt and 3M H_2SO_4), neutralize with soda ash. Collect slurry or flush with much water to drain if allowed.

DISPOSAL: Dispose of waste via a licensed handler, or return waste to supplier for iodine values, or bury in a sanitary landfill. Follow Federal, State and Local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation to meet the 0.1 ppm ceiling level. For non-routine or emergency conditions use an approved self-contained or air-supplied respirator with a full face piece above 1 ppm and positive pressure mode above 5 ppm. Direct exposure to iodine vapors above 10 ppm is immediately dangerous.

Wear impervious (rubber) gloves, chemical safety goggles and/or full faceshield, and other body protection as needed to prevent body contact with solid iodine or with solns (especially >7%). Soiled clothing to be changed and laundered before reuse.

Eyewash stations, washing facilities and safety showers should be readily accessible in areas of use and handling.

Individuals with disease of the thyroid, lungs, kidneys may be at increased risk from iodine exposure.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in tightly closed containers in a cool, (59-86F) dry, well-ventilated area away from sources of heat and ignition. Protect containers from physical damage. Store separate from reactive or combustible materials (see Sect V) and out of direct sunlight.

Do not wear contact lenses. Practice good personal hygiene and wear clean work clothing.

Avoid breathing vapors. Prevent eye and skin contact. Wash hands thoroughly before eating, drinking, or smoking after handling solid iodine or liquids containing iodine. Certain individuals may develop sensitization to iodine.

DATA SOURCE(S) CODE: 1,2,4-12,14,16,25,31,34,37, 38,47-49

APPROVALS: MIS/CRD J. M. Nielsen

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