

Safety Data Sheet

Section 1. Identification of the substance/mixture and of the company/undertaking

Product identifier:

Product name: Ammonia_Gas

Product code (SDS NO): 2025_Ammonia_Gas_JP_E-2

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

Relevant identified uses of the product: Production of semiconductor

Uses advised against: Use for purposes other than recommended uses is prohibited.

Details of the supplier of the safety data sheet

Manufacturer/Supplier: Asahi Graphic Corporation

Address: KOHGA Bldg. 3F, 4-23-8 Ebisu, Shibuya-ku, Tokyo, 150-0013 Japan

Telephone number: +81-3-6878-8985

FAX: +81-3-5424-3018

Emergency telephone number: +81-3-6878-8985

Section 2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL AND CHEMICAL HAZARDS

Flammable gases: Category 1

Gases under pressure: Liquefied gas

HEALTH HAZARDS

Acute toxicity (Inhalation): Category 4

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

Respiratory sensitization: Category 1

Specific target organ toxicity – single exposure: Category 1 (central nervous system, respiratory system)

Specific target organ toxicity – repeated exposure: Category 1 (respiratory system)

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment, short-term (acute): Category 3

(Note) GHS classification without description: Not classified/Classification not possible

Label elements



Signal word: Danger

HAZARD STATEMENT

Extremely flammable gas

Contains gas under pressure; may explode if heated

Harmful if inhaled

Causes severe skin burns and eye damage

Causes serious eye damage

May cause allergy or asthma symptoms or breathing difficulties if inhaled

Causes damage to organs (central nervous system, respiratory system)

Causes damage to organs through prolonged or repeated exposure (respiratory system)

Harmful to aquatic life

PRECAUTIONARY STATEMENT

Prevention

- Avoid release to the environment.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Do not breathe gas.
- In case of inadequate ventilation wear respiratory protection.
- Use only outdoors or in a well-ventilated area.
- Wash contaminated parts thoroughly after handling.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Do not eat, drink or smoke when using this product.

Response

- In case of leakage, eliminate all ignition sources.
- Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- Specific treatment is required.
- Get medical advice/attention if you feel unwell.
- Immediately call a POISON CENTER/doctor/physician.
- Call a POISON CENTER/doctor/physician if you feel unwell.
- IF exposed or concerned: Call a POISON CENTER/doctor/physician.
- If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
- 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.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

- Store in a well-ventilated place.
- Store locked up.
- Protect from sunlight. Store in a well-ventilated place.

Disposal

- Dispose of contents/container in accordance with local/national regulation.

Section 3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Ingredient name	CAS No.	Content (%)	ENCS
Ammonia	7664-41-7	>99.999	1-391

Note : The figures shown above are not the specifications of the product.

Components contributing to the hazard

Component(s) come under Deleterious Substance(s) list of Poisonous and Deleterious Substances

Control Act, Japan

Applicable

Component(s) come under Labeling, etc. article of Industrial Safety and Health Act, Japan

Applicable

Component(s) come under Delivery of Documents, etc. article of Industrial Safety and Health Act, Japan

Applicable

Section 4. First-aid measures

Descriptions of first-aid measures

IF INHALED

- Remove person to fresh air and keep comfortable for breathing.
- If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician.

IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water or shower.

Wash with plenty of soap and water.

Immediately call a POISON CENTER/doctor/physician.

IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Immediately call a POISON CENTER/doctor/physician.

IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

Call a POISON CENTER/doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Burning sensation, Cough, Sore throat, Breathlessness

(Symptoms when skin and/or eye contact)

Pain, Blisters, Skin burns, Redness, Severe burns

Indication of any immediate medical attention and special treatment needed

Specific treatment is required.

Section 5. Fire-fighting measures**Extinguishing media****Suitable extinguishing media**

In case of fire, use water mist, foam, dry powder, CO2 to extinguish.

Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

Specific hazards arising from the substance or mixture

Will form toxic nitrogen oxides upon combustion.

Containers may explode when heated.

Advice for firefighters**Specific fire-fighting measures**

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Evacuate non-essential personnel to safe area.

In case of leakage, eliminate all ignition sources.

Cool container with water spray.

Apply water from a safe distance to cool and protect surrounding area.

Prevent extinguishing water from entering sewers.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

Wear protective gloves/protective clothing/eye protection/face protection.

Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure mode.

Section 6. Accidental release measures**Personnel precautions, protective equipment and emergency procedures**

Evacuate area.

Keep unauthorized personnel away.

Wear an air-supplied respirator for handling a spill at a poor ventilated workplace.

Wear proper protective equipment.

Eliminate all sources of ignition and ventilate the area.

Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

If flown out into rivers, contact competent authorities.

Methods and materials for containment and cleaning up

Use clean non-sparking tools to collect absorbed material.

All equipment used when handling the product must be grounded.

Preventive measures for secondary accident

Stop leak if safe to do so.

Section 7. Handling and storage**Precautions for safe handling****Preventive measures**

(Exposure Control for handling personnel)

Do not breathe gas.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Ground and bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use non-sparking tools.

Take action to prevent static discharges.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Use personal protective equipment as required.

Any incompatibilities

Acids, Oxidizing agents, Alcohols, Metals should not be mixed with the chemicals.

Advice on general occupational hygiene

Do not get in eyes, on skin, or on clothing.

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Wash contaminated clothing before reuse.

Wash hands thoroughly after handling.

Storage**Conditions for safe storage**

Keep container tightly closed.

Keep cool.

Store locked up.

Protect from sunlight. Store in a well-ventilated place.

Container and packaging materials for safe handling data is not available.

Section 8. Exposure controls/personal protection**Control parameters**

Administrative Control Levels and Concentration standard value

Not established

Occupational Exposure Limit

The Japan Society for Occupational Health

25ppm; 17mg/m³

ACGIH

TWA: 25ppm; STEL: 35ppm (Eye dam; URT irr)

Exposure controls

Appropriate engineering controls

Use in a location equipped with a general ventilation system or local exhaust ventilation system.

Eye wash station should be available.

Washing facilities should be available.

Individual protection measures

Respiratory protection

Wear respiratory protection.

Hand protection

Chemical protective gloves Recommended material(s): impermeable or chemical resistant rubber

Eye protection

Wear safety glasses with side-shields or chemical safety goggle.

Skin and body protection

Wear face protection (as specified by the manufacturer/supplier or the competent authority).

Wear protective clothing.

Wear impervious clothing and boots in case of repeated or prolonged treatment.

Section 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state: Gas (Liquefied gas)

Color: Colorless

Odor: Irritant odor

Odor threshold data is not available.

Melting point/Freezing point: -77.7°C

Boiling point or initial boiling point: -33.3°C

Boiling range data is not available.

Flammability: Combustible

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 15.4vol %

Upper explosion limit: 33.6vol %

Flash point: Not applicable

Auto-ignition temperature: 630°C

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: 540g/liter(20°C)

Solubility in solvent data is not available.

n-Octanol/water partition coefficient: log Pow: -1.14

Vapor pressure: 1013kPa(26°C)

Density and/or relative density: 0.7(-33°C)

Relative vapor density (Air=1): 0.6

Particle characteristics: Not applicable

Section 10. Stability and Reactivity

Reactivity

Reactivity data is not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

May form explosive vapor-air mixtures.

Conditions to avoid

Conditions to avoid data is not available.

Incompatible materials

Acids, Oxidizing agents, Alcohols, Metals

Hazardous decomposition products

The following substances are produced by pyrolysis.

Nitrogen oxides

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Acute toxicity (Dermal)

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Acute toxicity (Inhalation)

[Product]

Category 4, Harmful if inhaled

[Data for components of the product]

[NITE-CHRIP]

gas: rat LC50: 7679 ppm (4-hour)

Irritant properties

Skin corrosion/irritation

[Product]

Category 1, Causes severe skin burns and eye damage

[Data for components of the product]

[NITE-CHRIP]

Category 1

Serious eye damage/irritation

[Product]

Category 1, Causes serious eye damage

[Data for components of the product]

[NITE-CHRIP]

Category 1

Sensitization

Respiratory sensitization

[Product]

Category 1, May cause allergy or asthma symptoms or breathing difficulties if inhaled

[Data for components of the product]

[NITE-CHRIP]

Category 1

Skin sensitization

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Germ cell mutagenicity

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Carcinogenicity

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Reproductive toxicity

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 1, Causes damage to organs

[Data for components of the product]

[NITE-CHRIP]

Category 1 (central nervous system, respiratory system)

STOT-repeated exposure

[Product]

Category 1, Causes damage to organs through prolonged or repeated exposure

[Data for components of the product]

[NITE-CHRIP]

Category 1 (respiratory system)

Aspiration hazard

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Product]

Category 3, Harmful to aquatic life

[Data for components of the product]

Hazardous to the aquatic environment, short-term (acute)

[NITE-CHRIP]

Fish (*Oncorhynchus mykiss*) 96-hour LC50: 13.0 mg/L (a converted value equivalent to total ammonia. test substance: NH₄Cl, pH: 8.29)

Hazardous to the aquatic environment, long-term (chronic)

[NITE-CHRIP]

Crustacea (*Mysidopsis bahia*) 32-day NOEC: 3.47 mg/L (a converted value equivalent to total ammonia. test substance: NH₄Cl, pH: 7.92–8.01)

Water solubility

54 g/100 mL (20°C) (source: ICSC, 2013)

Persistence and degradability

[Data for components of the product]

Rapidly degradable (rapidly nitrified in aquatic environment) (source: NITE)

Bioaccumulative potential

[Data for components of the product]

log Kow: -1.14 (source: NITE)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

Section 13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

Waste treatment methods

Avoid release to the environment.

Dispose of contents/container in accordance with local/national regulation.

Contaminated packing

Data is not available.

Section 14. Transport Information

UN No., UN CLASS

UN Number or ID Number : 1005

UN Proper Shipping Name :

AMMONIA, ANHYDROUS

Class or division (Transport hazard class) : 2.3

Subsidiary hazard(s) : 8

Packing group : Not regulated

ERG GUIDE No.: 125

Special provisions No.: 23; 379

IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 1005

UN Proper Shipping Name :

AMMONIA, ANHYDROUS

Class or division (Transport hazard class) : 2.3

Subsidiary hazard(s) : 8

Packing group : Not regulated

Special provisions No.: 23; 379

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 1005

UN Proper Shipping Name :

AMMONIA, ANHYDROUS

Class or division (Transport hazard class) : 2.3

Subsidiary hazard(s) : 8

Packing group : Not regulated

Special provisions No.: A2

Environmental hazards

Marine pollutants (yes/no) : yes

Special precautions for user

Special precautions for user is not applicable.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

This product is not intended to be carried in bulk.

Rules and regulations on domestic transport

Ship Safety Act

Class 2 : Gases—Division 2.3 Toxic gases

Civil Aeronautics Act
Prohibited

Section 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Poisonous and Deleterious Substances Control Act, Japan

Deleterious Substances (Article 2, Appended Table 2 of Act)

Applicable

Industrial Safety and Health Act, Japan

Specified Chemical Ordinance, Specified Chemical Substances Group-3

Applicable

Chemical Substances requiring Labeling and Delivery of Documents, etc.

Chemical Substances Requiring Labeling

Applicable

Chemical Substances Requiring Delivery of Documents

Applicable

Appended Table 1 Dangerous Substances (related to Article 1, 6, and 9-3)

Dangerous Substances • Flammable gases (item (v) of Appended table 1 of Cabinet order)

PRTR law, Japan

The product is not applicable to Pollutant Release and Transfer Register (PRTR) law, Japan

Labor Standards Act, Japan

Chemical substances or compounds (including alloys) causing disease (item (iv)-1 of Appended Table 1-2 of Regulation)

Applicable

Fire Service Act, Japan

Substances that inhibit firefighting activities

Hazardous materials ordinance, Appended table 2: Deleterious Substances (quantity 200kg)

Ammonia

High Pressure Gas Safety Act, Japan

Liquefied gas (Article 2, item (iii) of Act): Pressure (at normal operating temperature, or 35°C) ≥ 0.2 MPa

Specified High-pressure gases (Article 24-2 of Act • Article 1 of Cabinet Order 7)

Toxic gas (Article 2, item (ii) of Regulation on Safety of General High Pressure Gas)

Not applicable to Specified Chemical Substances, Monitoring Chemical Substances or Priority

Assessment Chemical Substances of Chemical Substances Control Law, Japan.

Offensive Odor Control Law, Japan

Applicable

Air Pollution Control Law, Japan

Specified Substances (Article 10, item (i-xxviii) of Cabinet order)

Applicable

Act on Prevention of Marine Pollution and Maritime Disaster

This product is not belong to Noxious Liquid Substances.

Water Pollution Prevention Act, Japan

Harmful Substances

Applicable

Chemical safety assessment

No chemical safety assessment has been carried out for this product.

Section 16. Other information

References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 23rd edit., 2023 UN

IMDG Code, 2024 Edition (Incorporating Amendment 42-24)

ASAHI GRAPHIC Ammonia_Gas, Asahi Graphic Corporation, 2025_Ammonia_Gas_JP_E-2, Jun/09/2025
IATA Dangerous Goods Regulations (66th Edition) 2025
2024 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2025 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2019
JIS Z 7253 : 2019
2024 Recommendation on TLVs (JSOH)
Notification No. 0111-1 (January 11, 2022), Chemical Hazards Control Division, Industrial
Safety and Health Department, Labour Standards Bureau, Ministry of Health, Labour and Welfare
Supplier's data/information
GESTIS-Stoffdatenbank
Pub Chem (OPEN CHEMISTRY DATABASE)

General Disclaimer

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety. The GHS classification data given here is based on current Data published in Japan (National Institute of Technology and Evaluation (NITE) Chemical Risk Information Platform (NITE-CHRIP), up to FY2023).