

Safety Data Sheet (SDS)

1. Chemical and Company Information

Chemical Name
Product Name Hydrogen iodide

Product Code
Company Profile
Name of Supplier GODO SHIGEN CO., LTD.

Department in charge Sales department

Address No.1545-1, NANAIDO, CHOSEI-MURA, CHOSEI-GUN,
CHIBA-PREF, 299-4333, JAPAN

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Emergency Phone Number GODO SHIGEN CO., LTD.
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Recommended Use and Restrictions on Use

General industrial use

2. Hazards Identification

GHS Classification
Physio-chemical Hazards

High-pressure gas Liquefied gas (low-pressure liquefied gas)

Health Hazards

Acute toxicity (oral) Not applicable

Acute toxicity (inhalation: gas) Classification not possible

Acute toxicity (inhalation: vapor) Not applicable

Skin corrosion/irritation: Category 1

 Serious eye damage/
Eye irritation Category 1

 Specific target organ toxicity
(single exposure) Category 1 (respiratory tract)

 Specific target organ toxicity
(repeated exposure) Category 1 (skin, thyroid, respiratory tract, systemic toxicity)

Environmental Hazards

Classification not possible

GHS Label Elements
Pictogram


Signal Word	Danger
Hazard Information	Gas under pressure may explode if heated. Serious skin chemical burns Serious eye damage Respiratory tract damage Damage to skin, thyroid, respiratory tract, and systemic toxicity due to long-term or repeated exposure.
Precautionary Statements	
[Safety Measures]	Do not breath smoke, gas, mist, vapor, or spray. Do not eat, drink or smoke while using this product. Wear appropriate protective gloves, protective clothing, eye protection, and face protection. Do not breathe gas. Wash hands thoroughly after handling.
[First Aid Measures]	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Immediately take off all contaminated clothing. Rinse skin with running water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Call a doctor/physician. If you feel unwell, get medical advice/attention. Wash contaminated clothing if it is to be reused.
[Storage]	Shield from the sun and store in a well-ventilated place. Store locked up.
[Disposal]	Disposal of contents and containers should be outsourced to an industrial waste disposer licensed by the prefectural governor.

Other Hazards

No information available

3. Composition and Information on Ingredients

Classification of Chemical Substance or Mixture

Chemical substance

Composition and Information on Ingredients

Chemical Name or General Name Hydrogen iodide

Chemical Properties (Chemical formula): HI

Content: $\geq 99.9 \%$

CAS No. 10034-85-2

Reference Number in Gazetted List in Japan: The Chemical Substance Control Law/ Industrial

4. First Aid Measures

First aid measures by exposure route

IF INHALED	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a doctor/physician.
IF ON SKIN	Wash with soap and water. Immediately call a doctor/physician. Immediately take off or remove all contaminated clothing. Wash contaminated clothing before reuse.
IF IN EYES	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor/physician.
IF SWALLOWED	Rinse mouth with water. Get medical advice immediately. Do NOT induce vomiting.

Most Important Symptoms and Effects, both Acute and Delayed

Vapor causes severe irritation to eyes, airways and lungs (From bronchitis, pneumonia to glottic edema and pulmonary edema). Delayed appearance of pulmonary edema may occur after two days. Body parts that come into contact with this liquid exhibit strong chemical burns. Symptoms such as severe lacrimation and eye pain, skin erythema and pain, irritating cough, dyspnea, and loss of consciousness can occur.

Precautions Necessary to Protect the First-aid Provider

Rescuers should wear protective equipment such as respiratory protection, sealed goggles, and protective gloves.

5. Firefighting Measures

Suitable Extinguishing Media

Water spray, powder or foam fire extinguishing agents, carbon dioxide, dry sand

Unsuitable Extinguishing Media

Straight stream water

Specific Hazards in the Case of Fire

Irritating, corrosive or toxic gases may be generated by fire. The container may explode upon heating. A ruptured cylinder may become a flying projectile. Because the product contains iodine (I) molecules, it may emit irritating or toxic fumes (or gases) in the event of a fire.

Particular Firefighting Methods

Move containers away from the fire area if it is safe to do so.
Cool containers sufficiently with copious amounts of water even after extinguishing the fire.
Do not spray water directly onto the spill or safety equipment. It may freeze.
Damaged cylinders should only be handled by specialists.

Reacts with strong oxidizers and magnesium. Poses a fire risk.

Special Protective Equipment and Precautions for Fire Fighters

Wear appropriate self-contained breathing apparatus and protective clothing (heat resistant).

6. Accidental Release Measure

Precautions for Personal Protection, Protective Equipment and Emergency Measures

Workers should wear appropriate protective equipment to prevent contact with eyes or skin or inhalation.

Do not touch, or walk through, spilled material.

Immediately isolate the spill area at an appropriate distance in all directions.

Prohibit unauthorized persons from entering the area

Work upwind and evacuate people downwind. Leave low ground.

Ventilate enclosed rooms before entering. Ventilate the spill area

The area should be off limits until the gas diffuses.

Environmental Precautionary Statements

Do not release into the environment.

Methods and material for containment and cleaning up

Neutralize with a large amount of weak alkaline water such as dilute sodium bicarbonate solution and absorb.

Stop the leak if safe to do so.

Prevent entry into drains, sewers, basements, or confined areas.

Secondary Disaster Prevention Measures

Immediately warn inhabitants of the residential and industrial areas and evacuate from the danger zone.

7. Handling and Storage Precautions

Handling

Technical measures

Take the equipment measures described in "8. Exposure Controls and Personal Protection" and wear appropriate protective equipment.

Precautions for Safe Handling

Prohibit the use of hot objects, sparks and fire in the surrounding area.

Handle the container with care. Do not subject to impact or knock over.

Take precautions when installing or removing the container to avoid causing leakage.

After use, fully close the valve, then attach the metal cap and protective cap.

Leaks may cause materials to corrode.

Do not swallow. Avoid contact with skin.

Do not breathe gas.

Perform exhaust ventilation to keep the air concentration below the acceptable exposure limit.

Contact Avoidance	Avoid contact with eyes.
Hygiene Measures	See "10. Stability and Reactivity". Wash hands and face thoroughly after handling. Do not eat, drink or smoke while using this product.

Storage

Technical measures	Store according to the standards for container storage in the High Pressure Gas Safety Act Regulation on Safety of General High Pressure Gas. Floors of storage areas should be constructed in a manner that prevents water from entering or penetrating the floor surface. Install necessary lighting and ventilation equipment in the storage area.
Prohibited contact substances	See "10. Stability and Reactivity".
Storage Conditions	Avoid direct sunlight, and store in a well-ventilated place at ≤ 40 °C. Do not store in the same place as strong oxidants, strong bases, metals, etc. Shield from the sun. Store in a well-ventilated place. Store locked up.
Safe container packaging material	Use containers specified in the High Pressure Gas Safety Act and UN Recommendations on the Transport of Dangerous Goods.

8. Exposure Controls and Personal Protection

Permissible concentration (exposure limit, biological exposure index)

Japan Society for Occupational Health (2021)	0.1 ppm、 1 mg/m ³ (As iodine)
ACGIH TLV-STEL (2021)	0.1 ppm (Iodine vapor)
ACGIH TLV-TWA (2021)	0.01ppm (Iodine and Iodides as inhalable fraction and vapor)

Equipment Measures

Install eyewash stations and safety showers in workplaces where this substance is stored or handled.
General or local exhaust ventilation should be installed in the workplace.

Protective Equipment

Respiratory protective equipment	Wear appropriate respiratory protective equipment
Protective gloves	Wear appropriate protective gloves.
Eye and/or face protection	Wear appropriate eye protection.
Skin and body protection	Wear appropriate protective equipment.

Special Precautions

No information available

9. Physical and Chemical Properties

Physical state	Compressed liquefied gas in a high-pressure gas container
Color	Colorless
Odor	Irritating odor
Melting point	-50.8°C
Boiling point	-35.5°C
Flammability	Not applicable
Explosive limits and explosive upper limit/flammability limit	No data available
Flash point	Non-flammable
Auto ignition point	Non-flammable
Decomposition temperature	>180 °C
pH	1 (0.1mol/L)
Dynamic viscosity	Not applicable
Solubility	Solubility in water 42g/100ml (20°C)
n-octanol/water partition coefficient (log value)	No data available
Vapor pressure	733 kPa (20°C)
Density and/or relative density	5.99g/l (air = 1,0°C)
Relative steam density	4.4 (air = 1)
Particle properties	No information available

10. Stability and Reactivity

Reactivity	The aqueous solution reacts like an acid. The gas is heavier than air.
Chemical stability	Slightly volatile. Reacts to light. Reacts to air.
Possibility of hazardous reactions	Reacts with strong oxidizers and magnesium. Poses a fire risk. Gradually degrades when heated. Reacts violently with high concentration lye, strong oxides and metals. Toxic and corrosive fumes are produced upon contact with water or steam. Fumes are produced upon contact with air.
Conditions to avoid	High temperatures, air, sunlight, high humidity
Incompatible dangerous substances	Strong oxidizers, magnesium, high concentration lye, metals, water, vapor
Hazardous decomposition products	Iodine Decomposes upon heating, producing extremely harmful hydrogen iodide fumes.

11. Toxicological Information

Product Toxicological Information

Acute toxicity (inhalation: gas)	Classification not possible
Acute toxicity (inhalation: vapor)	Not applicable
Acute toxicity (inhalation: dust/mist)	Not applicable
Skin corrosion/irritation:	GHS Classification: Category 1

Serious eye damage/eye irritation	<p>This is a strongly acidic substance. Although there are no specific reports, descriptions indicate that it is corrosive to human skin, causes redness and blisters, severe irritation and necrosis.</p> <p>GHS Classification: Category 1</p> <p>This is a strongly acidic substance. Although there are no specific reports, descriptions indicate that this substance is corrosive to eyes, causes redness and strong burns, and contact with eyes causes severe irritation.</p>
Respiratory sensitization	Classification not possible due to lack of data
Skin sensitization	Classification not possible due to lack of data
Germ cell mutagenicity	Classification not possible due to lack of data
Carcinogenicity	Classification not possible due to lack of data
Reproductive toxicity	Classification not possible due to lack of data
Specific target organ toxicity (single exposure)	<p>GHS Classification: Category 1 (respiratory tract)</p> <p>This substance is a strong airway irritant and has been reported to cause headaches and lung injury (respiratory effects such as pulmonary edema and pharyngeal edema) in humans following inhalation exposure.</p>
Specific target organ toxicity (repeated exposure)	<p>GHS Classification: Category 1 (skin, thyroid, respiratory tract, systemic toxicity)</p> <p>Chronic exposure to this substance may cause kidney and spleen injury, hypotension, palpitations, ataxia, feeling of weakness, and lung damage in humans. Descriptions also indicate that long-term exposure to hydrogen iodide, which is the aqueous solution of this substance, causes skin rash, headache, and irritation of the nasal mucosa. With regard to these findings, there is insufficient information on repeated exposure, but since this substance is strongly acidic and its effects on respiratory organs based on irritation have been reported as acute toxicity, it is presumed that it also occurs with repeated exposure. Since there have been no similar reports on kidney and spleen injury, only the respiratory system was indicated as the target organ. Although the following is not about this substance, there have been descriptions indicating iodine rash and thyroid lesions as iodine poisoning, as well as laryngitis, bronchitis, glottic edema, asthma attack, salivary gland edema, parotitis, gastritis, iodine cachexia, general weakness, heart palpitations, depression, insomnia, and nervousness, etc.</p>
Aspiration hazard	Not applicable

12. Ecological Information

Product Ecological Information

Ecotoxicity

Aquatic toxicity Short-term (acute)	No information available
Aquatic toxicity Long-term (chronic)	No information available

Persistence and degradability	No information available
Bioaccumulative potential	No information available
Mobility in soil	No information available
Ozone Hazard	No information available

13. Disposal Considerations

Residual waste

Conduct detoxification, stabilization and neutralization as far as possible before disposal to reduce the hazard level to a low level.

Contaminated containers and packaging

Dispose of this product in compliance with all laws and local government standards. Containers should be cleaned and recycled, or properly disposed of in compliance with all relevant laws and regulations and local government standards.

When disposing of empty containers, do so after completely removing all content.

14. Precautions for Transport

International regulations

Road and rail transport (Comply with ADR/RID regulations)

UN number	2197
Product name (UN proper shipping name)	Hydrogen iodide, anhydrous
UN classification (transport hazard class)	High-pressure gas (toxic high-pressure gas)
Subsidiary hazard class	8
Container grade	-

Sea transport (Comply with IMO regulations)

Marine pollutants (Applicable/Not applicable)	Not applicable
IBC code (Applicable/Not applicable)	Not applicable

Air transport (Comply with ICAO /IATA regulations)

Air regulation information	Transport prohibited
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Japanese regulations

Land regulation information	Comply with the Poisonous and Deleterious Substances Control Act and the Road Act.
Sea regulation information	Comply with the Ship Safety Law
Air regulation information	Transport prohibited

Special safety measures for transportation or methods of transportation:

It is necessary to retain a yellow card when transporting. Do not transport with food or animal feed.

Avoid direct sunlight during transportation. Check the container for damage, corrosion or spillage. Load in a manner that will prevent it from falling down, tipping over, or being damaged and take measures to

prevent load collapse. Do not stack heavy goods.

15. Applicable Laws and Regulations

Names of applicable laws and regulations and information relating to regulations based on those laws and regulations

Poisonous and Deleterious Substances Control Act.	Deleterious Substance (Act Article 2, Appendix 2) (Act number: 87) Deleterious Substance (Designation Order Article 2) (Cabinet Order No.: 102)
Industrial Safety and Health Act	Dangerous goods and hazardous substances (iodine and its compounds) that require notification of the name etc. to be provided.
High Pressure Gas Safety Act	Liquefied gas (Article 2.3 of the Act)
Aviation Law	Transport prohibited Corrosion behavior
Ship Safety Law	High-pressure gas, toxic high-pressure gas Corrosion behavior
Port Regulations Act	High pressure gas, toxic high pressure gas Corrosion behavior
Road Act	Vehicle traffic restrictions
Foreign Exchange and Foreign Trade Act	Item 16 of the Appendix Table 1 of the Export Trade Control Order (fluorine, chlorine, bromine and iodine)

16. Other Information

References

List of classification results for NITE GHS (2021)
 Japan Society for Occupational Health (2021) Recommendations for permissible concentrations etc.
 International Chemical Safety Cards (ICSC) (2010)
 Revised and Augmented Iodine General Theory Kasumigaseki Publishing (1992)
 GESTIS substance database
 ACGIH, American Conference of Governmental Industrial Hygienists (2021) TLVs and BEIs.

[Note] This SDS complies with JIS Z 7253: 2019 and was created based on the product information and hazard information available at the time of creation. However, this may not necessarily be sufficient. Therefore, handle with care. If new knowledge becomes available, changes may be made to this SDS as required. Precautionary statements apply to normal handling. In the case of special handling, safety measures suitable for the use and conditions should be taken before handling.