

1. Identification of the substance/preparation and of the company/undertaking**1.2 Identification of the product****Product number:** A5023**Name of material:** Ammonia solution 28%**CAS No.:** 1336-21-6**1.2 Recommended use and restriction on use**

General use : for experimental, research and industrial use.

Restriction on use : Never drink, Not used except for experimental, research and industrial applications.

1.3 Manufacturer / Supplier / Distributor information**Importer/distributors identification**

Company : ASIA CHEMIE (THAILAND) CO., LTD.

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2. Hazards identification**2.1 GHS Classification**

Corrosive to metals : Category1

Acute toxicity (oral) : Category4

Skin corrosion/irritation : Category1A

Serious eye damage/irritation : Category1

Specific target organ toxicity (Single exposure) : Category2

Specific target organ toxicity (Repeated exposure) : Category2

Acute aquatic toxicity : Category1

Chronic aquatic toxicity : Category1

2.2 GHS label elements**Hazard symbols****Signal word:** Danger**Hazard Statements**

H290 May be corrosive to metals

H302 Harmful if swallowed

H314 Causes severe skin burns and eye damage

H318 Causes serious eye damage

H371 May cause damage to organs (Refer Section SDS 11)

H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

H400 Very toxic to aquatic life

H410 Very toxic to aquatic life with long lasting effects

Precautionary Statements

P234 Keep only in original container.

P260 Do not breathe gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P309+P311 If exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

P310 Immediately call a POISON CENTER or doctor/physician.

- P314 Get medical advice/attention if you feel unwell.
 P321 Specific treatment
 P330 Rinse mouth.
 P363 Wash contaminated clothing before reuse.
 P390 Absorb spillage to prevent material damage.
 P391 Collect spillage.
 P405 Store locked up.
 P406 Store in corrosive resistant container with a resistant inner liner.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

2.3 Other hazards which do not result in classification : (NFPA Classification)

NFPA grade (0 ~ 4 level)

- Health : 3, Flammability : 3, Reactivity : 0

3. Composition/information on ingredients

Chemical name	Synonyms	CAS Number	Concentration %
Water	-	7732-18-5	72
Ammonia	-	1336-21-6	28

4. First aid measures

4.1 Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Remove contact lenses if worn

4.2 Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Wash thoroughly after handling.

4.3 Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.

4.4 Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

4.5 Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available.

4.6 Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. Fire-fighting measures

5.1 Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray.
- Avoid use of water jet for extinguishing.

5.2 Specific hazards arising from the chemical

- Not available.

5.3 Special protective actions for firefighters

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.

6.2 Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

6.3 Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.
- Avoid entering to sewers or water system.
- Prevent the influx to waterways, sewers, basements or confined spaces.

7. Handling and storage

7.1 Precautions for safe handling

- Wash thoroughly after handling.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with strong oxidizing agent.

7.2 Conditions for safe storage, including any incompatibilities

- Store in cool, dry and well ventilated place.
- Check regularly for leaks.
- Do not apply direct heat.
- Store according to current laws and regulations
- Prevent static electricity and keep away from combustible materials or heat sources.
- Collected them in sealed containers.
- Do not eat, drink or smoke when using this product.
- Do not store in metal containers.
- Store away from water and sewer.

8. Exposure controls/personal protection

8.1 Exposure limits

ACGIH TLV

- [Ammonia] : TWA, 25 ppm (17 mg/m³) STEL, 35 ppm (24 mg/m³)

OSHA PEL

- [Ammonia]:50ppm 35mg/m³

8.2 Engineering controls

Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

8.3 Individual protection measures, such as personal protective equipment

Respiratory protection

- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.

- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece

Eye protection

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

Hand protection

- Wear appropriate chemical resistant glove.

Skin protection

- Wear appropriate chemical resistant protective clothing.

Others

- Not available

9. Physical and chemical properties

A. Appearance	
- Appearance	Liquid
- Color	colorless
B. Odor	pungent odor
C. Odor threshold	50 ppm
D. pH	11.6 (1.0 N solution)
E. Melting point/Freezing point	-58 °C
F. Initial Boiling Point/Boiling Ranges	38 °C
G. Flash point	11°C
H. Evaporation rate	Not available
I. Flammability (solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	48 kPa 20 °C, 25%)
L. Solubility	100 g/100 ml (25°C)
M. Vapour density	1.2 (air=1)
N. Specific gravity (Relative density)	0.9 (-33 °C)
O. Partition coefficient of n-octanol/water	-2.66
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	35.04

10. Stability and reactivity**10.1 Chemical Stability**

- Stable under normal conditions of use and storage.

10.2 Possibility of hazardous reactions

- May be corrosive to metals.

10.3 Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with metals.

10.4 Incompatible materials

- Avoid contact with strong oxidizing agent and strong reducing agent.

10.5 Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. Toxicological information**11.1 Information on the likely routes of exposure**

Respiratory tracts

- Not available

Oral

- Harmful if swallowed

Eye · Skin

- Causes serious eye damage
- Causes severe skin burns and eye damage

11.2 Delayed and immediate effects and also chronic effects from short and long term exposure**Acute toxicity***** Oral**

- Product (ATEmix) : Not available
- [Water] : LD50 > 90000 mg/kg Rat (KOSHA)
- [Ammonia] : Corrosive substance

*** Dermal**

- Product (ATEmix) : Not available
- [Ammonia] : corrosive substance

*** Inhalation**

- Product (ATEmix) : Not available
- [Ammonia] : Gas LC50 2000 ppm 4 hr Rat

Skin corrosion/irritation

- Causes severe skin burns and eye damage

Serious eye damage/irritation

- Causes serious eye damage

Respiratory sensitization

- Not available

Skin sensitization

- Not available

Carcinogenicity*** IARC**

- Not available

*** OSHA**

- Not available

*** ACGIH**

- Not available

*** NTP**

- Not available

*** EU CLP**

- Not available

Germ cell mutagenicity

- Not available

Reproductive toxicity

- Not available

STOT-single exposure

- May cause damage to organs

STOT-repeated exposure

- May cause damage to organs through prolonged or repeated exposure

Aspiration hazard

- Not available

12. Ecological information**12.1 Ecotoxicity****Fish**

- [Ammonia] : LC50 1.06 mg/l 96 hr *Lepomis cyanellus*

Crustaceans

- [Ammonia] : LC50 101 mg/l 48 hr *Daphnia magna* (ASTM E729-80)

Algae

- [Ammonia] : EC50 2700 mg/l 18 day *Chlorella vulgaris*

12.2 Persistence and degradability**Persistence**

- [Water] : log Kow = -1.38

Degradability

- Not available

12.3 Bioaccumulative potential**Bioaccumulative potential**

- Not available

Biodegradation

- Not available

12.4 Mobility in soil

- Not available

12.5 Other adverse effects

- Not available

13. Disposal considerations**13.1 Disposal methods**

- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

13.2 Special precautions for disposal

- The user of this product must dispose by oneself or entrust it to a waste disposer, a person who recycles other's waste or establishes and operates waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. Transport information**14.1 UN No. (IMDG CODE/IATA DGR)**

- 2672

14.2 Proper shipping name

- AMMONIA SOLUTIONS, RELATIVE DENSITY BETWEEN 0.880 AND 0.957 AT 15 DEGREES C IN WATER, WITH MORE THAN 10 PERCENT BUT NOT MORE THAN 35 PERCENT AMMON

14.3 Hazard Class

- 8

14.4 IMDG CODE/IATA DGR Packing group

- III

14.5 Marine pollutant

- Applicable

14.6 Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-B (Corrosive substances)

15. Regulatory information**15.1 National and/or international regulatory information****POPs Management Law**

- Not applicable

Information of EU Classification**Classification**

- [Ammonia] : H221, H331, H314, H400

U.S. Federal regulations*** OSHA PROCESS SAFETY (29CFR1910.119)**

- [Ammonia] : 4535.99 kg 10000 lb

*** CERCLA Section 103 (40CFR302.4)**

- [Ammonia] : 45.3599 kg 100 lb

*** EPCRA Section 302 (40CFR355.30)**

- [Ammonia] : 226.7995 kg 500 lb

*** EPCRA Section 304 (40CFR355.40)**

- [Ammonia] : 45.3599 kg 100 lb

*** EPCRA Section 313 (40CFR372.65)**

- [Ammonia] : Applicable

Rotterdam Convention listed ingredients

- Not applicable

Stockholm Convention listed ingredients

- Not applicable

Montreal Protocol listed ingredients

- Not applicable

16. Other information

Reason for the revision: General update.

Date: 15/04/2014

Revision #4

Date: 15/03/2020

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