



SAFETY DATA SHEET

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Revised edition no : 1

Date : 14/7/2005

Supersedes : 0/0/0

Ammonia**AL002**

Label 2.3 : Toxic gas.



Label 8 : Corrosive substance.



N : Dangerous for the environment



T : Toxic

1 IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Trade name : Ammonia
MSDS No : AL002
Chemical formula : NH₃
Company identification : AIR LIQUIDE SA
France
See paragraph 16 "OTHER INFORMATION"
Emergency phone nr : See paragraph 16 "OTHER INFORMATION"

2 COMPOSITION / INFORMATION ON INGREDIENTS

Substance / Preparation : Substance.

Substance name	Contents	CAS No	EC No	Index No	Classification
Ammonia	: 100 %	7664-41-7	231-635-3	007-001-00-5	R10 T; R23 C; R34 N; R50

Contains no other components or impurities which will influence the classification of the product.

3 HAZARDS IDENTIFICATION

Hazards identification : Liquefied gas.
Toxic by inhalation.
Corrosive to eyes, respiratory system and skin.

4 FIRST AID MEASURES

First aid measures

- **Inhalation** : Toxic by inhalation.
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- **Skin/eye contact** : May cause chemical burns to skin and cornea (with temporary disturbance to vision).
Immediately flush eyes thoroughly with water for at least 15 minutes.
Remove contaminated clothing. Drench affected area with water for at least 15 minutes.
Obtain medical assistance.
- **Ingestion** : Ingestion is not considered a potential route of exposure.

5 FIRE-FIGHTING MEASURES

Flammable class : Non flammable.
Specific hazards : Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products : If involved in a fire the following toxic and/or corrosive fumes may be produced by



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5 FIRE-FIGHTING MEASURES (continued)

thermal decomposition : Nitric oxide/nitrogen dioxide.

Extinguishing media

- Suitable extinguishing media : All known extinguishants can be used.

Specific methods : If possible, stop flow of product.
Move away from the container and cool with water from a protected position.

Special protective equipment for fire fighters : Use self-contained breathing apparatus and chemically protective clothing.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions : Evacuate area.
Ensure adequate air ventilation.
Use self-contained breathing apparatus and chemically protective clothing.

Environmental precautions : Try to stop release.
Reduce vapour with fog or fine water spray.

Clean up methods : Ventilate area.
Wash contaminated equipment or sites of leaks with copious quantities of water.
Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).
Hose down area with water.

7 HANDLING AND STORAGE

Storage : Segregate from oxidant gases and other oxidants in store.
Keep container below 50°C in a well ventilated place.

Handling : Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Do not allow backfeed into the container.
Suck back of water into the container must be prevented.
Keep away from ignition sources (including static discharges).
Purge air from system before introducing gas.
Refer to supplier's container handling instructions.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal protection : Keep suitable chemically resistant protective clothing readily available for emergency use.
Keep self contained breathing apparatus readily available for emergency use.
Do not smoke while handling product.
Ensure adequate ventilation.
Protect eyes, face and skin from liquid splashes.

Occupational Exposure Limits : Ammonia : TLV^o -TWA [ppm] : 25
Ammonia : TLV^o -STEL [ppm] : 35
Ammonia : OEL (UK)-LTEL [ppm] : 25
Ammonia : OEL (UK)-STEL [ppm] : 35
Ammonia : VLE - France [ppm] : 50
Ammonia : VME - France [ppm] : 25
Ammonia : MAK - Germany [ppm] : 50



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9 PHYSICAL AND CHEMICAL PROPERTIES

Physical state at 20 °C	: Liquefied gas.
Colour	: Colourless.
Odo(u)r	: Ammoniacal.
Molecular weight	: 17
Melting point [°C]	: -77.7
Boiling point [°C]	: -33
Critical temperature [°C]	: 132
Vapour pressure, 20°C	: 8.6 bar
Relative density, gas (air=1)	: 0.6
Relative density, liquid (water=1)	: 0.7
Solubility in water [mg/l]	: Hydrolyses.
Flammability range [vol% in air]	: 15 to 30
Auto-ignition temperature [°C]	: 630
Other data	: Although this substance has flammability data, it is difficult to ignite in air and is classified as non-flammable.

10 STABILITY AND REACTIVITY

Stability and reactivity	: May react violently with oxidants. May react violently with acids. Reacts with water to form corrosive alkalis. Can form explosive mixture with air.
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11 TOXICOLOGICAL INFORMATION

Toxicity information	: Toxic by inhalation. May cause inflammation of the respiratory system and skin. Inhalation of large amounts leads to bronchospasm, laryngeal oedema and pseudomembrane formation.
LC50 [ppm/1h]	: 4000

12 ECOLOGICAL INFORMATION

Ecological effects information	: May cause pH changes in aqueous ecological systems.
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13 DISPOSAL CONSIDERATIONS

General	: Avoid discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Gas may be scrubbed in sulphuric acid solution. Gas may be scrubbed in water. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Contact supplier if guidance is required.
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14 TRANSPORT INFORMATION

UN No.	: 1005
H.I. nr	: 268
ADR/RID	
- Proper shipping name	: AMMONIA, ANHYDROUS
- ADR Class	: 2
- ADR/RID Classification code	: 2 TC
- Labelling ADR	: Label 2.3 : Toxic gas. Label 8 : Corrosive substance.
Other transport information	: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers : <ul style="list-style-type: none">- Ensure that containers are firmly secured.- Ensure cylinder valve is closed and not leaking.- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.- Ensure valve protection device (where provided) is correctly fitted.- Ensure there is adequate ventilation.- Compliance with applicable regulations.

15 REGULATORY INFORMATION

EC Classification	: Index No : 007-001-00-5 R10 T; R23 C; R34 N; R50
EC Labelling	
- Symbol(s)	: T : Toxic N : Dangerous for the environment.
- R Phrase(s)	: R10 : Flammable. R23 : Toxic by inhalation. R34 : Causes burns. R50 : Very toxic to aquatic organisms.
- S Phrase(s)	: S9 : Keep container in a well-ventilated place. S16 : Keep away from sources of ignition - No smoking. S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 : Wear suitable protective clothing, gloves and eye/face protection. S45 : In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible). S61 : Avoid release to the environment. Refer to special instructions/Safety data sheets.

16 OTHER INFORMATION

Ensure all national/local regulations are observed.
Ensure operators understand the toxicity hazard.
Users of breathing apparatus must be trained.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

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16 OTHER INFORMATION (continued)

Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Recommended uses and restrictions : This SDS is for information purposes only and is subject to change without notice. [Prior to purchase of products, please contact your local AIR LIQUIDE office for a complete SDS (with Manufacturer's name and emergency phone number).]

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