

# Safety Data Sheet



## 0.5%-5% Ammonia in Air

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Version: 4.2

SDS reference: AL703

**Warning**



### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

SDS no : AL703

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use  
Test gas/Calibration gas  
Laboratory use  
Contact supplier for more information on uses

Uses advised against : Consumer use

#### 1.3. Details of the supplier of the safety data sheet

Company identification : Air Liquide Australia Limited  
Level 9 / 380 St. Kilda Road  
3004 Melbourne VIC Australia  
+61 3 9697 9888  
ALAEquiries@AirLiquide.com

#### 1.4. Emergency telephone number

Emergency telephone number : 1800 812 588

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to WHS Regulation

Physical hazards	Gases under pressure : Compressed gas	H280
Health hazards	Skin corrosion/irritation, Category 2	H315
	Serious eye damage/eye irritation, Category 2	H319
	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335

#### 2.2. Label elements

##### Classification according to WHS Regulation

Hazard pictograms :



GHS04

GHS07

Signal word : Warning

Hazard statements : H335 - May cause respiratory irritation.  
H280 - Contains gas under pressure; may explode if heated.

H315 - Causes skin irritation.  
H319 - Causes serious eye irritation.

**Precautionary statements**

- Prevention : P280 - Wear protective gloves, protective clothing, eye protection, face protection
- Response : P332+P313 - If skin irritation occurs: Get medical advice/attention  
P302+P352 - IF ON SKIN: Wash with plenty of water
- Storage : P403+P233 - Store in a well-ventilated place. Keep container tightly closed  
P405 - Store locked up

**2.3. Other hazards**

: None

**SECTION 3: Composition/information on ingredients**

**3.1. Substance** : Not applicable

**3.2. Mixture**

Name	Product identifier	%	Classification according to WHS Regulation
Nitrogen	(CAS No) 7727-37-9 (EC no) 231-783-9 (EC index no) (REACH-no) *1	Balance	Press. Gas (Comp.), H280
Oxygen	(CAS No) 7782-44-7 (EC no) 231-956-9 (EC index no) 008-001-00-8 (REACH-no) *1	18.5 - 22.5	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Anhydrous ammonia	(CAS No) 7664-41-7 (EC no) 231-635-3 (EC index no) 007-001-00-5 (REACH-no) 01-2119488876-14	0.5 - 5	Flam. Gas 2, H221 Press. Gas (Liq.), H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400

Full text of R- and H-statements: see section 16

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

\*1: Listed in Annex IV / V REACH, exempted from registration.

\*2: Registration deadline not expired.

\*3: Registration not required: Substance manufactured or imported < 1t/y.

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

- 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 contact : Remove contaminated clothing. Drench affected area with water for at least 15 minutes
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes
- Ingestion : Ingestion is not considered a potential route of exposure

**4.2. Most important symptoms and effects, both acute and delayed**

- : May cause irritation to cornea (with temporary disturbance to vision)
- May cause irritation to skin
- Irritation to the respiratory tract
- Refer to section 11

**4.3. Indication of any immediate medical attention and special treatment needed**

: Obtain medical assistance  
Treat with corticosteroid spray as soon as possible after inhalation

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog
- Unsuitable extinguishing media : Do not use water jet to extinguish

### 5.2. Special hazards arising from the substance or mixture

- Specific hazards : Exposure to fire may cause containers to rupture/explode
- Hazardous combustion products : Nitrogen oxides

### 5.3. Advice for fire-fighters

- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems  
If possible, stop flow of product  
Use water spray or fog to knock down fire fumes if possible  
Move containers away from the fire area if this can be done without risk
- Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus  
EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams  
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask
- Hazchemcode : 2TE

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

- : Try to stop release  
Evacuate area  
Monitor concentration of released product  
Use chemically protective clothing  
Ensure adequate air ventilation  
Act in accordance with local emergency plan  
Stay upwind

### 6.2. Environmental precautions

- : Reduce vapour with fog or fine water spray

### 6.3. Methods and material for containment and cleaning up

- : Hose down area with water  
Ventilate area  
Wash contaminated equipment or sites of leaks with copious quantities of water

### 6.4. Reference to other sections

- : See also sections 8 and 13

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Safe use of the product** :
- The substance must be handled in accordance with good industrial hygiene and safety procedures
  - Only experienced and properly instructed persons should handle gases under pressure
  - Consider pressure relief device(s) in gas installations
  - Ensure the complete gas system was (or is regularly) checked for leaks before use
  - Do not smoke while handling product
  - Avoid exposure, obtain special instructions before use
  - 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 breathe gas
  - Avoid release of product into atmosphere.
- Safe handling of the gas receptacle** :
- Refer to supplier's container handling instructions
  - Do not allow backfeed into the container
  - Protect cylinders from physical damage; do not drag, roll, slide or drop
  - When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders
  - Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use
  - If user experiences any difficulty operating cylinder valve discontinue use and contact supplier
  - Never attempt to repair or modify container valves or safety relief devices
  - Damaged valves should be reported immediately to the supplier
  - Keep container valve outlets clean and free from contaminants particularly oil and water
  - Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment
  - Close container valve after each use and when empty, even if still connected to equipment
  - Never attempt to transfer gases from one cylinder/container to another
  - Never use direct flame or electrical heating devices to raise the pressure of a container
  - Do not remove or deface labels provided by the supplier for the identification of the cylinder contents
  - Containers should be stored in the vertical position and properly secured to prevent them from falling over.

**7.2. Conditions for safe storage, including any incompatibilities**

- Observe all regulations and local requirements regarding storage of containers
- Containers should not be stored in conditions likely to encourage corrosion
- Container valve guards or caps should be in place
- Containers should be stored in the vertical position and properly secured to prevent them from falling over
- Stored containers should be periodically checked for general condition and leakage
- Keep container below 50°C in a well ventilated place
- Store containers in location free from fire risk and away from sources of heat and ignition
- Keep away from combustible materials.

**7.3. Specific end use(s)**

: None.

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

0.5%-5% Ammonia in Air		
OEL : Occupational Exposure Limits		
Australia	TWA (mg/m <sup>3</sup> )	17 mg/m <sup>3</sup> Ammonia
	TWA (ppm)	25 ppm Ammonia
	STEL (mg/m <sup>3</sup> )	24 mg/m <sup>3</sup> Ammonia
	STEL (ppm)	35 ppm Ammonia
Anhydrous ammonia (7664-41-7)		
OEL : Occupational Exposure Limits		
United Kingdom	WEL - LTEL - UK [mg/m <sup>3</sup> ]	18 mg/m <sup>3</sup>
	WEL - LTEL - UK [ppm]	25 ppm
	WEL - STEL - UK [mg/m <sup>3</sup> ]	25 mg/m <sup>3</sup>
	WEL - STEL - UK [ppm]	35 ppm



<b>Anhydrous ammonia (7664-41-7)</b>	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	36 mg/m <sup>3</sup>
Long-term - local effects, inhalation	14 mg/m <sup>3</sup>
Acute - systemic effects, dermal	6.8 mg/kg bw/day
Long-term - systemic effects, dermal	6.8 mg/kg bw/day

<b>Anhydrous ammonia (7664-41-7)</b>	
PNEC: Predicted no effect concentration	
Aqua (freshwater)	0.0011 mg/l
Aqua (marine water)	0.0011 mg/l

**8.2. Exposure controls**

**8.2.1. Appropriate engineering controls**

- : Provide adequate general and local exhaust ventilation
- Product to be handled in a closed system
- Systems under pressure should be regularly checked for leakages
- Ensure exposure is below occupational exposure limits (where available)
- Gas detectors should be used when toxic gases may be released
- Consider work permit system e.g. for maintenance activities

**8.2.2. Individual protection measures, e.g. personal protective equipment**

- : A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered:  
PPE compliant to the recommended EN/ISO standards should be selected

• Eye/face protection

- : Wear safety glasses with side shields
- Standard EN 166 - Personal eye-protection
- Provide readily accessible eye wash stations and safety showers

• Skin protection

- Hand protection

- : Wear working gloves when handling gas containers
- Standard EN 388 - Protective gloves against mechanical risk
- Wear chemically resistant protective gloves
- Standard EN 374 - Protective gloves against chemicals
- Consult glove manufacturer's product information on material suitability and material thickness
- The breakthrough time of the selected gloves must be greater than the intended use period

- Other

- : Keep suitable chemically resistant protective clothing readily available for emergency use
- Standard EN943-1 - Full protective suits against liquid, solid and gaseous chemicals
- Wear safety shoes while handling containers
- Standard EN ISO 20345 - Personal protective equipment - Safety footwear

• Respiratory protection

- : Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known
- Use gas filters and full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers
- Consult respiratory device supplier's product information for the selection of the appropriate device
- Gas filters do not protect against oxygen deficiency
- Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136
- Keep self contained breathing apparatus readily available for emergency use
- Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask
- Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems

• Thermal hazards

- : None necessary

**8.2.3. Environmental exposure controls**

- : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

## Appearance

- Physical state at 20°C / 101.3kPa : Gas.
- Colour : Mixture contains one or more component(s) which have the following colour(s):  
Colourless.

Odour : There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.

Mixture contains one or more component(s) which have the following odour(s):  
Ammoniacal.

Odour threshold : Odour threshold is subjective and inadequate to warn of overexposure.

pH value : Not applicable for gas-mixtures.

Molar mass : Not applicable for gas-mixtures.

Melting point : Not applicable for gas-mixtures.

Boiling point : Not applicable for gas-mixtures.

Flash point : Not applicable for gas-mixtures.

Evaporation rate (ether=1) : Not applicable for gas-mixtures.

Flammability range : Non flammable.

Vapour pressure [20°C] : Not applicable.

Vapour pressure [50°C] : Not applicable.

Relative density, gas (air=1) : Lighter or similar to air.

Solubility in water : No data available

Partition coefficient n-octanol/water [log Kow] : Not applicable for gas-mixtures.

Auto-ignition temperature : Non flammable.

Viscosity [20°C] : Not applicable.

Explosive Properties : Not applicable

Oxidising Properties : Not applicable

**9.2. Other information**

Other data : None

**SECTION 10: Stability and reactivity****10.1. Reactivity**

: No reactivity hazard other than the effects described in sub-sections below

**10.2. Chemical stability**

: Stable under normal conditions

**10.3. Possibility of hazardous reactions**

: Reacts with water

**10.4. Conditions to avoid**

: Avoid moisture in installation systems

**10.5. Incompatible materials**

: Reacts with water to form corrosive alkalis

**10.6. Hazardous decomposition products**

: Under normal conditions of storage and use, hazardous decomposition products should not be produced

**SECTION 11: Toxicological information****11.1. Information on toxicological effects**

**Acute toxicity** : Classification criteria are not met  
Toxicological effects not expected from this product if occupational exposure limit values are not exceeded

**Anhydrous ammonia (7664-41-7)**

LC50 inhalation rat (ppm)	2000 ppm/4h
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<b>Skin corrosion/irritation</b>	: Irritation to skin
<b>Serious eye damage/irritation</b>	: Irritation to eyes
<b>Respiratory or skin sensitisation</b>	: No known effects from this product
<b>Germ cell mutagenicity</b>	: No known effects from this product
<b>Carcinogenicity</b>	: No known effects from this product
<b>Toxic for reproduction : Fertility</b>	: No known effects from this product
<b>Toxic for reproduction : unborn child</b>	: No known effects from this product
<b>STOT-single exposure</b>	: Irritation to the respiratory tract
<b>STOT-repeated exposure</b>	: No known effects from this product
<b>Aspiration hazard</b>	: Not applicable for gases and gas mixtures

**SECTION 12: Ecological information****12.1. Toxicity**

Assessment : Classification criteria are not met.

**12.2. Persistence and degradability**

Assessment : No data available.

**12.3. Bioaccumulative potential**

Assessment : No data available.

**12.4. Mobility in soil**

Assessment : No data available.

**12.5. Results of PBT and vPvB assessment**

Assessment : Not classified as PBT or vPvB

**12.6. Other adverse effects**

: May cause pH changes in aqueous ecological systems.  
Effect on ozone layer : None  
Effect on the global warming : No known effects from this product.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods**



Contact supplier if guidance is required  
Avoid discharge to atmosphere  
Do not discharge into any place where its accumulation could be dangerous  
Ensure that the emission levels from local regulations or operating permits are not exceeded  
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org> for more guidance on suitable disposal methods

List of hazardous waste codes (from Commission Decision 2001/118/EC)

: 16 05 04: Gases in pressure containers (including halons) containing dangerous substances

**13.2. Additional information**

: None

**SECTION 14: Transport information****14.1. UN number**

UN-No. : 1956

**14.2. UN proper shipping name**

**Transport by road/rail (ADR/RID)** : COMPRESSED GAS, N.O.S. (Nitrogen, Anhydrous ammonia)

**Transport by air (ICAO-TI / IATA-DGR)** : Compressed gas, n.o.s. (Nitrogen, Anhydrous ammonia)

**Transport by sea (IMDG)** : COMPRESSED GAS, N.O.S. (Nitrogen, Anhydrous ammonia)

**14.3. Transport hazard class(es)**

Labelling :



2.2 : Non-flammable, non-toxic gases

**Transport by road/rail (ADG)**

Class : 2  
Hazchemcode : 2TE  
Hazard identification number : 20  
Tunnel Restriction : E - Passage forbidden through tunnels of category E

**Transport by air (ICAO-TI / IATA-DGR)**

Class / Div. (Sub. risk(s)) : 2.2

**Transport by sea (IMDG)**

Class / Div. (Sub. risk(s)) : 2.2  
Emergency Schedule (EmS) - Fire : F-C  
Emergency Schedule (EmS) - Spillage : S-V

**14.4. Packing group**

Transport by road/rail (ADR/RID) : Not applicable

Transport by air (ICAO-TI / IATA-DGR) : Not applicable

Transport by sea (IMDG) : Not applicable

**14.5. Environmental hazards**

Transport by road/rail (ADR/RID) : None.



Transport by air (ICAO-TI / IATA-DGR) : None.  
 Transport by sea (IMDG) : None.

**14.6. Special precautions for user**

**Packing Instruction(s)**

Transport by road/rail (ADR/RID) : P200  
 Transport by air (ICAO-TI / IATA-DGR)  
     Passenger and Cargo Aircraft : 200  
     Cargo Aircraft only : 200  
 Transport by sea (IMDG) : P200

Special transport precautions : 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 there is adequate ventilation  
 - 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.

HAZCHEMCODE : 2TE

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

: Not applicable.

**SECTION 15: Regulatory information**

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

**National regulations**

Ensure all national/local regulations are observed.

**15.2. Chemical safety assessment**

: A CSA does not need to be carried out for this product

**SECTION 16: Other information**

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010.

Training advice : Users of breathing apparatus must be trained. Receptacle under pressure.

Full text of H-statements

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Gas 2	Flammable gases, Category 2
Ox. Gas 1	Oxidising Gases, Category 1



Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H221	Flammable gas
H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H331	Toxic if inhaled
H335	May cause respiratory irritation
H400	Very toxic to aquatic life
R10	Flammable
R20	Harmful by inhalation
R23	Toxic by inhalation
R34	Causes burns
R36/37/38	Irritating to eyes, respiratory system and skin
R50	Very toxic to aquatic organisms
R8	Contact with combustible material may cause fire
C	Corrosive
N	Dangerous for the environment
O	Oxidising
T	Toxic
Xi	Irritant
Xn	Harmful

## DISCLAIMER OF LIABILITY

: 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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