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SAFETY DATA SHEET

Section 1- IDENTIFICATION

COMPOSITION I		PRODUCT NAME Iodine
SUPPLIER: Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030	RECOMMENDED USE: Laboratory Chemicals Scientific Research	EMERGENCY TELEPHONE NUMBERS US: 001-800-424-9300 Europe: 001-703-527-3887

Section 2- HAZARD(S) IDENTIFICATION

Classification: This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)	
Eye Irritation: Category 2A (H319)	Acute Dermal Toxicity: Category 4 (H312)
Acute Inhalation Toxicity: Category 4 (H332)	Skin Irritation: Category 2 (H315)
Specific Target Organ Toxicity-Single Exposure: Category 3, Respiratory System (H335)	
Specific Target Organ Toxicity-Repeated Exposure: (Oral) Category 1, Thyroid (H372)	
Acute Aquatic Toxicity: Category 1 (H400)	
LABEL ELEMENTS: Signal Word: Danger	



HAZARD STATEMENTS

- H312 + H332: Harmful in contact with skin or if inhaled
- H315: Causes skin irritation
- H319: Causes serious eye irritation
- H335: May cause respiratory irritation
- H372: Causes damage to organs (Thyroid) through prolonged or repeated exposure if swallowed
- H400: Very toxic to aquatic life

PRECAUTIONARY STATEMENTS

Prevention:

- P264: Wash face, hands and any exposed skin thoroughly after handling
- P270: Do not eat, drink or smoke when using this product
- P280: Wear protective gloves, protective clothing, eye protection and face protection
- P260: Avoid breathing dust/fume/gas/mist/vapors/spray
- P271: Use only outdoors or in a well ventilated area
- P273: Avoid release to the environment
- P302 + P352 + P312: IF ON SKIN: Wash with plenty of water. Call a Poison Center or doctor/physician if you feel unwell.
- P304 + P340 + P312: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Center or doctor/physician if you feel unwell.

-P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
 -P314: Get medical advice/attention if you feel unwell
 -P332 + P313: If skin irritation occurs, get medical advice/attention
 -P337 + P313: If eye irritation persists, get medical advice/attention
 -P362: Take off contaminated clothing and wash before reuse
 -P391: Collect spillage
 -P403 + P233: Store in a well-ventilated place. Keep container tightly closed
 -P405: Store locked up
 -P501: Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC):
 -None identified.

Section 3- COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS-No	Molecular Weight
Iodine	7553-56-2	253.81 g/mol

Section 4- FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
INHALATION: Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration. Consult a physician.
SKIN CONTACT: Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Take victim immediately to hospital. Consult a physician.
EYE CONTACT: Flush eyes with lukewarm water, lifting upper and lower lids, for at least 15 minutes. Consult a physician.
INGESTION: Rinse mouth with water. Never give anything by mouth to an unconscious person. Consult a physician.
MOST IMPORTANT SYMPTOMS/EFFECTS: The most important known symptoms and effects are described in the labeling (see section 2).
INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: No data available

Section 5- FIREFIGHTING MEASURES

Suitable Extinguishing Media: Carbon Dioxide (CO2); Dry Chemical, Water Spray, alcohol-resistant foam	Unsuitable Extinguishing Media: No Information Available
Flash Point: No Information Available Method: No Information Available Auto Ignition Temperature: No Information Available	Explosion Limits: Upper: No Data Available Lower: No Data Available Sensitivity to Mechanical Impact: No Information Available Sensitivity to Static Discharge: No Information Available
Specific Hazards Arising from the Chemical: No data available.	
Protective Equipment & Precautions for Firefighters: As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.	

Section 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist or gas. Evacuate personnel to safe areas.

Environmental Precautions: Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Do not let product enter drains. See Section 12 for additional ecological information.

Methods for Containment & Clean Up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal. Do not let this chemical enter the environment.

Section 7- HANDLING AND STORAGE

Handling: Provide appropriate exhaust ventilation at places where dust is formed. Wear personal protective equipment. Avoid contact with eyes and skin. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Storage:

Keep in a dry, cool and well ventilated place. Keep container tightly closed.

Handle and store under inert gas: Hygroscopic.

Storage Class (TRGS 510): Non-combustible, acute toxic Cat.3; toxic hazardous materials or hazardous materials causing chronic effects.

Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Component	CAS-No.	Value	Control Parameters	Basis
Iodine	7553-56-2	CEIL	0.100000 ppm 1.000000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		C	0.1 ppm 1 mg/m3	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
Remarks		The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.		
		C	0.100000 ppm 1.000000 mg/m3	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
Remarks		The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.		
		C	0.100000 ppm 1.000000 mg/m3	USA.NIOSH recommended exposure limits
		TWA	0.010000 ppm	USA.ACGIH Threshold Limit Values (TLV)
Remarks		Upper Respiratory Tract Irritation. Hypothyroidism. Not classifiable as a human carcinogen.		
		STEL	0.100000 ppm	USA.ACGIH Threshold Limit Values (TLV)
Remarks		Upper Respiratory Tract Irritation. Hypothyroidism. Not classifiable as a human carcinogen.		
		C	0.1 ppm 1 mg/m3	California permissible exposure limits for chemical contaminants (Title 8,Article 107)

Engineering Measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

Personal Protective Equipment:

Eye/Face Protection: Wear face shield and safety glasses as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and Body Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or Type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice.

Section 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Appearance: Black, violet

Odor: Pungent

Odor Threshold: No information available

pH: 5.4

Melting Point/Range: 113°C / 235°F – lit.

Boiling Point/Range: 184°C / 363°F – lit.

Flash Point: No information available

Evaporation Rate: No information available

Flammability (solid,gas): No information available

Flammability or Exposure Limits:

Upper: No data available

Lower: No data available

Vapor Pressure: 0.41 hPa (0.31 mmHg) at 25°C (77°F)

Vapor Density: 8.76 – (Air = 1.0)

Relative Density: 4.930 g/cm³

Solubility: 0.3 g/l at 25°C (77°F) – slightly soluble

Partition coefficient; n-octanol/water: log Pow: 2.49 at 20°C (68°F)

Auto Ignition Temperature: No information available

Decomposition Temperature: No information available

Viscosity: Not applicable

Explosive Properties: No data available

Oxidizing Properties: No data available

Section 10- STABILITY AND REACTIVITY

Reactive Hazard: No data available.

Stability: Stable under recommended storage conditions.

Conditions to Avoid: No data available

Incompatible Materials: Rubber, plastics, iron and iron salts, sulfur compounds, ammonia, magnesium, zinc, aluminum, metals, alkalis, antimony salts, arsenates, bromides, chlorides, iodides, thiocyanates, ferrous salts, hypophosphites, morphine salts, oils, creosote, phosphates, tannins, tartrates, mixing iodine, antimony, and ammonia resulted in an explosion. A violent reaction occurs between iodine and acetaldehyde. Acetylene, acetaldehyde, strong oxidizing agents

Hazardous Decomposition Products:

Hazardous decomposition products formed under fire conditions-Hydrogen iodide.

Other decomposition products-No information available

Hazardous Polymerization: No information available

Hazardous Reactions: No information available

Section 11- TOXICOLOGICAL INFORMATION

Acute Toxicity:

Product Information/Component Information:

Component	LD50 Oral (Rat)	LC50 Dermal (Rat-Male)	LC50 Inhalation (Rat)
Iodine	14,000 mg/kg Remarks: Diarrhea	1,425 mg/kg (OPPTS 870.1200)	4 h - > 4.588 mg/l (OECD Test Guideline 403) Remarks: Cough Respiratory Disorder

Delayed and immediate effects as well as chronic effects from short and long term exposure:

Skin Corrosion/Irritation: Moderate skin irritation

Serious eye damage/irritation: Moderate eye irritation

Respiratory or Skin Sensitization: (Mouse) Does not cause skin sensitization

Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	OSHA
I	7553-56-2	Not Listed	Not Listed	Not Listed

Mutagenic Effects: No information available

Reproductive Effects: No information available

Development Effects: No information available

STOT – single exposure: Inhalation-May cause respiratory irritation – Respiratory system

STOT – repeated exposure: Oral – Causes damage to organs through prolonged or repeated exposure - Thyroid

Aspiration Hazard: No information available

Symptoms/effects, both acute & delayed: Stomach irregularities-Based on Human evidence

Additional Information (RTECS: NN1575000): Prolonged exposure to iodides may produce iodism in sensitive individuals. Symptoms of exposure include skin rash, running nose, headache and irritation of the mucous membrane. For severe cases the skin may show pimples, boils, hives, blisters, and black and blue spots. Iodides are readily diffused across placenta. Neonatal deaths from respiratory distress secondary to goiter have been reported. Iodides have been known to cause drug-induced fevers, which are usually of short duration.

Section 12- ECOLOGICAL INFORMATION

Toxicity:

Toxicity to fish: LC50-Oncorhynchus mykiss (rainbow trout) – 1.7 mg/l – 96.0 h

Toxicity to daphnia and other aquatic invertebrates: EC50-Daphnia magna (water flea) – 0.2 mg/l – 48 h

Toxicity to algae: Growth inhibition EC50-Desmodesmus subspicatus (green algae) – 0.13 mg/l (OECD Test Guideline 201)

Persistence and Degradability: No information available

Bioaccumulation/Accumulation: No information available

Mobility in Soil: No information available

Other Adverse Effects: Very toxic to aquatic life. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13- DISPOSAL CONSIDERATIONS

Waste Disposal Methods: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dispose of contaminated packaging as unused product.

Section 14- TRANSPORT INFORMATION

DOT:

UN-No: 3495
Proper Shipping Name: Iodine
Hazard Class: 8 (6.1)
Packing Group: III
Poison Inhalation Hazard: No

IATA:

UN-No: 3495
Proper Shipping Name: Iodine
Hazard Class: 8 (6.1)
Packing Group: III

IMDG/IMO:

UN-No: 3495
Proper Shipping Name: Iodine
Hazard Class: 8 (6.1)
Packing Group: III
EMS-No: F-A, S-B
Marine Pollutant: Yes

Section 15- REGULATORY INFORMATION

US Federal Regulations:

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313

HMIS (USA):

Health Hazard: 2
Flammability: 0
Physical Hazard: 0

National Fire Protection Association (USA):

Health Hazard: 2
Fire Hazard: 0
Reactivity Hazard: 0

US California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

US Massachusetts RTK – Substance List: Iodine (CAS 7553-56-2)

US New Jersey Right-to-Know Act: Iodine (CAS 7553-56-2)

US Pennsylvania RTK – Hazardous Substances: Iodine (CAS 7553-56-2)

Section 16- OTHER INFORMATION

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

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