GHS Assistant
—SDS作成/容器ラベル作成支援システム—
ASAHI GRAPHIC

Safety Data Sheet

according to Regulation (EC) No.1907/2006 (REACH), amended by COMMISSION REGULATION (EU) 2020/878

Product name : Ammonia Gas
SDS No. : 2025_Ammonia_Gas_EU-2
Revision No. : 2

Date of revision : 03/Mar/2025
Date previous version : 28/Feb/2025
Previous version : 1

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

1.1 Product identifier:
Product name: Ammonia Gas
Product code (SDS NO): 2025_Ammonia_Gas_EU-2

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses of the product: Production of semiconductor

1.3 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

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

Section 2. Hazards identification

GHS classification and label elements of the product

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No.1272/2008 [CLP]
PHYSICAL AND CHEMICAL HAZARDS
Flammable gases: Category 2
Gases under pressure: Liquefied gas
HEALTH HAZARDS
Acute toxicity (Inhalation): Category 3
Skin corrosion/irritation: Category 1B
ENVIRONMENT HAZARDS
Hazardous to the aquatic environment, short-term (acute): Category 1
(Note) GHS classification without description: Not classified/Classification not possible

2.2 Label elements
Labelling according to Regulation (EC) No.1272/2008 [CLP]

Signal word: Danger
HAZARD STATEMENT
H221 Flammable gas
H280 Contains gas under pressure; may explode if heated
H331 Toxic if inhaled
H314 Causes severe skin burns and eye damage
H400 Very toxic to aquatic life
PRECAUTIONARY STATEMENT
Prevention
P273 Avoid release to the environment.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 Do not breathe gas
P271 Use only outdoors or in a well-ventilated area.
P264 Wash contaminated parts thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response
P381 In case of leakage, eliminate all ignition sources.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P391 Collect spillage.
P321 Specific treatment is required.
P310 Immediately call a POISON CENTER/doctor/physician.
P311 Call a POISON CENTER/doctor/physician.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P363 Wash contaminated clothing before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
Storage
P403 Store in a well-ventilated place.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P410 + P403 Protect from sunlight. Store in a well-ventilated place.
Disposal
P501 Dispose of contents/container in accordance with local/national regulation.

2.3 Other hazards
The product does not contain any ingredient designated as PBT and/or vPvB.
The product does not contain any ingredients designated as Endocrine disrupting properties.

Section 3. Composition/information on ingredients

Mixture/Substance selection:
3.1 Substance

Ingredient name	CAS No.	Content (%)
Classification according to REGULATION (EC) No.1272/2008 [CLP]	EC No.	
Ammonia	7664-41-7	>99.999
Flam. Gas 2, H221; Press. Gas; Acute Tox. 3 *, H331; Skin Corr. 1B, H314; Aquatic Acute 1, H400 [SCL's, M-Factors, ATE, Component notes] note:[U]	231-635-3	

Note : The figures shown above are not the specifications of the product.
Components contributing to the hazard
The product does not contain any ingredients listed in REACH SVHC candidate list.
Full text of classifications and hazard statements: see section 16

Section 4. First-aid measures

4.1 Descriptions of first-aid measures
IF INHALED
Remove person to fresh air and keep comfortable for breathing.
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.

If eye irritation persists: Get medical advice/attention.

IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

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

4.2 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

4.3 Indication of any immediate medical attention and special treatment needed

Specific treatment is required.

Section 5. Fire-fighting measures

5.1 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.

5.2 Specific hazards arising from the substance or mixture

Will form toxic nitrogen oxides upon combustion.

Containers may explode when heated.

5.3 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

6.1 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.

6.2 Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

Do not wash away into sewers or waterway.

If flown out into rivers, contact competent authorities.

6.3 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

Collect spillage.

Stop leak if safe to do so.

6.4 Reference to other sections

Refer to section 8

Refer to section 13

Section 7. Handling and storage

7.1 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.

7.2 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.

7.3 Specific end use(s)

Production of semiconductor

Section 8. Exposure controls/personal protection

8.1 Control parameters

Adopted value

ACGIH

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

EU Occupational exposure limit values (Workplace Exposure limits) compliant to relevant EU Directive through 91/332/EEC to 2019/1831/EU

LTEL: (Anhydrous) 14mg/m3; 20ppm

STEL: (Anhydrous) 36mg/m3; 50ppm

Derived No-Effect Level (DNEL)

No DNELs available.

Predicted No-Effect Concentrations (PNEC)

No PNECs available.

8.2 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

9.1 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℃

Boiling point or initial boiling point: -33.3℃

Boiling range data is not available.

Flammability (gases, liquids and solids): 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℃

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity data is not available.

Solubility:
Solubility in water: 540g/liter(20℃)
Solubility in solvent data is not available.
n-Octanol/water partition coefficient: log Pow: -1.14
Vapor pressure: 1013kPa(26℃)
Density and/or relative density: 0.7(-33℃)
Relative vapor density (Air=1): 0.6
Particle characteristics: Not applicable

9.2 Other information
Other information is not available.

Section 10. Stability and Reactivity

10.1 Reactivity
Reactivity data is not available.

10.2 Chemical stability
Stable under normal storage/handling conditions.

10.3 Possibility of hazardous reactions
May form explosive vapor-air mixtures.

10.4 Conditions to avoid
Conditions to avoid data is not available.

10.5 Incompatible materials
Acids, Oxidizing agents, Alcohols, Metals

10.6 Hazardous decomposition products
The following substances are produced by pyrolysis.
Nitrogen oxides

Section 11. Toxicological Information

11.1 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 3, Toxic if inhaled
[Data for components of the product]
[Table 3 of Annex VI to the CLP Regulations]
Category 3

Irritant properties

Skin corrosion/irritation
[Product]
Category 1B, Causes severe skin burns and eye damage

[Data for components of the product]
[Table 3 of Annex VI to the CLP Regulations]
Category 1B

Serious eye damage/irritation
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.

Sensitization
Respiratory sensitization
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.

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]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.

STOT-repeated exposure
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.

Aspiration hazard
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.

11.2 Information on other hazards
Endocrine disrupting properties
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.

Section 12. Ecological Information
12.1 Toxicity
Aquatic toxicity
[Product]
Category 1, Very toxic to aquatic life
[Data for components of the product]
Hazardous to the aquatic environment, short-term (acute)
[Table 3 of Annex VI to the CLP Regulations]
Category 1
Water solubility
54 g/100 mL (20℃) (source: ICSC, 2013)
12.2 Persistence and degradability
[Data for components of the product]
Rapidly degradable (rapidly nitrified in aquatic environment) (source: NITE)
12.3 Bioaccumulative potential
[Data for components of the product]
log Kow: −1.14 (source: NITE)
12.4 Mobility in soil
Mobility in soil data is not available.
12.5 Results of PBT and vPvB assessment
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.
12.6 Endocrine disrupting properties
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.
12.7 Other adverse effects
Results of PMT and vPvM assessment
[Product]
Classification not possible (Insufficient data available or no data available).
[Data for components of the product]
No data available.
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

13.1 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

14.1 UN Number or ID Number : 1005
14.2 UN Proper Shipping Name :
AMMONIA, ANHYDROUS
14.3 Class or division (Transport hazard class) : 2.3
Subsidiary hazard(s) : 8
14.4 Packing group : Not regulated
ERG GUIDE No.: 125
Special provisions No.: 23; 379

ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road)

14.1 UN Number or ID Number : 1005
14.2 UN Proper Shipping Name :
AMMONIA, ANHYDROUS
14.3 Class or division (Transport hazard class) : 2
Label : 2.3; +8
14.4 Packing group : Not regulated
Special provisions : 23; 379

ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)

14.1 UN Number or ID Number : 1005
14.2 UN Proper Shipping Name :
AMMONIA, ANHYDROUS
14.3 Class or division (Transport hazard class) : 2
Label : 2.3 ; +8
14.4 Packing group : Not regulated
Special provisions : 23; 379

RID (Regulation concerning the International Carriage of Dangerous goods by Rail)

14.1 UN Number or ID Number : 1005
14.2 UN Proper Shipping Name :
AMMONIA, ANHYDROUS
14.3 Class or division (Transport hazard class) : 2
Label : 2.3 ; +8; (+13)
14.4 Packing group : Not regulated
Special provisions : 23; 379

IMDG Code (International Maritime Dangerous Goods Regulations)
14.1 UN Number or ID Number : 1005
14.2 UN Proper Shipping Name :
AMMONIA, ANHYDROUS
14.3 Class or division (Transport hazard class) : 2.3
Subsidiary hazard(s) : 8
14.4 Packing group : Not regulated
Special provisions No.: 23; 379

IATA (Dangerous Goods Regulations)
14.1 UN Number or ID Number : 1005
14.2 UN Proper Shipping Name :
AMMONIA, ANHYDROUS
14.3 Class or division (Transport hazard class) : 2.3
Subsidiary hazard(s) : 8
14.4 Packing group : Not regulated
Special provisions No.: A2

14.5 Environmental hazards
Marine pollutants (yes/no) : yes

14.6 Special precautions for user
Special precautions for user is not applicable.

14.7 Maritime transport in bulk according to IMO instruments
This product is not intended to be carried in bulk.

Section 15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
The product does not contain any ingredients listed in REACH SVHC candidate list.
Other information is not available.

Other regulatory information
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

15.2 Chemical safety assessment
Advice on safe handling for this product can be found in sections 7 and 8 of this SDS.

Section 16. Other information

GHS classification and labelling
Flammable gases, Category 2: H221 Flammable gas
Gases under pressure: Liquefied gas: H280 Contains gas under pressure; may explode if heated
Acute toxicity, Category 3: H331 Toxic if inhaled
Skin corrosion/irritation, Category 1B: H314 Causes severe skin burns and eye damage
Hazardous to the aquatic environment, short-term (acute), Category 1: H400 Very toxic to aquatic life

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)
IATA Dangerous Goods Regulations (66th Edition) 2025
ADR (2025), ADN (2025), RID (2025)
EU REGULATION (EC) No. 1272/2008 (CLP), amended by COMMISSION DELEGATED REGULATION (EU) 2023/1434
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2025 TLVs and BEIs. (ACGIH)

Supplier's data/information
GESTIS-Stoffdatenbank
Pub Chem (OPEN CHEMISTRY DATABASE)

Abbreviations and acronyms

ACGIH – American Conference of Governmental Industrial Hygienists; ADN – European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR – European Agreement concerning the International Carriage of Dangerous Goods by Road; ATE – Acute Toxicity Estimate; BCF – Bioconcentration Factor; BOD – Biochemical Oxygen Demand; Cat. – Category; Ceiling-C – Ceiling value; CLP – Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures; COD – Chemical Oxygen Demand; DSEN – Dermal Sensitization; EC No. – The European Community number; EC50 – Effective Concentration 50; EU – European Union; GHS – Globally Harmonized System of Classification and Labelling of Chemicals; IARC – International Agency for Research on Cancer; IATA – International Air Transport Association; IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IMDG Code – International Maritime Dangerous Goods Code; LC50 – Lethal Concentration 50; LD50 – Lethal Dose 50; logPow – n-Octanol/water Partition Coefficient; LTEL – eight-hour time weighted average; MARPOL – International Convention for the Prevention of Pollution from Ships; M-factor – Multiplying factors; NOEC – No Observed Effect Concentration; NTP – National Toxicology Program; PBT – Persistent, Bioaccumulative and Toxic substances; REACH – Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No.1907/2006; RID – Regulation concerning the International Carriage of Dangerous goods by Rail; RSEN – Respiratory Sensitization; SCL – Specific Concentration Limit; Skin – Danger of cutaneous absorption; STEL – Short-term Exposure Limit; STOT – Specific target organ toxicity; SVHC – Substance of Very High Concern; TWA – time-weighted average; UN – United Nations; vPvB – Very Persistent and very Bioaccumulative substances
dam – damage; irr – irritation; URT – upper respiratory tract

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 EU official data (Consolidated version of the CLP Regulation published in 01/12/2023 and Commission delegated regulation (EU) 2024/197 (ATP21)).