

**Ammonia**
**AL068**


T : Toxic



N : Dangerous for the environment



Label 2.3 : Toxic gas.



Label 8 : Corrosive substance.

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

**Trade name** : Ammonia  
**MSDS Nr** : AL068  
**Use** : Aqueous ammonia. Chemical reagent. Heat treatment. Nitriding agent. Refrigerant.  
**Chemical formula** : NH<sub>3</sub>  
**Company identification** : Air Liquide  
 Level 9, 380 St.Kilda Road  
 3004 Melbourne AUSTRALIA  
**Emergency phone nr** : 1800 812 588

**2 HAZARDS IDENTIFICATION**

**Hazard classification** : Classified as hazardous according to NOHSC criteria.  
 Classified as a dangerous good by the criteria of the ADG code.

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

**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.

**3 COMPOSITION/INFORMATION ON INGREDIENTS**

**Substance / Preparation** : Substance.

Substance name	Contents	CAS No	EC No	Annex No	Classification
Anhydrous 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.

**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.



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### 4 FIRST AID MEASURES (continued)

- 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 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.

**Ammonia****AL068****8 EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)**

**Occupational Exposure Limits** : Anhydrous ammonia : ILV (EU) - 8 H - [mg/m<sup>3</sup>] : 14  
Anhydrous ammonia : ILV (EU) - 8 H - [ppm] : 20  
Anhydrous ammonia : ILV (EU) - 15 min - [mg/m<sup>3</sup>] : 36  
Anhydrous ammonia : ILV (EU) - 15 min - [ppm] : 50  
Anhydrous ammonia : TLV<sup>©</sup> -TWA [ppm] : 25  
Anhydrous ammonia : TLV<sup>©</sup> -STEL [ppm] : 35

**9 PHYSICAL AND CHEMICAL PROPERTIES**

**Physical state at 20 °C** : Liquefied gas.  
**Colour** : Colourless.  
**Odour** : 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.

**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.

**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



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## 13 DISPOSAL CONSIDERATIONS (continued)

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.

## 14 TRANSPORT INFORMATION

<b>UN No.</b>	: 1005
<b>Labelling ADG</b>	: Label 2.3 : Toxic gas. Label 8 : Corrosive substance.
<b>H.I. nr</b>	: 268
<b>Proper shipping name</b>	: AMMONIA, ANHYDROUS
<b>HAZCHEM - Emergency Action Code</b>	: 2RE : 2 = Fine water spray. <i>R = Recommended personal protective equipment : Liquid-tight chemical protective clothing and breathing apparatus. Appropriate measures : dilute.</i> <i>E = There may be a public safety hazard outside the immediate area of the incident, and that the following actions should be considered :</i> <i>1. People should be warned to stay indoors with all doors and windows closed, preferably in rooms upstairs and facing away from the incident. Ignition sources should be eliminated and any ventilation stopped.</i> <i>2. Effects may spread beyond the immediate vicinity. all non-essential personnel should be instructed to move at least 250 metres away from the incident.</i> <i>3. Police and fire brigade incident commanders should consult each other and with a product expert, or with a source of product expertise.</i> <i>4. The possible need for subsequent evacuation should be considered, but it should be remembered that in most cases it will be safer to remain in a building than to evacuate.</i>
<b>- ADG Class</b>	: 2
<b>- ADG Classification code</b>	: 2 TC
<b>Other transport information</b>	: 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 : - 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

<b>EC Classification</b>	: Annex No : 007-001-00-5 R10 T; R23 C; R34 N; R50
<b>EC Labelling Symbol(s)</b>	: T : Toxic N : Dangerous for the environment

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#### 15 REGULATORY INFORMATION (continued)

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#### 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.

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

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