SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 06/20/2017 Version 3.1

SECTION 1.Identification

Product identifier

Product number	IX0125
Product name	Iodine
CAS-No.	7553-56-2

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis

Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.
Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification

Acute toxicity, Category 4, Inhalation, H332
Acute toxicity, Category 4, Dermal, H312
Skin irritation, Category 2, H315
Eye irritation, Category 2A, H319
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system, H335
Specific target organ systemic toxicity - repeated exposure, Category 1, Oral, thyroid, H372

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms

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.

Precautionary Statements
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
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.
P322 Specific measures (see supplemental first aid instructions on this label).
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.
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.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula	I_2 (Hill)
Molar mass	253.8 g/mol

Hazardous ingredients

Chemical name (Concentration)
CAS-No.
Iodine (>= 90 % - <= 100 %)
7553-56-2

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

Inhalation
After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

Skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

Eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist.

Ingestion
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
irritant effects, conjunctivitis, Asthma, bronchitis, Dermatitis, Skin disorders, Fever, bloody diarrhea, collapse, rhinitis, metallic taste

Indication of any immediate medical attention and special treatment needed
Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

SECTION 5. Fire-fighting measures

Extinguishing media
Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture
Not combustible.
Ambient fire may liberate hazardous vapors.
Fire may cause evolution of:
hydrogen iodide

Advice for firefighters
Special protective equipment for fire-fighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid substance contact. Avoid inhalation of dusts. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions
Do not empty into drains.

Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).
Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture.

Conditions for safe storage, including any incompatibilities

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at room temperature.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
Iodine 7553-56-2			
NIOSH/GUIDE	Ceiling Limit Value and Time Period (if specified):	0.1 ppm 1 mg/m³	
OSHA_TRANS	Ceiling Limit Value:	0.1 ppm 1 mg/m³	
Z1A	Ceiling Limit Value:	0.1 ppm 1 mg/m³	
ACGIH	Short Term Exposure Limit (STEL):	0.1 ppm	Form of exposure: Vapor and aerosol.
	Time Weighted Average (TWA):	0.01 ppm	Form of exposure: Inhalable fraction and vapor.

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Safety glasses

Hand protection

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm

	Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).
The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.
This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment:
protective clothing

Respiratory protection
required when dusts are generated.
Recommended Filter type: Filter B-(P2)
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are performed according to the instructions of the producer. These measures have to be properly documented.

SECTION 9. Physical and chemical properties

Physical state	solid
Color	dark violet
Odor	stinging
Odor Threshold	No information available.
pH	5.4 (saturated solution)
Melting point	237 °F (114 °C)
Boiling point/boiling range	365 °F (185 °C) at 1,013 hPa
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	The product is not flammable.
Lower explosion limit	Not applicable

Upper explosion limit	Not applicable
Vapor pressure	0.41 hPa at 77 °F (25 °C)
Relative vapor density	8.8
Density	4.93 g/cm3 at 68 °F (20 °C)
Relative density	No information available.
Water solubility	0.3 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 2.49 (experimental) Bioaccumulation is not expected. (Lit.)
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	2.27 mPa.s at 241 °F (116 °C)
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Bulk density	ca.2,100 kg/m3
Viscosity, kinematic	0.57 mm2/s at 241 °F (116 °C) liquid

SECTION 10. Stability and reactivity

Reactivity
See below

Chemical stability
sublimable

Possibility of hazardous reactions
Risk of explosion with:

Reducing agents, Alkali metals, Acetylene, Ammonia, Potassium, copper compounds, sodium, oxyhalogenic compounds, Boron, halogen oxides, iodides, azides, ammonium compounds

antimony, in powder form

mercury oxide, with, Methanol, and, ethanol

Risk of ignition or formation of inflammable gases or vapors with:

Powdered metals, Zinc, semimetals, halogen-halogen compounds, nonmetals, nonmetallic oxides, alkali salts, Iron, Fluorine, formaldehyde, hydrides, sodium phosphite, phosphorus, sulfur, Titanium, powdered aluminum, acetylidene, combustible substances, powdered magnesium, petrol, butadiene, CALCIUM HYDRIDE

Diethyl ether, with, Aluminum

Exothermic reaction with:

carbides, azides, turpentine oils and/or turpentine substitutes, alkali oxides, lithium silicide, alkaline earth compounds, nitrides, Acetaldehyde, Lithium, fluorides, Oxides of phosphorus, Chlorine

Iron, in powder form

Conditions to avoid
no information available

Incompatible materials
no information available

Hazardous decomposition products
in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Eye contact, Skin contact, Ingestion

Target Organs
Eyes
Skin
Respiratory system
Central nervous system
cardiovascular system

Acute oral toxicity
LD50 Rat: 14,000 mg/kg (RTECS)

Symptoms: metallic taste, bloody diarrhea, Circulatory collapse

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract
absorption

Acute dermal toxicity
LD50 Rabbit: 1,425 mg/kg
US-EPA

absorption

Skin irritation
In vitro study
Result: non-corrosive
OECD Test Guideline 435

In vitro study
Result: Irritations
OECD Test Guideline 439

Causes skin irritation.

Possible damages: Dermatitis

Eye irritation

Causes serious eye irritation.

Sensitization
In animal experiments: Mouse
Result: negative
Method: OECD Test Guideline 429

Repeated dose toxicity
(as aqueous solution)

Genotoxicity in vitro
Mutagenicity (mammal cell test):
MOUSE LYMPHOMA TEST
Result: negative
Method: OECD Test Guideline 476

UDS (Unscheduled DNA synthesis assay)
Result: negative
Method: OECD Test Guideline 482

Specific target organ systemic toxicity - single exposure
May cause respiratory irritation.
Target Organs: Respiratory system

Specific target organ systemic toxicity - repeated exposure
Causes damage to organs through prolonged or repeated exposure if swallowed.
Routes of exposure: Oral
Target Organs: thyroid

Aspiration hazard
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

Systemic effects:
After uptake:
Fever
Chronic intoxication:
Skin disorders, rhinitis, conjunctivitis, bronchitis, Asthma
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish
static test LC50 Oncorhynchus mykiss (rainbow trout): 1.67 mg/l; 96 h (ECHA)

Toxicity to daphnia and other aquatic invertebrates
static test EC50 Daphnia magna (Water flea): 0.55 mg/l; 48 h (ECHA)

Toxicity to algae
Growth inhibition ErC50 Desmodesmus subspicatus (green algae): 0.13 mg/l; 72 h
OECD Test Guideline 201

Toxicity to bacteria
EC50 activated sludge: 280 mg/l; 3 h
OECD Test Guideline 209

Persistence and degradability

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

Partition coefficient: n-octanol/water
log Pow: 2.49
(experimental)
Bioaccumulation is not expected. (Lit.)

Mobility in soil

No information available.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 3495
Proper shipping name	IODINE
Class	8 (6.1)
Packing group	III
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 3495
Proper shipping name	IODINE
Class	8 (6.1)
Packing group	III
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 3495
Proper shipping name	IODINE
Class	8 (6.1)
Packing group	III
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-B

SECTION 15. Regulatory information

United States of America

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.

SARA 302

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

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

DEA List I

Listed

Ingredients

Iodine	7553-56-2

DEA List II

Not listed

US State Regulations

Massachusetts Right To Know

Ingredients

Iodine

Pennsylvania Right To Know

Ingredients

Iodine

New Jersey Right To Know

Ingredients

Iodine

California Prop 65 Components

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

Notification status

TSCA:	All components of the product are listed in the TSCA-inventory.
DSL:	All components of this product are on the Canadian DSL

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms

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
P273 Avoid release to the environment.
Response
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
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.

Full text of H-Statements referred to under sections 2 and 3.

H312	Harmful in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

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