A-GAS™

A-GAS NITROGEN, HIGH PURITY

Hazard Alert Code: MODERATE

Chemwatch Material Safety Data Sheet | Revision No: 2.0 | Chemwatch 4689-13

Issue Date: 10-Jun-2008 | CD 2008/2

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: A-GAS NITROGEN, HIGH PURITY

PROPER SHIPPING NAME

NITROGEN, COMPRESSED

PRODUCT USE

A wide variety of applications including the manufacture of ammonia, nitric acid, nitrates, cyanides, etc.; in manufacture of explosives. Blanket gas to form an oxygen free, inert atmosphere for the preservation of materials, including food; metallurgy. Filling of incandescent bulbs.

SUPPLIER

Company: A-Gas Pty Ltd
Address:
9-11 Oxford Road
Laverton North
VIC, 3026
AUS
Telephone: +61 3 9368 9222
Emergency Tel: 1800 002 427
Fax: +61 3 9368 9233

HAZARD RATINGS

		Min	Max
Flammability:	0		
Toxicity:	2		
Body Contact:	0		
Reactivity:	0		
Chronic:	0		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

DANGEROUS GOODS. NON-HAZARDOUS SUBSTANCE. According to the Criteria of NOHSC, and the ADG Code.

POISONS SCHEDULE

None

RISK

Risk Codes	Risk Phrases
R44	Risk of explosion if heated under confinement.

SAFETY

Safety Codes	Safety Phrases
S23	Do not breathe gas/ fumes/ vapour/ spray.
S51	Use only in well ventilated areas.
S09	Keep container in a well ventilated place.
S03	Keep in a cool place.
S07	Keep container tightly closed.
S27	Take off immediately all contaminated clothing.
S60	This material and its container must be disposed of as hazardous waste.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
nitrogen	7727-37-9.	>99.999^

Section 4 - FIRST AID MEASURES

SWALLOWED

Not applicable.

EYE

Not applicable.

SKIN

Not normally required. In case of cold burns (frost-bite):

- Bathe the affected area immediately in cold water for 10 to 15 minutes, immersing if possible and without rubbing.
- DO NOT apply hot water or radiant heat.
- Apply a clean, dry dressing.
- Transport to hospital, or doctor.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat for asphyxia.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING

GENERAL

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus and protective gloves.
- Fight fire from a safe distance, with adequate cover.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach cylinders suspected to be hot.
- Cool fire exposed cylinders with water spray from a protected location.
- If safe to do so, remove cylinders from path of fire.

SPECIAL REQUIREMENTS:

- Excessive pressures may develop in a gas cylinder exposed in a fire; this may result in explosion.
- Cylinders with pressure relief devices may release their contents as a result of fire and the released gas may constitute a further source of hazard for the fire-fighter.
- Cylinders without pressure-relief valves have no provision for controlled release and are therefore more likely to explode if exposed to fire.

FIRE FIGHTING REQUIREMENTS:

The need for proximity, entry and special protective clothing should be determined for each incident, by a competent fire-fighting safety professional.

FIRE/EXPLOSION HAZARD

Non flammable gas.

Heating may cause expansion or decomposition leading to violent rupture of containers.

HAZCHEM

2[T]

Personal Protective Equipment

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

If safe to do so, stop flow of gas.

- Remove leaking cylinders to a safe place if possible.
- Release pressure under safe, controlled conditions by opening the valve.
- DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.

Cylinder leakage:-

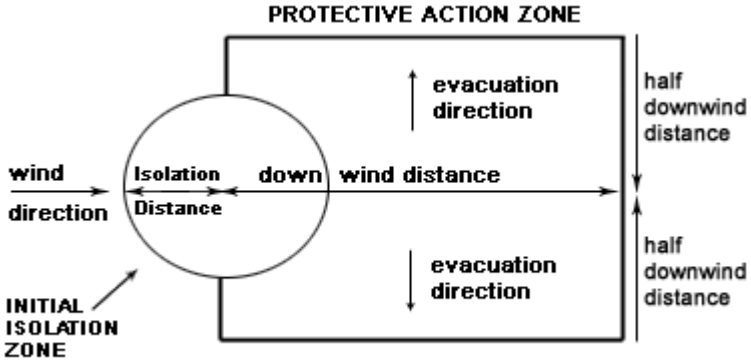
If leak occurs in an enclosed area, evacuate. Increase ventilation, leaks in enclosed areas can build up a to a hazardous level.

MAJOR SPILLS

- Clear area of all unprotected personnel and move upwind.
- Alert Emergency Authority and advise them of the location and nature of hazard.
- Wear breathing apparatus and protective gloves.
- Prevent by any means available, spillage from entering drains and water-courses.
- Consider evacuation.
- Increase ventilation.
- No smoking or naked lights within area.
- Stop leak only if safe to so do.
- Water spray or fog may be used to disperse vapour.
- DO NOT enter confined space where gas may have collected.
- Keep area clear until gas has dispersed.
- Remove leaking cylinders to a safe place if possible.
- Release pressure under safe, controlled conditions by opening the valve.
- DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.

PROTECTIVE ACTIONS FOR SPILL

From IERG (Canada/Australia)	
Isolation Distance	15 metres
Downwind Protection Distance	250 metres
IERG Number	8



FOOTNOTES

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills". LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
5 Guide 121 is taken from the US DOT emergency response guide book.
6 IERG information is derived from CANUTEC - Transport Canada.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

\+ + + + + +

X: Must not be stored together
O: May be stored together with specific preventions
+: May be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Consider use in closed pressurised systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal.
- Use a pressure reducing regulator when connecting cylinder to lower pressure (<100 psig) piping or systems
- Use a check valve or trap in the discharge line to prevent hazardous back-flow into the cylinder
- Check regularly for spills or leaks. Keep valves tightly closed but do not apply extra leverage to hand wheels or cylinder keys.
- Valve protection caps must remain in place must remain in place unless container is secured with valve outlet piped to use point.
- Do NOT drag, slide or roll cylinders - use a suitable hand truck for cylinder movement
- Test for leakage with brush and detergent - NEVER use a naked flame.
- Do NOT heat cylinder by any means to increase the discharge rate of product from cylinder.
- Leaking gland nuts may be tightened if necessary.
- If a cylinder valve will not close completely, remove the cylinder to a well ventilated location (e.g. outside) and, when empty, tag as FAULTY and return to supplier.
- Obtain a work permit before attempting any repairs. DO NOT attempt repair work on lines, vessels under pressure.
- Atmospheres must be tested and O.K. before work resumes after leakage.

Requirements of State Authorities concerning conditions for tank entry must be met. Particularly with regard to training of crews for tank entry; work permits; sampling of atmosphere; provision of rescue harness and protective gear as needed.
Avoid inhalation. Use in a well-ventilated area.
Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards, otherwise PPE is required.
Wear protective clothing when risk of exposure occurs.
Avoid sources of heat. Avoid physical damage to containers.

- DO NOT transfer gas from one cylinder to another.

SUITABLE CONTAINER

Cylinder fitted with valve protector cap. Ensure the use of equipment rated for cylinder pressure. Ensure the use of compatible materials of construction. Cylinder valve must be closed when not in use or when empty. Cylinder must be properly secured either in use or in storage.
WARNING: Suckback into cylinder may result in rupture. Use back-flow preventive device in piping.

- Check that containers are clearly labelled

STORAGE INCOMPATIBILITY

If quantity exceeds limits prescribed by appropriate Dangerous Goods Code, restrictions exist on the transport or containerised storage of the material with:
Class 4.2 - Spontaneously combustible substances;
Class 5.2 - Organic peroxides.

STORAGE REQUIREMENTS

- Store in original containers.
- Store in an upright position.
- DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
- No smoking, naked lights, heat or ignition sources.
- Keep containers securely sealed.
- Contents under pressure.

- Store in a cool, dry, well ventilated area; away from incompatible materials.
- Avoid storage at temperatures higher than 40 deg C.
- Protect containers against physical damage.
- Check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.
- Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open.
- Such compounds should be sited and built in accordance with statutory requirements.
- The storage compound should be kept clear and access restricted to authorised personnel only.
- Cylinders stored in the open should be protected against rust and extremes of weather.
- Cylinders in storage should be properly secured to prevent toppling or rolling.
- Cylinder valves should be closed when not in use.
- Where cylinders are fitted with valve protection this should be in place and properly secured.
- Gas cylinders should be segregated according to the requirements of the Dangerous Goods Act.
- Preferably store full and empty cylinders separately.
- Check storage areas for hazardous concentrations of gases prior to entry.
- Full cylinders should be arranged so that the oldest stock is used first.
- Cylinders in storage should be checked periodically for general condition and leakage.
- Protect cylinders against physical damage. Move and store cylinders correctly as instructed for their manual handling.

NOTE: A 'G' size cylinder is usually too heavy for an inexperienced operator to raise or lower.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

MATERIAL DATA

ES TWA: simple asphyxiant TLV TWA: simple asphyxiant

Simple asphyxiants are gases which, when present in high concentrations, reduce the oxygen content in air below that required to support breathing, consciousness and life; loss of consciousness, with death by suffocation may rapidly occur in an oxygen deficient atmosphere.

CARE: Most simple asphyxiants are odourless and there is no warning on entry into an oxygen deficient atmosphere. If there is any doubt, oxygen content can be checked simply and quickly. It may not be appropriate to only recommend an exposure standard for simple asphyxiants rather it is essential that sufficient oxygen be maintained. Air normally has 21 percent oxygen by volume, with 18 percent regarded as minimum under normal atmospheric pressure to maintain consciousness / life. At pressures significantly higher or lower than normal atmospheric pressure, expert guidance should be sought.

PERSONAL PROTECTION




EYE

- Safety glasses.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59]

HANDS/FEET

Wear physical protective gloves, eg. leather.
Wear safety footwear.

OTHER

Ensure that there is ready access to breathing apparatus.
Operators should be trained in correct use & maintenance of respirators.

RESPIRATOR

Full face respirator with supplied air.

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions.
Provide adequate ventilation in warehouse or closed storage areas.
If risk of overexposure exists, wear air supplied breathing apparatus.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Colourless, odourless compressed gas; sparingly soluble in water. Soluble in liquid ammonia, alcohol. Packed under pressure in pewter-coloured cylinders fitted with AS2473 Type 10 valve outlet. Sudden release of pressure or leakage may result in rapid generation of large volume of asphyxiant gas. NB; Gas gives NO warning of exposure. Compressed nitrogen is available at different pressures. For example, (a) normal - 13,700 kPa @ 15 deg. C; (b) high - 25,000 kPa @ 15 deg. C

PHYSICAL PROPERTIES

Gas.
Does not mix with water.

Molecular Weight: 28.02	Boiling Range (°C): -195.8
Melting Range (°C): -209.9	Specific Gravity (water=1): Not available
Solubility in water (g/L): Immiscible	pH (as supplied): Not applicable
pH (1% solution): Not applicable.	Vapour Pressure (kPa): Not available
Volatile Component (%vol): 100	Evaporation Rate: Not available
Relative Vapour Density (air=1): 0.967	Flash Point (°C): Not applicable
Lower Explosive Limit (%): Not applicable	Upper Explosive Limit (%): Not applicable
Autoignition Temp (°C): Not applicable	Decomposition Temp (°C): Not applicable

State: Compressed gas | Viscosity: Not Applicable

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

No data for this material.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Overexposure is unlikely in this form.

EYE

Overexposure is unlikely in this form.

SKIN

Overexposure is unlikely in this form.

INHALED

The gas is. a simple asphyxiant (precludes access to oxygen).

Symptoms of asphyxia (suffocation) may include headache, dizziness, shortness of breath, muscular weakness, drowsiness and ringing in the ears. If the asphyxia is allowed to progress, there may be nausea and vomiting, further physical weakness and unconsciousness and, finally, convulsions, coma and death. Significant concentrations of the non-toxic gas reduce the oxygen level in the air. As the amount of oxygen is reduced from 21 to 14 volume %, the pulse rate accelerates and the rate and volume of breathing increase. The ability to maintain attention and think clearly is diminished and muscular coordination is somewhat disturbed. As oxygen decreases from 14-10% judgement becomes faulty; severe injuries may cause no pain. Muscular exertion leads to rapid fatigue. Further reduction to 6% may produce nausea and vomiting and the ability to move may be lost. Permanent brain damage may result even after resuscitation at exposures to this lower oxygen level. Below 6% breathing is in gasps and convulsions may occur. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death will follow in a few minutes.

Nitrogen is non-toxic, but may replace oxygen in inhaled air, hence causing suffocation.

As the concentration of inhaled oxygen is reduced from 21% to 14% by volume, pulse rate and volume of breathing increase.

Nitrogen inhaled under increased atmospheric pressure (>1.5 atmospheres), may dissolve in fat-containing brain-cells, producing anaesthaesia and causing sleepiness. Individuals exposed to increased pressures for some time and who are suddenly released from the pressure may develop decompression sickness. This also occurs in repeated exposures without complete decompression.

CHRONIC HEALTH EFFECTS

Not applicable.

TOXICITY AND IRRITATION

No significant acute toxicological data identified in literature search.

Section 12 - ECOLOGICAL INFORMATION

No data for A-Gas Nitrogen, High Purity.

Section 13 - DISPOSAL CONSIDERATIONS

No data for this material.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: NON-FLAMMABLE COMPRESSED GAS

HAZCHEM: 2[T]

UNDG:

Dangerous Goods Class:	2.2	Subrisk:	None
UN Number:	1066	Packing Group:	None

Shipping Name:NITROGEN, COMPRESSED

Air Transport IATA:

ICAO/IATA Class:	2.2	ICAO/IATA Subrisk:	None
UN/ID Number:	1066	Packing Group:	None
Special provisions:	None		

Shipping Name: NITROGEN, COMPRESSED

Maritime Transport IMDG:

IMDG Class:	2.2	IMDG Subrisk:	None
UN Number:	1066	Packing Group:	None
EMS Number:	F-C,S-V	Special provisions:	None
Limited Quantities:	120 ml		

Shipping Name: NITROGEN, COMPRESSED

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

None

REGULATIONS

A- Gas Nitrogen, High Purity (CAS: None):

No regulations applicable

Section 16 - OTHER INFORMATION

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.
The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Issue Date: 10-Jun-2008
Print Date: 19-Jun-2008