

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 01/27/2010

Reviewed on 01/26/2010

1 Identification of substance:**Product details:****Product name:** Ammonium hydroxide, 28% NH3**Stock number:** L13168**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
 Johnson Matthey Catalog Company, Inc.
 30 Bond Street
 Ward Hill, MA 01835-8099
 Emergency Phone: (978) 521-6300
 CHEMTREC: (800) 424-9300
 Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:**Chemical characterization:****Description: (CAS#)**

Ammonia (CAS# 7664-41-7): 28% w/w

Water (CAS# 7732-18-5): 72% w/w

Identification number(s):**EINECS Number:** 215-647-6**Index number:** 007-001-01-2**3 Hazards identification****Hazard description:**

C Corrosive
 N Dangerous for the environment

Information pertaining to particular dangers for man and environment

R 34 Causes burns.

R 50 Very toxic to aquatic organisms.

Classification system**HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	3
FIRE	0
REACTIVITY	1

Health (acute effects) = 3
 Flammability = 0
 Reactivity = 1

GHS label elements**Danger**

3.2/1B - Causes severe skin burns and eye damage.

**Warning**

4.1/1 - Very toxic to aquatic life.

Prevention:

Avoid release to the environment.

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

Response:

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

IF exposed or if you feel unwell:

Immediately call a POISON CENTER or doctor/physician.

4 First aid measures**General information** Immediately remove any clothing soiled by the product.**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

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Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek immediate medical advice.**5 Fire fighting measures****Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Nitrogen oxides (NOx)

Ammonia

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires: The product is not flammable**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:**

Do not store together with acids.

Keep away from heat and direct sunlight.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Protect from heat and direct sunlight.

8 Exposure controls and personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Ammonia

	ppm
ACGIH TLV	25; 35-STEL
Austria MAK	25
Belgium TWA	25; 35-STEL
Denmark TWA	25
Finland TWA	25; 40-STEL
France VME	25; 50-VLE

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Germany MAK 50
 Hungary TWA 18; 27-STEL
 Japan OEL 25
 Korea TLV 25; 35-STEL
 Netherlands MAC-TGG 25
 Norway TWA 25
 Poland TWA 20 mg/m³; 27 mg/m³-STEL
 Russia TWA 25; 20 mg/m³-STEL
 Sweden NGV 25; 50-TGV
 Switzerland MAK-W 25; 50-KZG-W
 United Kingdom TWA 25; 35-STEL
 OSHA PEL 50

Additional information: No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands: Impervious gloves

Eye protection:

Safety glasses

Tightly sealed goggles

Full face protection

Body protection: Protective work clothing.

9 Physical and chemical properties:**General Information**

Form: Liquid
Color: Colorless
Odor: Ammonia-like

Change in condition

Melting point/Melting range: Not determined
Boiling point/Boiling range: Not determined
Sublimation temperature / start: Not determined

Flash point: Not determined

Ignition temperature: Not determined

Decomposition temperature: Not determined

Danger of explosion: Product does not present an explosion hazard.

Explosion limits:

Lower: Not determined
Upper: Not determined

Vapor pressure at 20°C (68°F): 685 hPa (514 mm Hg)

Density at 20°C (68°F): 0.9 g/cm³

Solubility in / Miscibility with Water: Fully miscible

pH-value (100 g/l) at 20°C (68°F): 12

10 Stability and reactivity**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

Acids

Halogens

Oxidizing agents

Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.

Heat

Dangerous reactions

Danger of receptacles bursting because of high vapor pressure if heated

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Several incidents involving sudden "boiling" of concentrated ammonia solutions have been reported.

Dangerous products of decomposition:

Ammonia
Nitrogen oxides

11 Toxicological information**Acute toxicity:****LD/LC50 values that are relevant for classification:**

ORL-HMN LDLo: 43 MG/KG (SOLUTIONS 12-44% NH3)
ORL-RAT LD50: 350 MG/KG (SOLUTIONS 12-44% NH3)
INH-HMN LCLo: 5000 PPM (SOLUTIONS 12-44% NH3)
EYE-RBT: 44 UG: SEV (SOLUTIONS 12-44% NH3)

Primary irritant effect:

on the skin: Corrosive effect on skin and mucous membranes.

on the eye: Strong corrosive effect.

Sensitization: No sensitizing effects known.

Subacute to chronic toxicity:

Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss. Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Ingestion may cause damage to the mouth, throat and esophagus. May cause skin burns or irritation depending on the severity of the exposure.

Additional toxicological information:

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

12 Ecological information:**Ecotoxicological effects:**

Remark: Very toxic for fish

General notes:

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Do not allow material to be released to the environment without proper governmental permits.

Very toxic for aquatic organisms

Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

13 Disposal considerations**Product:**

Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 Transport information**DOT regulations:**

Hazard class: 8
Identification number: UN2672
Packing group: III
Proper shipping name (technical name): AMMONIA SOLUTION

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Label corrosive

Land transport ADR/RID (cross-border)



ADR/RID class: 8 (C5) Corrosive substances
 Danger code (Kemler): 80
 UN-Number: 2672
 Packaging group: III
 Special marking: Symbol (fish and tree)
 Description of goods: 2672 AMMONIA SOLUTION

Maritime transport IMDG:



IMDG Class: 8
 UN Number: 2672
 Label: 8
 Packaging group: III
 Marine pollutant: No
 Proper shipping name: AMMONIA SOLUTION

Air transport ICAO-TI and IATA-DGR:



ICAO/IATA Class: 8
 UN/ID Number: 2672
 Label: 8
 Packaging group: III
 Proper shipping name: AMMONIA SOLUTION

UN "Model Regulation": UN2672, AMMONIA SOLUTION, 8, III

Environmental hazards: Environmentally hazardous substance, liquid; Marine Pollutant

15 Regulations

Product related hazard informations:

Hazard symbols:

C Corrosive

N Dangerous for the environment

Risk phrases:

34 Causes burns.

50 Very toxic to aquatic organisms.

Safety phrases:

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

45 In case of accident or if you feel unwell, seek medical advice immediately.

61 Avoid release to the environment. Refer to special instructions/Safety data sheets

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use:

For use only by technically qualified individuals.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure

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proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.

Contact: Zachariah Holt

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EMNECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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