

Safety Data Sheet

【Product Name】 Helium, compressed

Where to call at Iwatani Corporation

Branch in charge:

Phone number:

Fax number:

Safety Data Sheet

1. Chemical Product and Company Identification

Chemical product name : Helium, compressed

Company name : Iwatani Corporation
Address : 3-21-8 Nishishimbashi, Minato-ku, Tokyo 105-8458
Japan

Department in charge : Safety and Environment Department
Phone number : 03-5405-7026
Fax number : 03-5405-7028

Recommended applications and limit for utilization

: Optical fiber; carrier gas; various vacuum equipment for inspection; leak test for pipes, etc.; metallurgy, welding and heat treatment of iron & steel and machinery; shielding gas for welding; laser beam source; nuclear reactor cooling for disaster prevention; airships of transport industry; balloon filling; and engineering diving work

Reference number : SN-05

2. Hazards Identification

【GHS classification】

Physicochemical hazards

High-pressure gas : Compressed gas
(Symbol: Gas cylinder; Signal word: Warning)

* Hazard identification which is not described above is subject to “out of classification,” “out of category” or “cannot be categorized.”

【GHS label elements】

Pictograms or symbols :



- Signal word : Warning
- Hazardous information : High-pressure gas. It may cause an explosion when heated.
- Instructions
- Safety measures : Obtain the user's manual of gas related equipment before use.
: Read and understand all safety precautions before handling.
: Use the gas only in an outdoor area or well-ventilated area.
- First aid measures : If a gas leak occurs, provide ventilation and perform air diffusion to avoid gas retention.
- Storage : Store in a well-ventilated area with screening sunlight.
- Disposal : If it cannot help but release the gas, a small amount of the gas should gradually be released at an airy place.
- Other hazardous information which is not applied to GHS classification : Suffocation
- Overview of important signs and possible emergency situations : Inhalation of a high concentration gas may cause unconsciousness after only one breath. If unconsciousness continues, it results in a death.

3. Composition and Information on Ingredients

- Single substance or compound : Single substance (single product)
- Chemical name or general name : Helium
- Chemical property (formula, etc.): He
- CAS number : 7440-59-7
- Ingredients and concentration or range of concentration (content) : 99.995% and more
- Reference number for notice through official gazettes (Act on the Evaluation of Chemical Substances and Regulation of their Manufacture, etc. and Industrial Safety and Health Act)
Act on the Evaluation of Chemical Substances and Regulation of their Manufacture, etc.
: Exempt from the act
- Industrial Safety and Health Act: Exempt from the act

4. First Aid Measures

- Inhalation : If a worker inhales a high concentration gas, move

- him/her to fresh air. Loosen his/her tight clothing, warm with a blanket or the like and keep at rest.
- : If a worker feels bad, get medical attention.
 - : If a worker breathes weakly, give oxygen.
 - : If a worker is not breathing, give artificial respiration and get medical attention.
- Contact with skin : If a worker is exposed to an atmospheric pressure gas, no special treatment is needed.
- Contact with eyes : If eyes are exposed to a jet of gas, get medical attention immediately.
- Taking in gas : Conform to the directions in “inhalation” above.
- Most important signs of acute symptoms and delayed symptoms : If a worker inhales a high concentration gas, oxygen deficit may occur and suffocation symptoms (increased respiratory rate, fatigue or dizziness) are observed.
- Protection for first-aiders : Provide ventilation at a place where the gas leaks or blows out, as oxygen concentration in the air possibly lowers. Use a positive pressure respirator when needed.

5. Fire-fighting Measures

- Extinguishing media : Use an extinguishing agent suitable for the surrounding fire (including water sprinkling, water spraying, dry chemicals, fire foam, etc.).
- Extinguishing media not to be used: None
- Specific hazards with regard to measures during fire fighting
- : Upon exposure to flames, a pressure in a cylinder can build up so that a pressure relief device activates and gas blows out.
 - : A sharp rise of cylinder pressure due to the force of fire may cause the cylinder to rupture.
 - : Broken pieces of a ruptured cylinder may fly in all directions.
- Specific fire-fighting procedures : Evacuate unauthorized personnel to a safe place.
- : Use water spray from the windward side to keep fire-exposed cylinders cool.
 - : In case of the surrounding fire, move cylinders to a safe place.
- Protection for firefighters : Wear protective gears including fire-resistant gloves,

fire-resistant clothes, etc. and extinguish the fire from a farthest possible place on the windward side.

: Wear a positive pressure respirator when needed.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency measures

: Immediately isolate the leak area for an appropriate distance in all directions.

: Keep unauthorized personnel from entering until the gas diffuses.

: Provide ventilation to avoid a danger of suffocation and inhalation of gas.

: If a gas leak cannot be stopped, order the persons on the leeward to evacuate to a well-ventilated safe place.

: Wear appropriate protective gears when needed.

Environmental precautions : No data

Methods and equipment for containment and cleaning up

: Ventilate the area well for immediate diffusion and dilution of the gas into the air.

: Stop the gas leak if it is not dangerous.

Prevention of secondary hazards : As it is a suffocating gas, provide sufficient ventilation to avoid retention of the leaked gas.

: Stop gas supply.

: If a significant amount of gas leak continues, rope the surrounding area to keep off-limits.

7. Handling and Storage

Handling

Technical measures (local exhaust, whole ventilation, etc.)

: Inhalation of a high concentration gas may cause suffocation. To prevent gas exposure, provide ventilation.

Precautions for safe handling : Obtain the user's manual of gas related equipment before use.

: Read and understand all safety precautions before handling.

: Take preventive measures against falling, dropping, etc.

of cylinders and do not handle them roughly.

- : Prohibit using ignition sources (fire and others including high-temperature matters, spark, naked flames, electricity, etc.) in the surrounding area. -Prohibition of smoking
 - : Cylinders may explode if heated.
 - : In installing or removing cylinders and using the gas, care should be taken to prevent a gas leak and foaming agent, etc. should be used for gas leak inspection.
 - : Close the valve completely after gas use and put a protective cap.
 - : Do not seal cylinders or use them in a poorly ventilated area. If the cylinders are used under such conditions, measurement and management work should be performed to maintain oxygen concentration at a level of 18% or higher.
 - : Do not use the gas directly from the cylinders but use the gas with a pressure regulator without fail.
 - : Do not operate cylinder accessories (fusible plug, rupture disk, etc.).
 - : Use a designated handle for opening and closing the cylinder valve and open it slowly and gently.
- Avoidance of contact : Avoid contact with the gas blowing out at a high pressure.

Storage

Safe storage conditions

- Appropriate technical measures :
- Comply with the regulations of the High Pressure Gas Safety Act.
 - : Store cylinders at a well-ventilated place with a temperature of 40°C and less and avoid exposure to the corrosive atmosphere and continuous vibration.
 - : Store cylinders with putting a protective cap at a designated place for separate storage from flammable gas and toxic gas.
 - : Cease to use the gas with still being gas left in its cylinder. Immediately return the used cylinders and cylinders whose contract periods have already expired to the sellers.

Incompatible hazard : None

Safe packaging materials for cylinders

Helium, compressed Iwatani Corporation SN – 05
Creation date : 30th March 1993
Revision date : 1st April 2015

: Cylinders prescribed under the High Pressure Gas Safety Act.

8. Exposure Controls/Personal Protection

Protective equipment : Provide sufficient ventilation when used indoor.
: Perform measurement and management work to maintain oxygen concentration in the air at a level of 18% or higher.

Acceptable parameters

Japan Society for Occupational Health

: Not set in FY2014 version.

ACGIH

: Simple suffocating gas (FY2009 version)

Protective equipment

Respiratory protection : Use a positive pressure respirator if necessary.

Hand protection : Wear gloves appropriate for the type of usage.

Eye protection : Wear protective glasses appropriate for the type of usage.

Skin and body protection : Do not expose the skin from sleeve or trouser hem.

9. Physical and Chemical Properties

Appearance (physical conditions, shape, color, etc.)

: Compressed gas

: Colorless

Odor

: Odorless

pH

: No data

Melting point/freezing point : -272.2°C (2.6 MPa)

Boiling point, initial boiling point and range of boiling points

: -268.9°C

Flashpoint

: No data

Upper/lower limits of flammable or explosive range

: No data

Vapor pressure

: 0.2275 MPa (critical point)

Liquid density

: 0.1250 kg/L (-268.9°C, 101.3 kPa)

Vapor density

: 0.178 kg/m³ (0°C, 101.3 kPa)

Specific gravity (relative density): 0.138 (specific gravity of gas, air = 1)

Solubility

: 2.50 mg/L (water at 21°C)

: Insoluble (alcohol)

n-octanol/water partition coefficient

: log Pow = 0.7

Auto-ignition temperature

: No data

Resolution temperature

: No data

Other data

Molecular weight : 4.003

10. Stability and Reactivity

Reactivity : No data
Chemical stability : Chemically stable
Possibility of hazardous reaction : No data
Conditions to avoid : No data
Incompatible hazard : No data
Hazardous decomposition products
: No data

11. Toxicological Information

Acute toxicity : No data
Skin corrosivity and skin irritation
: No data
Serious eye damage or eye irritation
: No data
Respiratory organs sensitization or skin sensitization
: No data
Original generative cell variation (mutagenicity)
: No data
Carcinogenicity : No data
Reproduction toxicity : No data
Specification target internal organs toxicity (single revelation)
: No data
Specification target internal organs toxicity (repeat revelation)
: No data
Absorption respiratory organs toxicity
: No data
Other information : Acts as a simple suffocating gas after replacement with
air as indicated below:

Oxygen concentration in air (%)	Symptoms of anoxia, etc.
18	Lower safety limit. It is necessary to provide continuous ventilation and measure oxygen concentration in the work environment, and prepare respiratory protective equipment such as safety belts.
16-12	Increased pulse and respiratory rates, loss of concentration, simple miscalculation, degradation of muscle for precise work, weakness in a muscle, headache, tinnitus, nausea, bout of vomiting, and cyanosis due to oxygen saturation in arterial blood of 85-80% (oxygen partial pressure of 50-45 mmHg)
14-9	Decrease in judgment, hyperthymic condition, unstable mental condition (get a testy), frequency of sigh, extreme feeling of fatigue, inebriated condition, headache, tinnitus, bout of vomiting, vomiting, no recollection of a certain period of time, insensibility to pain, feeling of weakness throughout the body, increase in body temperature, cyanosis, stupor, and danger of death from falling from steps or ladder, or drowning
10-6	Feeling of vomiting, vomiting, loss of freedom of action, inability of moving and shouting even if feeling endangered, being absent-minded, cyanosis, hallucination, coma, falling unconscious, central nervous system damage, appearance of Cheyne-Stokes type respiration (slower and deeper respiration), full-body spasm and risk of death.
6 and less	Faint or falling after gasping respiration, slowing or arrest of breathing, convulsion, cardiac arrest and death

12. Ecological Information

Ecotoxicity : No data
 Persistence/degradability : No data
 Bioaccumulation : No data
 Mobility in soil : No data
 Harmful effect on ozone layer : No data

13. Disposal Consideration

Residues : Used cylinders should be returned to the supplier without

disposing of residual gas.

: In case of releasing the gas by necessity, a small amount of the gas should be released at an airy place pursuant to the provisions of High Pressure Gas Safety Act.

Contaminated cylinder and packing

: Disposal of cylinders should be conducted by the supplier and users are not allowed to do so on its own.

14. Transport Information

International regulation

UN number : UN1046
Proper shipping name : Helium (compressed)
UN classification : Class 2.2 (non-flammable and non-toxic gas)
Packing group : -
Marine pollution substance : Not applicable
Liquid substances for bulk shipping under MARPOL treaty : Not applicable

Maritime regulations information

: Comply with the rules and regulations of the International Maritime Organization (IMO).

Aviation regulations information

: Comply with the rules and regulations of the International Civil Aviation Organization (ICAO).

Domestic regulation

Land regulations information

High Pressure Gas Safety Act : Article 23 (Transportation) of the act and Article 48 (Safety Measures and Technical Standards regarding Transportation) of the Security Regulation for General High-Pressure Gas

Fire Service Act : Paragraph 6 (Loading Method), Article 29 of the Cabinet Order regarding Regulation of Hazardous Materials and Article 46 (Materials Prohibited from Being Consolidated with Hazardous Materials) of the Rules regarding Regulation of Hazardous Materials

Poisonous and Deleterious Substances Control Act

: Not applicable

Road Act

: Article 46 (Entry Is Prohibited or Restricted) and Paragraph (13) (Entry of Vehicles Is Limited), Article 19

of the Enforcement Order

Sea regulations information

Ship Safety Act : Article 28 (Rules of Dangerous Goods, etc.) and Article 2 (Words and Terms) and Article 3 (Classification, etc.) of the Regulations for the Carriage and Storage of Dangerous Goods by Ships, Annex Table 1 of the Public Notice Establishing Standards, etc. for Dangerous Goods Transportation by Ships: UN1046

Act on Port Regulations : Articles 21-23 (Dangerous Goods), Article 12 (Types of Dangerous Goods) of the Enforcement Ordinance, and Public Notice Establishing Types of Dangerous Goods under the Enforcement Ordinance of Act on Port Regulations: High-Pressure Gas

Aviation regulations information

Civil Aeronautics Act : Article 86 (Prohibition for Carriage of Explosives, etc.) of the act, Article 194 (Articles Prohibited from Being Transported) of the Enforcement Ordinance, and Annex Table 1 of the Public Notice Defining Standards, etc. for Transportation of Explosives, etc. by Aircrafts: UN1046

Special safety measures regarding transport or transport methods

- : When transporting cylinders loaded in a vehicle, a danger warning sign of “High-Pressure Gas” should be put on the vehicle with carrying fire extinguishers, disaster prevention tools, etc.
- : In cargo vehicle transport, shippers should require a transporter to carry a yellow card.
- : In transport, the cylinders should be put on a loading platform separated from driver’s seat.
- : Cylinders with no gas leak should be loaded and preventive measures should be taken for a load collapse without fail, in order to avoid falling, dropping, impact, etc.
- : Cylinders should be fitted with protective caps during transportation.
- : Preventive measures should be taken for the increase in temperature of cylinders, in order for them to be kept at less than 40°C.

Emergency Response Guidebook Number

: 121

Helium, compressed Iwatani Corporation SN – 05
Creation date : 30th March 1993
Revision date : 1st April 2015

15. Regulatory Information

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

: Not applicable

Industrial Safety and Health Act : Paragraph (14) (Indication) and Paragraph (15) (Granting), Article 24 of the Regulations

Poisonous and Deleterious Substances Control Act

: Not applicable

High pressure Gas Safety Act : Article 2 (Compressed Gas)

Fire Service Act : Article 10 (Position) and Article 16 (Loading Methods and Transport Methods)

Food Sanitation Act : Public Notice No. 120 (Existing Food Additives) of the Ministry of Health & Welfare

Road Act : Same as “14 Transporting Information” above in this material

Ship Safety Act : Same as “14 Transporting Information” above in this material

Act on Port Regulations : Same as “14 Transporting Information” above in this material

Civil Aeronautics Act : Same as “14 Transporting Information” above in this material

16. Other Information

References

- 1) “Shokubanoanzen Site” (model label responding to GHS and model SDS information)
: Ministry of Health, Labour and Welfare
(http://www.anzeninfo.mhlw.go.jp/anzen_pg/GHS_MSD_FND.aspx)
- 2) High-Pressure Gas Handbook
: Japan Industrial and Medical Gases Association
- 3) Emergency Response Guidebook
: Japan Standards Association
- 4) New Textbook for Operation Chief of Oxygen Deficient Danger
: Japan Industrial Safety & Health Association
- 5) International Chemical Safety Cards (ICSC)
: National Institute of Health Sciences
(<http://www.nihs.go.jp/ICSC/>)

- 6) Gas Encyclopedia : L'Air Liquide
- 7) Gas Data Book : Matheson Gas Products
- 8) NITE-chemical Substance Management Field
: National Institute of Technology and Evaluation
(<http://www.safe.nite.go.jp/>)

Notice to readers : The information contained in this Safety Data Sheet (SDS) is based on the materials and information that can be obtained as of the date of this SDS. However, Iwatani Corporation does not guarantee the accuracy or completeness of the data, estimation, etc. contained in this SDS.

: All information contained in this SDS is premised on ordinary handling, so that it is the user's responsibility to take enough considerations in case of particular use.

: All of the chemical products should be handled with recognizing "possible existence of unknown danger or harm" and such danger and harm significantly vary depending on the environment, handling methods, storage conditions and periods. It is recommended that such chemical products should be handled only by the persons with appropriate expertise and experience or under the directions of such persons from opening to storage and disposal, in addition to utilization.

: Reproduction of the contents herein for posting on websites and provision of this material to non-users are prohibited.