

SAFETY DATA SHEET (SDS)

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Chemicals Name**Product Name** Iodine**Product Code****Company Information****Supplier Company Name** GODO SHIGEN CO., LTD.**Department in Charge** Sales department**Address** No.1545-1, NANAIDO, CHOSEI-MURA, CHOSEI-GUN,
CHIBA-PREF, 299-4333, JAPAN**Phone Number** 0475-32-2302**Fax Number** 0475-32-1115**E-mail** sales@godoshigen.co.jp**Emergency Phone Number** GODO SHIGEN CO., LTD.
Sales department 0475-32-2302**Recommended Use and Restrictions on Use**

General industrial use

2 HAZARDS IDENTIFICATION

GHS Classification**Physical Hazards**

Classification not possible

Health Hazards

Acute toxicity (Oral)	Category 4
Acute toxicity (Inhalation: vapour)	Category 1
Skin corrosion/irritation	Category 2
Serious eye damage/irritation	Category 2
Skin sensitization	Category 1
Specific target organ toxicity (Single exposure)	Category 3 (Respiratory tract irritation)
Specific target organ toxicity (Repeated exposure)	Category 1 (Thyroid)

Environmental Hazards

Hazards to aquatic environment - acute hazard	Category 1
Hazards to aquatic environment - chronic hazard	Category 1

GHS Label Element**Pictograms**



Signal Words	Danger
Hazard Statements	Harmful if swallowed Causes skin irritation May cause allergic skin reaction Causes serious eye irritation Fatal if inhaled May cause respiratory irritation Cause damage to thyroid through prolonged or repeated exposure Very toxic to aquatic life Very toxic to aquatic life with long lasting effects
Precautionary Statements	
[Prevention]	Keep container tightly closed. Do not breathe dust/fume/gas/vapours. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of work place. Avoid release to the environment. Wear halogen gas mask/protective gloves/eye protection. [In case of inadequate ventilation] wear respiratory protection.
[Response]	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF ON SKIN: Wash with 5% sodium thiosulfate solution and then wash with plenty of water. IF IN EYES: Rinse cautiously with running water for at least 15 minutes and then seek medical attention immediately. IF SWALLOWED: Rinse mouth with water. Seek medical attention immediately. Get medical advice/attention if you feel unwell. Rinse mouth. If skin irritation: Get medical advice/attention. If skin irritation or rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Collect spills.
[Storage]	Store in well-ventilated, a cool and dark place. Keep container tightly closed. Store locked up.
[Disposal]	Dispose of contents/container by requesting a professional

waste disposal company licensed by the prefectural governor.

Other Hazards

No data available

3 COMPOSITION/INFORMATION ON INGREDIENTS

Distinction of Substance or Mixture

Substance

Composition and Information on Ingredient

Chemical name or common name:	Iodine
Chemical properties (chemical formula):	I ₂
Concentration:	99.7 %
CAS No.:	7553-56-2
Reference number in gazetted list in Japan	ENCS No.: Not applicable (Element) ISHL No.: Listed (Element)

4 FIRST AID MEASURES

First Aid

If inhaled	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, seek medical attention immediately.
If on skin	Take off contaminated clothing promptly. Wash with plenty of water and soap. If possible, wash the affected area with plenty of water (or lukewarm water) after washing the affected area with a 5% sodium thiosulfate solution. Seek immediate medical attention as delayed or inadequate cleaning can cause skin damage.
If in eyes	Immediately rinse cautiously with water for several minutes, wash contaminated product thoroughly and seek medical attention immediately. Remove contact lenses, if present and easy to do. Continue rinsing.
If swallowed	Rinse mouth with water and seek medical attention immediately. If possible, give a 5% sodium thiosulfate solution to induce vomiting. Never give anything by mouth to an unconscious patient.

The Acute and Delayed Effects and Main Symptoms

Sore throat, cough, shortness of breath, redness, pain, severe skin burns, hazy eyes, severe burns, burning sensation, gastric spasm, vomiting, diarrhea, shock or collapse.

Advice to Protect the Rescuers

Rescuers need to wear appropriate eye and skin protection depending on the situation.

5 FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

The product itself does not burn. Use appropriate fire extinguishing agents such as water spray, dry chemical powder, foam, carbon dioxide, etc. depending on the surrounding fire.

Unsuitable Extinguishing Media

Avoid direct rod-shaped water injection as fire may spread to the surrounding area.

Special Hazards and Risks

Irritant, corrosive or toxic purple iodine gas or vapor can be released in case of fire. The container may explode due to heating.

Specific Fire Fighting

Fight fire from upwind side.

Isolation the site and prohibit the unnecessary person to access.

If without risk, move the container to a safe area.

Cool down the container and nearby facilities by sprinkling water in case of fire in the vicinity.

Evacuate and extinguish the fire from a safe distance. When exposed to heat, it may explode and release severely toxic vapors or decomposition products.

Fire Fighting Notes and Protective Measures

Fire-fighting personnel must wear protective equipment according to the situation when engaged in firefighting.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Evacuate immediate area. Keep unnecessary personnel away.

Use personal protective equipment (See "8. EXPOSURE CONTROLS/PERSONAL PROTECTION") to avoid eye and skin contact and inhalation.

Do not touch damaged containers or leaks unless you are wearing proper protective clothing.

Work from upwind and evacuate people downwind.

Stay away from the lowlands.

If the leak does not cause a fire, wear a tightly sealed, impermeable protective garment.

Ventilate before entering a closed area.

Environmental Precautions

Avoid leaking products into the environment so as not to affect the surrounding environment.

Methods and Materials for Containment and Cleaning Up

Sweep up the leaked material and collect it in an empty container that can be sealed.

The spilled area should be neutralized or reduced and then rinsed with water.

Prevent inflow into drains, sewers, basements or closed areas.

Absorb or cover with dry soil, sand or non-combustible material and transfer to container.

Prevention Measures for Secondary Disaster

Immediately remove combustibles and ignition sources.

Cover with a plastic sheet to prevent scattering.

7 HANDLING AND STORAGE

HANDLING

Technical Measures	<p>Handle in areas with well ventilation.</p> <p>Since it is sublimable at room temperature, seal the container immediately after use.</p> <p>Wear appropriate protective equipment to avoid eye and skin contact and inhalation.</p> <p>Provide safety hand and eye wash station identified clearly near work area.</p> <p>Wash hands and face thoroughly after handling.</p>
Precautions for Safe Handling	<p>Handle in a place with local exhaust or general ventilation equipment.</p> <p>Avoid dust and vapour generation during operation.</p> <p>Avoid contact with organics as this product is an oxidizing substance.</p>
Contact Avoidance	Refer to "10. STABILITY AND REACTIVITY"
Hygiene Measures	<p>Wash hands thoroughly after handling.</p> <p>Do not eat, drink or smoke when using this product.</p>

STORAGE

Technical Measures	The equipment of a lighting, and ventilation necessary to store or to handle dangerous articles is installed in the inventory location.
Incompatible Materials	Flammable and reducing substances, alkali metals, phosphorus, antimony, ammonia, acetaldehyde, acetylene
Storage Conditions	<p>Avoid direct sunlight, flame and heat sources.</p> <p>Keep container tightly closed. Store in a cool and dark place.</p> <p>Store locked up since it is a deleterious substance.</p> <p>Store in accordance with regulatory standards.</p>
Safe Containers and Packaging Materials	Vinylidene chloride or glass container.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Allowable concentration (Exposure Limits, Biological Limit Values)	
JSOH (2021)	0.1 ppm, 1 mg/m ³ (Iodine)
ACGIH TLV-STEL (2021)	0.1 ppm (Iodine vapor)
ACGIH TLV-TWA (2021)	0.01 ppm (Iodine and Iodides as inhalable fraction and vapor)

Equipment Measures

Provide general ventilation system.

Use a sealed device, equipment, or local mechanical ventilation.

Provide safety shower and eye wash station identified clearly in the work area.

Personal Protective Equipment

Respiratory Protection	Wear respiratory protective equipment such as halogen gas masks, air supply masks, and air respirators.
Hand Protection	Wear impervious protective gloves.
Eye/Face Protection	Wear protective glasses, goggles, and face shield.
Skin and Body Protection	Wear protective clothing, protective boots, protective aprons, etc. if necessary.

Special Precautions

No data available

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Colour	Black-purple with metallic luster
Odour	Pungent odor
Melting Point	114°C
Boiling Point	184°C
Flammability	Not applicable
Upper/Lower Flammability or Explosive Limits	Not applicable
Flash Point	Not applicable
Auto-ignition Temperature	Not applicable
Decomposition Temperature	No data available
pH	No data available
Kinetic viscosity	Not applicable
Solubility	Water: 0.03 g/100 mL (20°C)
Partition Coefficient (<i>n</i> -Octanol/Water) (log value)	log Pow = 2.49
Vapor Pressure	0.04 kPa (25°C)
Density / Relative Density	4.9
Relative Vapour Density	8.8 (Air = 1)
Particle Characteristics	No data available

10 STABILITY AND REACTIVITY

Reactivity	Vapor reacts with many metals at room temperature.
Chemical Stability	It is sublimable. It emits purple harmful vapors when heated.
Possibility of Hazardous Reactions	Although not flammable or explosive, vapors react with many metals at room temperature.
Condition to Avoid	Reacts with ammonia and produce explosive iodine nitride. Avoid direct sunlight, heating, and contact with combustibles

Incompatible Materials	and reducing substances. Flammable and reducing substances, alkali metals, phosphorus, antimony, ammonia, acetaldehyde, acetylene
Hazardous Decomposition Products	No data available

11 TOXICOLOGICAL INFORMATION

Product Hazard Information

Acute Toxicity (Oral)	Rat LD ₅₀ = 315 mg/kg Rat LD ₅₀ = 14,000 mg/kg
Acute Toxicity (Dermal)	Rat LD ₅₀ = 3,333 mg/kg
Acute Toxicity (Inhalation: Gases)	Solid (GHS definition)
Acute Toxicity (Inhalation: Vapours)	Rat 4 hours LC ₅₀ = 0.363 mg/L (Conversion value: 35 ppm)
Acute Toxicity (Inhalation: Dusts / mists)	Classification not possible due to lack of data.
Skin Corrosion/Irritation	There is a report that in a test with rats (inhalation exposure), severe oedema, erythema and desquamation were observed and it was corrosive, but these effects are not considered to be severe, and there is a description that this substance is corrosive to the skin, however, there are no descriptions of the exposure time and irreversible effects. In addition, there is a description that the vapour of this substance was irritating to the skin in humans and there is a description that it causes skin blisters as a local effect.
Serious Eye Damage/Irritation	There is a description that the vapour of this substance was irritating to the eyes and eyelids in humans, and there is a report that it was severely irritating to the mucosa in experimental animals.
Respiratory Sensitization	Classification not possible due to lack of data.
Skin Sensitization	This substance was classified in occupational skin sensitizers Group 2 by Japan Society for Occupational Health. In addition, there are reports of allergic dermatitis and of eruption due to allergic reactions.
Germ Cell Mutagenicity	Classification not possible due to lack of data. There were no <i>in vivo</i> data. As for <i>in vitro</i> , it was negative in a mouse lymphoma test with cultured mammalian cells.
Carcinogenicity	It was classified as A4 by ACGIH.
Reproductive Toxicity	Classification not possible due to lack of data. Besides, there were no data on this substance, and there were limited data on the reproductive/developmental effects of iodine/iodide in experimental animals. However, human case reports demonstrate that intake of a very high amount of this substance during pregnancy (among these doses, the lowest reported dose of 130 mg/day) may induce neonatal goiter and hypothyroidism.
Specific Target Organ Toxicity (Single Exposure)	There are reports of respiratory tract irritation, coughing, headache and chest tightness by inhalation exposures to a vapour and a mist of this substance, and abdominal pain,

Specific Target Organ Toxicity (Repeated Exposure)	vomiting, diarrhea and gastrointestinal ulceration by the oral ingestion in humans. There were no data in experimental animals. There is a description that chronic intake of excess iodine in humans may result in hypothyroidism or hyperthyroidism and in extreme cases of more than 8 mg/kg/day (approximately 560 mg/day), it causes hyperthyroidism, etc. As for experimental animals, when rats with an inbred susceptibility to autoimmune thyroiditis or general-purpose rats treated with thymectomy were administered by drinking water containing 0.05% of iodine for 8 weeks or 12 weeks, respectively, an increase in the incidence of autoimmune thyroiditis characterized by a lymphocytic infiltration, accompanied by increased thyroid weights and increased antibodies to thyroglobulin was observed. In addition, in a test in which rats were given this substance by feeding for 10 weeks, dose-dependent increases in thyroid weights and thyroglobulin antibodies were observed within dose ranges of 0.015-0.23 mg/kg/day.
Aspiration Hazards	Classification not possible due to lack of data.

12 ECOLOGICAL INFORMATION

Product Environmental Impact Information

Ecological Toxicity	
Hazards to aquatic environment - acute hazard	Crustacean (<i>Daphnia magna</i>) 48hrs EC ₅₀ = 0.16 mg/L
Hazards to aquatic environment - chronic hazard	No data available
Persistence/Degradability	No data available
Bioaccumulation Potential	No data available
Mobility in Soil	No data available
Hazardous to the Ozone Layer	No data available

13 DISPOSAL CONSIDERLATIONS

Waste Disposal

- For disposal, conform with the standards provided by related laws and local public bodies. Commission the authorized waste disposal company, or a local public body who conducts the disposal, to dispose of the material.
- Dispose of poisonous and deleterious substances according to the standards for disposal methods.
- 1) Dissolve in an alkaline aqueous solution (lime milk or sodium hydroxide aqueous solution) little by little, dilute with a large amount of water, and treat.
 - 2) Dilute with a large amount of water, add a solution of a reducing agent (for example, sodium thiosulfate aqueous solution), and then neutralize. Then, dilute with a large amount of water and treat.

Contaminated Container and Packaging

Containers should be cleaned and sanctioned appropriately, and relevant regulations should be regulated.

When disposing of empty containers, remove the contents completely.

14 TRANSPORT INFORMATION

International Regulations

Land transport (According to ADR / RID regulations)

UN No.	3495
UN Proper Shipping Name	Iodine
Hazard Class	8
Subsidiary Risk	6.1
Packing Group	III

Marine transport (According to IMO regulations)

UN No.	3495
UN Proper Shipping Name	Iodine
Hazard Class	8
Subsidiary Risk	6.1
Packing Group	III
Marine Pollutant (Applicable / Not applicable)	Applicable
IBC code (Applicable / Not applicable)	Not applicable

Air transport(According to ICAO / IATA regulations)

UN No.	3495
UN Proper Shipping Name	Iodine
Hazard Class	8
Subsidiary Risk	6.1
Packing Group	III

Regulations in Japan

Regulatory Information by Land	Follow the Fire Service Law, PDSCL, and Road Law
Regulatory Information by Sea	Follow the Ship Safety Law
Marine Pollutants	Applicable
Regulatory Information by Air	Follow the Air Law

Specific Safety Measures:

During transportation, avoid direct sunlight, and ensure that the container is not damaged, corroded or leaked. Do not dump, drop or damage when loading. Prevent the goods from collapsing.

15 REGULATORY INFORMATION

Applicable Regulations and Regulatory Information Based on the Regulations

Act on Confirmation, etc. of Release	Not applicable
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Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof	Disease chemicals (Iodine)
Labor Standards Act	Dangerous and hazardous substances for which names should be notified (Iodine and its compounds) (Iodine compounds are limited to Iodides. Preparations and other products containing 0.1wt% or more)
Industrial Safety and Health Act	Dangerous goods and hazardous substances whose names should be displayed ((Iodine and its compounds) (Iodine compounds are limited to Iodides. Preparations and other products containing 1wt% or more. Dangerous materials, flammable materials, etc. that do not become non-solid and do not become powdery during transportation and storage, as well as substances that may cause an explosion or fire. Excludes those that do not pose a risk of corrosion to skin.)
Fire Service Act	Substances that require notification such as storage (Iodine)
Poisonous and Deleterious Substances Control Act	Deleterious substance (Iodine) (Active ingredient (pure industrial product))
Civil Aeronautics Act	Corrosive substance (Iodine)
Ship Safety Law	Corrosive substance (Iodine)
Road law	Vehicle traffic restrictions
Foreign Exchange and Foreign Trade Act	Item 16 of the attached table 1 of the Export Trade Control Ordinance (Fluorine, Chlorine, Bromine and Iodine)

16 OTHER INFORMATION

References

NITE GHS classification result list (2021)

JSOH, Japan Society of Occupational Health (2021) Recommendations for permissible concentrations, etc.

ACGIH, American Conference of Governmental Industrial Hygienists (2021) TLVs and BEIs.

【NOTE】 The SDS complies with JIS Z 7253: 2019 and is made based on the product information and hazard information available at the time of creation. Please handle with care as it may not always be sufficient. If you have any new knowledge, please change the contents of this SDS as necessary. In addition, the precautions are intended for normal handling, please take safety measures suitable for the application and conditions before special handling.