

Safety Data Sheet

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

Product identifier:

Product name: Ammonia solution

Reference number(SDS): 13370jis_E1-5

Product type:

Reagent

Details of the supplier of the safety data sheet

Manufacturer/Supplier: JUNSEI CHEMICAL CO., LTD.

Address: 1-6, Ohmano-cho, Koshigaya-shi, Saitama 343-0844, Japan

Division: Quality Assurance Department

Telephone number: +81-48-986-6161

FAX: +81-48-989-2787

e-mail address: shiyaku-t@junsei.co.jp

Section 2. Hazards identification

GHS classification and label elements of the product**Classification of the substance or mixture****PHYSICAL AND CHEMICAL HAZARDS**

Corrosive to metals: Category 1

HEALTH HAZARDS

Acute toxicity (Oral): 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)

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

H290–May be corrosive to metals

H302–Harmful if swallowed

H314–Causes severe skin burns and eye damage

H318–Causes serious eye damage

H334–May cause allergy or asthma symptoms or breathing difficulties if inhaled

H370–Causes damage to organs

H402–Harmful to aquatic life

PRECAUTIONARY STATEMENT**Prevention**

Avoid release to the environment.

Keep only in original packaging.

Do not breathe dust/fume/gas/mist/vapors/spray.

In case of inadequate ventilation wear respiratory protection.

- Wash contaminated parts thoroughly after handling.
- Wear protective gloves, protective clothing or face protection.
- Wear eye protection/face protection.
- Do not eat, drink or smoke when using this product.

Response

- Absorb spillage to prevent material-damage.
- Immediately call a POISON CENTER/doctor/physician.
- 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: Call a POISON CENTER/doctor/physician if you feel unwell.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

- Store locked up.

Disposal

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

Section 3. Composition/information on ingredients

Mixture/Substance selection:

Mixture

Chemical identification: Ammonia aqueous solution (MW:35.05; CAS No. 1336-21-6;

ECNO:215-647-6; Chemicals No, Japan:1-314)

Ingredient name:Ammonia

Content (%):28~30

Chemical formula:H3N

Chemicals No, Japan:1-391

CAS No.:7664-41-7

MW:17.03

ECNO:231-635-3

Ingredient name:Water

Content (%):Residual quantity of the ingredient mentioned above

Chemical formula:H2O

CAS No.:7732-18-5

MW:18.02

ECNO:231-791-2

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

Section 4. First-aid measures

Descriptions of first-aid measures

General measures

- Immediately call a POISON CENTER/doctor/physician.
- Keep victim warm and quiet.
- Call emergency medical service.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

IF INHALED

- Remove person to fresh air and keep comfortable for breathing.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician.
- Call a POISON CENTER/doctor/physician if you feel unwell.

IF ON SKIN (or hair)

- Take off immediately all contaminated clothing. Rinse skin with water or shower.
- If skin irritation or rash occurs: Get medical advice/attention.
- Remove and isolate contaminated clothing and shoes.
- For minor skin contact, avoid spreading material on unaffected skin.

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.
- If victim is conscious, give 1 – 2 glasses of water.
- Call a POISON CENTER/doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

- Cough. Sore throat. Burning sensation. Laboured breathing. Shortness of breath. Vomiting. Abdominal pain.

(Symptoms when skin and/or eye contact)

- Conjunctival redness of the eyes. Redness in the skin. Pain. Blurred vision. Severe deep burns. Blisters.

Indication of any immediate medical attention and special treatment needed

- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

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

- Use appropriate extinguishing media suitable for surrounding facilities.
- The product is non-flammable.

Unsuitable extinguishing media

- Unsuitable extinguishing media data is not available.

Specific hazards arising from the substance or mixture

- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

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

- Evacuate non-essential personnel to safe area.
- Cool container with water spray.

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 full face piece operated positive pressure mode.

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

- Keep unauthorized personnel away.

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In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Ventilate area until material pick up is complete.

Wear proper protective equipment.

PUBLIC SAFETY: Ventilate closed spaces before entering.

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

EVACUATION : Spill: See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Environmental precautions

Avoid release to headsprings, rivers, lakes, ocean and groundwater.

Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.

Cautiously neutralize spilled liquid with dilute acid such as dilute sulfuric acid.

Preventive measures for secondary accident

Absorb spillage to prevent material-damage.

Collect spillage.

Stop leak if you can do it without risk.

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

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

Do not get water inside containers.

Keep out of low areas.

Section 7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

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

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

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

Wear protective gloves, protective clothing or face protection.

Wear eye protection/face protection.

Use personal protective equipment as required.

When using do not eat, drink or smoke.

Release caps with care.

Be aware that ammonia gas can evolve from this product.

Any incompatibilities

Acids, Metals should not be mixed with the chemicals.

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

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

Wash contaminated clothing before reuse.

Storage

Conditions for safe storage

Store in a well-ventilated place. Keep container tightly closed.

Keep cool. Protect from sunlight.

Store in accordance with local/national regulation.

Store locked up.

(Incompatible storage condition)

The product may corrode metal. Do not keep in a metal container.

Do NOT completely fill bottles with the substance: strong solutions may develop pressure.

Container and packaging materials for safe handling

Keep only in original packaging.

Store in a corrosion resistant/specified container with a resistant inner liner.

Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

Section 8. Exposure controls/personal protection

Control parameters

Control value in MHLW is not available.

Adopted value

(Ammonia)

JSOH(1979) 25ppm; 17mg/m³

ACGIH(1976) TWA: 25ppm;

STEL: 35ppm (Eye dam; URT irr)

Exposure controls

Appropriate engineering controls

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

Individual protection measures

Respiratory protection

Wear respiratory protection.

Wear positive pressure self-contained breathing apparatus (SCBA).

Hand protection

Wear protective gloves. Recommended material(s): butyl rubber

Inspect before use and replace worn or damaged gloves.

Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions.

Eye protection

Wear chemical safety goggle.

Wear eye/face protection.

Skin and body protection

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: Volatile solution

Color: Colorless

Odor: Irritant odor

Odor threshold: 0.0266~39.6 mg/m³ (as Ammonia)

Melting point/Freezing point: -58°C(25%)

Boiling point or initial boiling point: 38°C(25%); 25°C(32%)

Boiling range data is not available.

Flammability (gases, liquids and solids): Non-flammable

Lower and upper explosion limit/flammability limit data is not available.

Flash point: Non-flammable

Auto-ignition temperature data is not available.

Decomposition temperature data is not available.

Self-Accelerating Decomposition Temperature/SADT data is not available.

pH: 11.5 <= pH(Strong basic)

Dynamic viscosity data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: Miscible

Solubility in solvent data is not available.

n-Octanol/water partition coefficient data is not available.

Vapor pressure: 48 kPa (20°C)(25%)

Vapor density data is not available.

Density and/or relative density: 0.8980g/cm³(20°C)(28%)

Relative vapor density (Air=1) data is not available.

Relative density of the Vapor/air - mixture at 20°C (Air = 1) data is not available.

Particle characteristics data is not available.

Other information

Critical temperature data is not available.

Evaporation rate data is not available.

VOC data is not available.

Section 10. Stability and Reactivity

Reactivity

Runaway polymerization will not occur.

Chemical stability

Stable under normal storage/handling conditions.

Very volatile.

Possibility of hazardous reactions

Reacts with many heavy metals and heavy metal salts. This produces explosive compounds.

Attacks many metals. This produces flammable/explosive gas. It reacts violently with acids.

This generates fire and explosion hazard.

Decomposes on heating. This produces toxic and corrosive fumes. This generates toxic hazard.

Conditions to avoid

Contact with incompatible materials.

Heating.

Incompatible materials

Acids, Metals.

Hazardous decomposition products

Nitrogen oxides, Hydrogen gas, Ammonia gas

Section 11. Toxicological Information

The product has not been subjected to toxicological testing. Refer to the available data on the constituents.

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Product]

Category 4, Harmful if swallowed

[Data for components of the product]

[GHS Cat. Japan, base data]

(Ammonia aqueous solution)

rat LD50=350mg/kg (SIDS, 2008)

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]

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

[Data for components of the product]

[GHS Cat. Japan, base data]

(Ammonia)

gas: rat LC50=7679ppm/4hr (EHC 54, 1986)

Labor standard law, Japan; Toxic

Ammonia; Ammonia aqueous solution

Irritant properties

Skin corrosion/irritation

[Product]

Category 1, Causes severe skin burns and eye damage

[Product data]

[GHS Cat. based on pH]

11.5 ≤ pH, accordingly Skin corrosion/irritation: Category 1

[Data for components of the product]

[GHS Cat. Japan, base data]

(Ammonia)

severe burns (DFGOT vol. 6, 1994)

(Ammonia aqueous solution)

rabbit : corrosive (SIDS, 2008)

Serious eye damage/irritation

[Product]

Category 1, Causes serious eye damage

[Product data]

[GHS Cat. based on pH]

11.5 ≤ pH, accordingly Serious eye damage/eye irritation: Category 1

[Data for components of the product]

[GHS Cat. Japan, base data]

(Ammonia)

severe necrosis (DFGOT vol. 6, 1994)

(Ammonia aqueous solution)

corrosive (SIDS, 2008)

Sensitization

Respiratory sensitization

[Product]

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

[Data for components of the product]

[GHS Cat. Japan, base data]

(Ammonia)

cat. 1; ATSDR, 2004

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]

[cat.1]

[GHS Cat. Japan, base data]

(Ammonia)

central nervous system, respiratory system (ATSDR, 2004)

(Ammonia aqueous solution)

central nervous system, respiratory system (HSDB, Access on Jun. 2014; ATSDR, 2004)

STOT-repeated exposure

[Product]

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

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

(Ammonia)

respiratory system (ATSDR, 2004)

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

The product has not been subjected to ecotoxicological testing. Refer to the available data on the constituents.

Toxicity

Aquatic toxicity

[Product]

Category 3, Harmful to aquatic life

[Data for components of the product]

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

[GHS Cat. Japan, base data]

(Ammonia)

Fish (*Oncorhynchus mykiss*) LC50=13.0mg/L/96hr (as total ammonia)(Test substance: NH₄Cl, pH: 8.29) (Thurston et al., 1981)

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(Ammonia aqueous solution)

Fish (*Oncorhynchus mykiss*) LC50=26.8mg/L/96hr (as Ammonium hydroxide)

(Test substance: NH₄Cl, pH: 8.29) (Thurston et al., 1981)

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

[GHS Cat. Japan, base data]

(Ammonia)

Crustacea (*Mysidopsis bahia*) NOEC=3.47mg/L/32days (as total ammonia)

(Test substance: NH₄Cl, pH: 7.92-8.01) (SIDS, 2007)

(Ammonia aqueous solution)

Crustacea (*Mysidopsis bahia*) NOEC=7.1mg/L/32days (as Ammonium hydroxide)

(Test substance: NH₄Cl, pH: 7.92-8.01) (SIDS, 2007)

Water solubility

[Data for components of the product]

(Ammonia)

54 g/100 ml (20°C) (ICSC, 2013)

(Ammonia aqueous solution)

miscible (ICSC, 2018)

Persistence and degradability

[Data for components of the product]

(Ammonia)

Rapidly degradable (readily converted to nitrate in an aqueous environment (SIDS, 2007))

(Ammonia aqueous solution)

Rapidly degradable (readily converted to nitrate in an aqueous environment (SIDS, 2007))

Bioaccumulative potential

[Data for components of the product]

(Ammonia)

log Pow=-1.14 (SIDS, 2007)

(Ammonia aqueous solution)

log Pow=-2.66 (PhysProp Database)

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.

Section 14. Transport Information

UN No., UN CLASS

UN Number or ID Number : 2672

UN Proper Shipping Name :

AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 ° C in water, with more than 10% but not more than 35% ammonia

Class or division (Transport hazard class) : 8

Packing group : III

ERG GUIDE No.: 154

IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 2672

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UN Proper Shipping Name :

AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 ° C in water, with more than 10% but not more than 35% ammonia

Class or division (Transport hazard class) : 8

Packing group : III

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 2672

UN Proper Shipping Name :

AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 ° C in water, with more than 10% but not more than 35% ammonia

Class or division (Transport hazard class) : 8

Hazard labels : Corrosive

Packing group : III

Environmental hazards

Marine pollutants (yes/no) : yes

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

Non Noxious Liquid Substances ; Cat. OS

Water

MARPOL Annex V – HME (Harmful to the Marine Environment)

Specific target organ toxicity – repeated exposure: cat.1

Ammonia

Section 15. Regulatory Information

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

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

1336-21-6; 7664-41-7; 7732-18-5

All components are listed or exempted.

Superfund Amendments and Reauthorizations Act (SARA), Title III

SARA 313 (TRI)

Ammonia

Other regulatory information

We are not able to check up the regulatory information with regard to the substances in your country or region, therefore, we request this matter would be filled by your responsibility.

Regulatory information with regard to this substance in your country or in your region should be examined by your own responsibility.

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

Regulatory information in this section are limited to intentional ingredient(s), but does not contain information on non-intentional ingredients or impurities which are not informed by supplier(s).

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

H290-Corrosive to metals, Category 1: H290 May be corrosive to metals

H302-Acute toxicity, Category 4: H302 Harmful if swallowed

H314-Skin corrosion/irritation, Category 1: H314 Causes severe skin burns and eye damage

H318-Serious eye damage/eye irritation, Category 1: H318 Causes serious eye damage

H334-Respiratory sensitization, Category 1: H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

H370-STOT – single exposure, Category 1: H370 Causes damage to organs

H402-Hazardous to the aquatic environment, short-term (acute), Category 3: H402 Harmful 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 22nd edit., 2021 UN
IMDG Code, 2020 Edition (Incorporating Amendment 40-20)
IATA Dangerous Goods Regulations (64th Edition) 2023
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2022 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2019
JIS Z 7253 : 2019
2022 Recommendation on TLVs (JSOH)
Notification No. 0111-1 (January 11, 2022), Chemical Hazards Control Division, Industrial
Safety and Health Department, Labour Standards Bureau, MHLW in Japan
Supplier's data/information
Chemicals safety data management system "GHS Assistant" Version 4.21(<https://www.asahi-ghs.com/>)
NITE Chemical Risk Information Platform "NITE-CHRIP"
(https://www.nite.go.jp/en/chem/chrip/chrip_search/systemTop)
GHS Classification Guidance for Enterprises 2019 Revised Edition (Ver. 2.0) (Mar. 2020, METI)

Abbreviations and acronyms

SDS (Safety Data Sheet)
LD50 (Lethal Dose, 50%)
LC50 (Lethal Concentration, 50%)
IARC (International Agency for Research on Cancer)
ACGIH (American Conference of Governmental Industrial Hygienists)
EPA (US Environmental Protection Agency)
NTP (US National Toxicology Program)
JSOH (Japan Society for Occupational Health)
EU (European Union)
EC50 (Effective Concentration, 50%)
NOEC (No Observed Effect Concentration)
BOD (Biochemical Oxygen Demand)
COD (Chemical Oxygen Demand)
BCF (Bioconcentration Factor)
anh (anhydride)

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 data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2021).