



Safety Data Sheet

0-190ppm NO, 0-190ppm SO₂, 0-190ppm CO, 0-20.0% CO₂ in NITROGEN

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SDS reference: AL142

Warning



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

1.1. Product identifier

SDS no : AL142

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

2.2. Label elements

Classification according to WHS Regulation

Hazard pictograms :



GHS04

Signal word : Warning

Hazard statements : H280 - Contains gas under pressure; may explode if heated.

Precautionary statements

- Storage : P403 - Store in a well-ventilated place

2.3. Other hazards



: Asphyxiant in high concentrations

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
Carbon dioxide	(CAS No) 124-38-9 (EC no) 204-696-9 (EC index no) (REACH-no) *1	0 - 22	Press. Gas (Liq.), H280
Nitric oxide	(CAS No) 10102-43-9 (EC no) 233-271-0 (EC index no) (REACH-no) *2	0 - 0.02	Ox. Gas 1, H270 Press. Gas (Comp.), H280 Acute Tox. 1 (Inhalation:gas), H330 Skin Corr. 1B, H314 Eye Dam. 1, H318
Sulphur dioxide	(CAS No) 7446-09-5 (EC no) 231-195-2 (EC index no) 016-011-00-9 (REACH-no) 01-2119485028-34	0 - 0.02	Press. Gas (Liq.), H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318
Carbon monoxide	(CAS No) 630-08-0 (EC no) 211-128-3 (EC index no) 006-001-00-2 (REACH-no) 01-2119480165-39	0 - 0.02	Flam. Gas 1, H220 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360D STOT RE 1, H372

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 : Adverse effects not expected from this product
- Eye contact : Adverse effects not expected from this product
- Ingestion : Ingestion is not considered a potential route of exposure

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

- : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation
Refer to section 11

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

- : None

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 : None that are more toxic than the product itself

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 : Use self-contained breathing apparatus
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters

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
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe
Ensure adequate air ventilation
Act in accordance with local emergency plan
Stay upwind

6.2. Environmental precautions

: Try to stop release

6.3. Methods and material for containment and cleaning up

: Ventilate area

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
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

Carbon monoxide (630-08-0)		
OEL : Occupational Exposure Limits		
United Kingdom	WEL - LTEL - UK [mg/m ³]	35 mg/m ³
	WEL - LTEL - UK [ppm]	30 ppm
	WEL - STEL - UK [mg/m ³]	232 mg/m ³
	WEL - STEL - UK [ppm]	200 ppm
Carbon dioxide (124-38-9)		
OEL : Occupational Exposure Limits		
United Kingdom	WEL - LTEL - UK [mg/m ³]	9150 mg/m ³
	WEL - LTEL - UK [ppm]	5000 ppm
	WEL - STEL - UK [mg/m ³]	27400 mg/m ³
	WEL - STEL - UK [ppm]	15000 ppm
Sulphur dioxide (7446-09-5)		
DNEL: Derived no effect level (Workers)		
Acute - local effects, inhalation		2.7 mg/m ³
Long-term - local effects, inhalation		1.3 mg/m ³
Carbon monoxide (630-08-0)		
DNEL: Derived no effect level (Workers)		
Acute - local effects, inhalation		100 ppm
Acute - systemic effects, inhalation		100 ppm
Long-term - local effects, inhalation		20 ppm
Long-term - systemic effects, inhalation		20 ppm

**Sulphur dioxide (7446-09-5)****Carbon monoxide (630-08-0)****8.2. Exposure controls****8.2.1. Appropriate engineering controls**

- : Provide adequate general and local exhaust ventilation
- Systems under pressure should be regularly checked for leakages
- Ensure exposure is below occupational exposure limits (where available)
- Oxygen detectors should be used when asphyxiating 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

• Skin protection

- Hand protection

- : Wear working gloves when handling gas containers
- Standard EN 388 - Protective gloves against mechanical risk

- Other

- : Wear safety shoes while handling containers
- Standard EN ISO 20345 - Personal protective equipment - Safety footwear

• Respiratory protection

- : Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres
- Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask

• 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):
Brownish gas. 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):
Pungent.

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

: Moisture

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

Nitric oxide (10102-43-9)	
LC50 inhalation rat (ppm)	57.5 ppm/4h
Sulphur dioxide (7446-09-5)	
LC50 inhalation rat (ppm)	1260 ppm/4h
Carbon monoxide (630-08-0)	
LC50 inhalation rat (ppm)	3760 ppm/1h (P200) 1300 ppm/4h

Skin corrosion/irritation	: No known effects from this product
Serious eye damage/irritation	: No known effects from this product
Respiratory or skin sensitisation	: No known effects from this product
Germ cell mutagenicity	: No known effects from this product
Carcinogenicity	: No known effects from this product
Toxic for reproduction : Fertility	: No known effects from this product
Toxic for reproduction : unborn child	: No known effects from this product
STOT-single exposure	: No known effects from this product



STOT-repeated exposure : No known effects from this product
Aspiration hazard : 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

Effect on ozone layer : None

Effect on the global warming : Contains greenhouse gas(es) not covered by Regulation (EC) 842/2006.

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

Contact supplier if guidance is required
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 05: Gases in pressure containers other than those mentioned in 16 05 04

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, Carbon dioxide)

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

Transport by sea (IMDG) : COMPRESSED GAS, N.O.S. (Nitrogen, Carbon dioxide)

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.



0-190ppm NO, 0-190ppm
SO₂, 0-190ppm CO, 0-
20.0% CO₂ in NITROGEN

SDS Ref.: AL142

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 : Receptacle under pressure.

Full text of H-statements

Acute Tox. 1 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 1
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Flam. Gas 1	Flammable gases, Category 1
Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Repr. 1A	Reproductive toxicity, Category 1A
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
H220	Extremely 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
H318	Causes serious eye damage
H330	Fatal if inhaled
H331	Toxic if inhaled
H360D	May damage the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
R12	Extremely flammable
R23	Toxic by inhalation
R26	Very toxic by inhalation
R34	Causes burns
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation
R61	May cause harm to the unborn child
R8	Contact with combustible material may cause fire
C	Corrosive
F+	Extremely flammable
O	Oxidising
T	Toxic



AIR LIQUIDE

0-190ppm NO, 0-190ppm
SO₂, 0-190ppm CO, 0-
20.0% CO₂ in NITROGEN

SDS Ref.: AL142

T+

Very toxic

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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