



ARCAL FORCE

1050004



2.2 : Non flammable, non toxic gas.

Warning**SECTION 1. Identification of the substance/mixture and of the company/undertaking****Product identifier**

Trade name : ARCAL FORCE
 SDS Nr : 1050004

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use. Contact supplier for more uses information

Details of the supplier of the safety data sheet

Company identification : AIR LIQUIDE (PTY) LTD
 Crn Vereeniging Road & Andre Marais Street
 Alrode, Alberton
 Gauteng SOUTH AFRICA
 Tel. : (011) 389 7000

E-Mail address (competent person) : sales@airliquide.co.za

Emergency telephone number

Emergency telephone number : (011) 389 7000

SECTION 2. Hazards identification**Classification of the substance or mixture****Hazard Class and Category Code Regulation EC 1272/2008 (CLP)**

• Physical hazards : Gases under pressure - Compressed gas - Warning - (CLP : Press. Gas) - H280

Classification EC 67/548 or EC 1999/45

: Not classified as dangerous substance/mixture.

Label elements**Labelling Regulation EC 1272/2008 (CLP)**

• Hazard pictograms



• Hazard pictograms code : 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.

ARCAL FORCE**1050004****SECTION 2. Hazards identification (continued)****Other hazards**

: Asphyxiant in high concentrations.

SECTION 3. Composition/information on ingredients**Substance / 3.2. Mixture****Mixture.**

Substance name	Contents	CAS No	EC No	Index No	Registration no	Classification
Carbon dioxide	: 18 %	124-38-9	204-696-9	-----	* 1	Not classified (DSD/DPD) Liq. Gas (H280)
Argon	: 82 %	7440-37-1	231-147-0	-----	* 1	Not classified (DSD/DPD) Press. Gas (H280)

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

Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16

SECTION 4. First aid measures**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.

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

: None.

SECTION 5. Fire-fighting measures**Extinguishing media**

- Suitable extinguishing media : All known extinguishants can be used.

Special hazards arising from the substance or mixture

- Specific hazards : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : None.

Advice for fire-fighters

- Specific methods : Coordinate fire measure to the surrounding fire. Cool endangered containers with water spray jet from a protected position. Do not empty contaminated fire water into drains.
If possible, stop flow of product.
- Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.

ARCAL FORCE**1050004****SECTION 6. Accidental release measures****Personal precautions, protective equipment and emergency procedures**

- : Evacuate area.
- Try to stop release.
- Ensure adequate air ventilation.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- Monitor concentration of released product.

Environmental precautions

- : Try to stop release.

Methods and material for containment and cleaning up

- : Ventilate area.

Reference to other sections

- : See also sections 8 and 13.

SECTION 7. Handling and storage**Precautions for safe handling****Safe use of the product**

- : Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
- Only experienced and properly instructed persons should handle gases under pressure. The product must be handled in accordance with good industrial hygiene and safety procedures.
- Do not smoke while handling product.
- Ensure the complete gas system was (or is regularly) checked for leaks before use.

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.

Conditions for safe storage, including any incompatibilities

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

Specific end use(s)

- : None.



ARCAL FORCE

1050004

SECTION 8. Exposure controls/personal protection**Control parameters****Occupational Exposure Limits**

Carbon dioxide : ILV (EU) - 8 H - [mg/m³] : 9000
: ILV (EU) - 8 H - [ppm] : 5000
: TLV[©] -TWA [ppm] : 5000
: TLV[©] -STEL [ppm] : 30000

DNEL: Derived no effect level : None available.

PNEC: Predicted no effect concentration : None available.

Exposure controls

Appropriate engineering controls : Oxygen detectors should be used when asphyxiating gases may be released.
Provide adequate general and local exhaust ventilation.
Ensure exposure is below occupational exposure limits (where available).
Systems under pressure should be regularly checked for leakages.
Consider work permit system e.g. for maintenance activities.

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.
Wear safety glasses with side shields
Wear leather safety gloves and safety shoes when handling cylinders.

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**Information on basic physical and chemical properties****Appearance**

- Physical state at 20°C / 101.3kPa : Gas.
- Colour : Colourless.
Odour : Odourless.
Odour threshold : Odour threshold is subjective and inadequate to warn for overexposure.
pH value : Not applicable for gas-mixtures.
Molar mass [g/mol] : Not applicable for gases and gas-mixtures.
Melting point [°C] : Not applicable for gas-mixtures.
Boiling point [°C] : Not applicable for gas-mixtures.
Flash point [°C] : Not applicable for gas-mixtures.
Evaporation rate (ether=1) : Not applicable for gas-mixtures.
Flammability range [vol% in air] : Not applicable for gas-mixtures.
Vapour pressure [20°C] : Not applicable.
Relative density, gas (air=1) : Heavier than air.
Solubility in water [mg/l] : No reliable data available.
Partition coefficient n-octanol/water : Not applicable for gas-mixtures.
Viscosity at 20°C [mPa.s] : Not applicable.
Explosive Properties : Not applicable.

Other information

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



ARCAL FORCE

1050004

SECTION 10. Stability and reactivity**Reactivity**

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

Chemical stability

: Stable under normal conditions.

Possibility of hazardous reactions

: None.

Conditions to avoid

: Avoid moisture in installation systems.

Incompatible materials

: Reacts with water to form corrosive acids.

Hazardous decomposition products

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

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

Acute toxicity	: No known toxicological effects from this product.
Rat inhalation LC50 [ppm/4h]	: No data available.
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.
Carcinogenicity	: No known effects from this product.
Germ cell mutagenicity	: 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**Toxicity**

: No data available.

Persistence - degradability

: No data available.

Bioaccumulative potential

: No data available.

Mobility in soil

: No data available.

Results of PBT and vPvB assessment

: No data available.

Other adverse effects

Effect on ozone layer	: None.
Effect on the global warming	: Contains greenhouse gas(es) not covered by 842/2006/EC

ARCAL FORCE

1050004

SECTION 12. Ecological information (continued)

SECTION 13. Disposal considerations

Waste treatment methods

: Ensure that the emission levels from local regulations or operating permits are not exceeded.

Do not discharge into any place where its accumulation could be dangerous.
 Refer to the code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods
 Contact supplier if guidance is required.

Additional information

: None.

SECTION 14. Transport information

UN number : 1956
 Labelling ADR, IMDG, IATA



: 2.2 : Non flammable, non toxic gas.

Land transport (ADR/RID)

H.I. nr : 20
 UN proper shipping name : COMPRESSED GAS, N.O.S. (Argon, Carbon dioxide)
 Transport hazard class(es) : 2
 Classification code : 1 A
 Packing Instruction(s) : P200
 Tunnel Restriction : E : Passage forbidden through tunnels of category E.

Sea transport (IMDG)

Proper shipping name : COMPRESSED GAS, N.O.S. (Argon, Carbon dioxide)
 Class : 2.2
 Packing group : P200
 Emergency Schedule (EmS) - Fire : F-C
 Emergency Schedule (EmS) - Spillage : S-V
 Packing instruction : P200

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : COMPRESSED GAS, N.O.S. (Argon, Carbon dioxide)
 Class : 2.2
 Passenger and Cargo Aircraft : Allowed.
 Packing instruction - Passenger and Cargo Aircraft : 200
 Cargo Aircraft only : Allowed.
 Packing instruction - Cargo Aircraft only : 200

Special precautions for user

: 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.



ARCAL FORCE

1050004

SECTION 14. Transport information (continued)

- 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.

SECTION 15. Regulatory information**Safety, health and environmental regulations/legislation specific for the substance or mixture****EU legislation**

Seveso directive 96/82/EC : Not covered.

National legislation

: Ensure all national/local regulations are observed.

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.
- List of full text of H-statements in section 3.** : H280 - Contains gas under pressure; may explode if heated.
- Further information** : Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD.
This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
- 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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