Safety Data Sheet
ARGON based Compressed Gas Mixture, including ARCAL (Chrome, Speed and Force) and ALIGAL 63

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SDS reference: AL615

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

1.1. Product identifier
SDS no : AL615

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
ALAEqueries@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 : 

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
Air Liquide Australia Limited
Level 9 / 380 St. Kilda Road
3004 Melbourne VIC Australia
+61 3 9697 9888

EN (English)  SDS Ref.: AL615
ARGON based Compressed Gas Mixture, including ARCAL (Chrome, Speed and Force) and ALIGAL 63

SIDS Ref.: AL615

SECTION 3: Composition/information on ingredients

3.1. Substance : Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to WHS Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td>(CAS No) 124-38-9 (EC no) 204-696-9 (EC index no) (REACH no) *1</td>
<td>&lt;= 100</td>
<td>Press. Gas (Liq.), H280</td>
</tr>
<tr>
<td>Helium</td>
<td>(CAS No) 7440-59-7 (EC no) 231-168-5 (EC index no) (REACH no) *1</td>
<td>&lt;= 100</td>
<td>Press. Gas (Comp.), H280</td>
</tr>
<tr>
<td>Argon</td>
<td>(CAS No) 7440-37-1 (EC no) 231-147-0 (EC index no) (REACH no) *1</td>
<td>Balance</td>
<td>Press. Gas (Comp.), H280</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>(CAS No) 7727-37-9 (EC no) 231-783-9 (EC index no) (REACH no) *1</td>
<td>&lt;= 100</td>
<td>Press. Gas (Comp.), H280</td>
</tr>
<tr>
<td>Oxygen</td>
<td>(CAS No) 7782-44-7 (EC no) 231-959-9 (EC index no) 008-001-00-8 (REACH no) *1</td>
<td>&lt;= 23.5</td>
<td>Ox. Gas 1, H270 Press. Gas (Comp.), H280</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>(CAS No) 1333-74-0 (EC no) 215-605-7 (EC index no) 001-001-00-9 (REACH no) *1</td>
<td>&lt;= 2.93</td>
<td>Flam. Gas 1, H220 Press. Gas (Comp.), H280</td>
</tr>
</tbody>
</table>

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 : Adverse effects not expected from this product
  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 : For liquid spillage - flush 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

: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation
  No effect on living tissue
  Refer to section 11

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

: None

SECTION 5: Firefighting measures
ARGON based Compressed Gas Mixture, including ARCAL (Chrome, Speed and Force) and ALIGAL 63

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

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
- Prevent from entering sewers, basements and workshops, or any place where its accumulation can be dangerous
- Act in accordance with local emergency plan
- Stay upwind

6.2. **Environmental precautions**
- None
- Try to stop release

6.3. **Methods and material for containment and cleaning up**
- None
- 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.
- Protect eyes, face and skin from liquid splashes.
- 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

<table>
<thead>
<tr>
<th>Carbon dioxide (124-38-9)</th>
<th>OEL</th>
<th>Occupational Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WEL - LTEL - UK (mg/m³)</td>
<td>9150 mg/m³</td>
</tr>
<tr>
<td></td>
<td>WEL - LTEL - UK (ppm)</td>
<td>5000 ppm</td>
</tr>
<tr>
<td></td>
<td>WEL - STEL - UK (mg/m³)</td>
<td>27400 mg/m³</td>
</tr>
<tr>
<td></td>
<td>WEL - STEL - UK (ppm)</td>
<td>15000 ppm</td>
</tr>
</tbody>
</table>

DNEL (Derived-No Effect Level): No data available.
PNEC (Predicted No-Effect Concentration): No data available.

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
    - Wear goggles and a face shield when transferring or breaking transfer connections
    - 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
    - Wear cold insulating gloves when transferring or breaking transfer connections
    - Standard EN 511 - Cold insulating gloves

8.2.3. Environmental exposure controls

- None necessary.

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: Odourless.
- 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]: No reliable data available.
- Vapour pressure [50°C]: No reliable data available.
- Relative density, gas (air=1): Heavier than air.
- Solubility in water: No data available
- Partition coefficient n-octanol/water [log Kow]: Not applicable for gas-mixtures.
ARGON based Compressed 
Gas Mixture, including 
ARCAL (Chrome, Speed 
and Force) and ALIGAL 63 

Auto-ignition temperature : Non flammable.
Viscosity [20°C] : Not applicable.
Explosive Properties : Not applicable
Oxidising Properties : Not applicable

9.2. Other information
Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level

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
: None

10.4. Conditions to avoid
: None

10.5. Incompatible materials
: None

10.6. Hazardous decomposition products
: None

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity : No toxicological effects from this product
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 : No ecological damage caused by this product.

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


SECTION 13: Disposal considerations

13.1. **Waste treatment methods**

Contact supplier if guidance is required

May be vented 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 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. (Argon, Helium)

Transport by air (ICAO-TI / IATA-DGR): Compressed gas, n.o.s. (Argon, Helium)

Transport by sea (IMDG): COMPRESSED GAS, N.O.S. (Argon, Helium)

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

Labelling:

![2.2: Non-flammable, non-toxic gases](image)

2.2: Non-flammable, non-toxic gases

Transport by road/rail (ADG)

Class: 2

Hazard code: 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


Training advice

Receptacle under pressure.

Full text of H-statements

<table>
<thead>
<tr>
<th>Flammable gases, Category 1</th>
<th>Oxidising Gases, Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable gases, Category 1</td>
<td>Oxidising gases, Category 1</td>
</tr>
<tr>
<td>Gases under pressure: Compressed gas</td>
<td>Gases under pressure: Liquefied gas</td>
</tr>
<tr>
<td>May cause or intensify fire; oxidizer</td>
<td>May cause or intensify fire; oxidizer</td>
</tr>
<tr>
<td>Contains gas under pressure; may explode if heated</td>
<td>Contains gas under pressure; may explode if heated</td>
</tr>
<tr>
<td>Contact with combustible material may cause fire</td>
<td>Contact with combustible material may cause fire</td>
</tr>
<tr>
<td>Oxidising</td>
<td>Oxidising</td>
</tr>
</tbody>
</table>

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.