

MATERIAL SAFETY DATA SHEET (MSDS)
SHIELDING GASES – (ARGOSHIELD, FLEXSHIELD, ARCAL SPEED)
Please ensure that this MSDS is received by an appropriate person

DATE: March 2023
Ref. No.: MS086

Version 1

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name Shielding Gases
Chemical Formula Ar + CO₂
Trade Names Argoshield,
Flexshield,
Arcal Speed
Colour coding Argoshield – Dark Blue
Stainshield – Dark Blue + Green shoulder
Arcal Speed – Dark Blue
Flexshield – Dark Green + Grey body
Valve Brass 5/8 inch right hand BSP female
valve. / valve as per customer
requirements/ standard
Company Identification Les Gaz Industriels Ltd
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2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name Argon
Chemical Family Inert Rare Gas
CAS No. 7440-37-1
UN No. 1006
ERG No. 121
Hazard Warning 2 C Non-flammable gas

Chemical Name Carbon Dioxide
Chemical Family Carbon Anhydride
Synonyms Carbonic Acid Gas
CAS No. 124-38-9
UN No. 1013
ERG No. 120
Hazard Warning 2 C Non-flammable Gas

3 HAZARDS IDENTIFICATION

Main Hazards

All cylinders are portable gas containers and must be regarded as pressure vessels at all times. Shielding Gas does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in air below the levels necessary to support life.

Adverse Health Effects

Inhalation of Shielding Gas in excessive concentrations can result in dizziness, nausea, vomiting, loss of consciousness and death.

Chemical Hazards

The argon is extremely inert and forms no known chemical compounds and the carbon dioxide is relatively non-reactive and non-toxic. In the presence of moisture, carbon dioxide can aggressively bring about corrosion in a variety of steel materials.

Biological Hazards

No known effects

Vapour Inhalation

As shielding gas acts as a simple asphyxiant death may result from errors in judgement, confusion, or loss of consciousness, which prevents self-rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning.

Label Elements

Hazard Pictograms



Precautionary Statements

H280: Contains gas under pressure, may explode if heated.
P403: Store in a well-ventilated place
P280: Wear protective gloves/eye protection/face protection.

4 FIRST AID MEASURES

Eye/Skin Contact No known effect
Ingestion Ingestion is not considered a potential route of exposure.
Inhalation Victim may not be aware of asphyxiation. Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Seek medical attention. Apply artificial respiration if breathing stopped. Low concentrations of Argon will not cause irritation.

5 FIRE FIGHTING MEASURES

Extinguishing Media

Material will not burn. In case of fire in the surroundings: use an appropriate extinguishing agent.

Specific Hazard

Asphyxiant in high concentrations.

Emergency Actions

If possible, shut off the source of excess shielding gas. Evacuate area. All cylinders should be removed from the vicinity of the fire. Cylinders that cannot be removed should be cooled with water from a safe distance to prevent build-up of excessive pressure. Cylinders that have been exposed to excessive heat should be clearly identified and returned to supplier. CONTACT LES GAZ INDUSTRIELS LTD.

Protective Clothing

Self-contained breathing apparatus.

Safety gloves, goggles and shoes, or boots, should be worn when handling cylinders.

Environmental Precautions

The shielding gas is heavier than air and could accumulate in low-lying areas. Care should be taken when entering a potentially oxygen-deficient environment. If possible, ventilate the affected area.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions

Do not enter any area where shielding gas has been spilled unless tests have shown that it is safe to do so.

Environmental Precautions

Shielding gas does not pose a hazard to the environment.

Small Spills

Shut off the source of escaping shielding gas. Ventilate the area.

Large Spills

Evacuate the area. Shut off the source of the spill if this can be done without risk. Restrict access to the area until completion of the clean-up procedure. Ventilate the area using force-draught if necessary.

7 HANDLING AND STORAGE

Do not allow cylinders to slide or come into contact with sharp edges. Shielding gas cylinders may be stacked horizontally provided that they are firmly secured at each end to prevent rolling. Use a "first in - first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Keep out of reach of children.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Hazards

As shielding gas is a simple asphyxiant, avoid any areas where spillage has taken place. Only enter once testing has proved the atmosphere to be safe.

Engineering Control Measures

Engineering control measures are preferred to reduce exposure to oxygen-depleted atmospheres. General methods include forced-draught ventilation, separate from other exhaust ventilation systems. Ensure that sufficient fresh air enters at, or near, floor level.

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Personal Protection

Self-contained breathing apparatus should always be worn when entering area where oxygen depletion may have occurred. Safety goggles, gloves and shoes or boots should be worn when handling cylinders.

Skin

No known effect.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Argon

| | |
|--------------------------------|--------------|
| Chemical Symbol | Ar |
| Molecular Weight | 39.948 g/mol |
| Specific Volume @ 20°C & 1 atm | 603.7 ml/g |
| Colour | None |
| Taste | None |
| Odour | None |

Carbon Dioxide

| | |
|----------------------------------------|-------------------------|
| Chemical Symbol | CO ₂ |
| Molecular Weight | 44.01 |
| Specific volume @ 20°C & 101,325 kPa | 547 ml/g |
| Density gas @ 101,325 kPa & 20°C | 1.839 kg/m ³ |
| Relative density (Air=1) @ 101,325 kPa | 1,522 |
| Colour | None |
| Taste | Acidic |
| Odour | None |

10 STABILITY AND REACTIVITY

Conditions to avoid

The dilution of the oxygen concentration in the atmosphere to levels which cannot support life. Never use cylinders as rollers or supports, or for any other purpose than the storing of shielding gas. Never expose cylinders to excessive heat, as this may cause sufficient build-up of pressure to rupture the cylinders.

Incompatible Materials

None, provided the system has been designed to safely withstand the pressures involved.

Hazardous Decomposition Products

None

11 TOXICOLOGICAL INFORMATION

| | |
|----------------------|------------------------------------------------------------------|
| Acute Toxicity | Non-toxic |
| Skin & eye contact | No adverse effect |
| Chronic Toxicity | Based on available data, the classification criteria are not met |
| Carcinogenicity | Based on available data, the classification criteria are not met |
| Mutagenicity | Based on available data, the classification criteria are not met |
| Reproductive Hazards | Based on available data, the classification criteria are not met |

(For further information see Section 3. Adverse Health effects)

12 ECOLOGICAL INFORMATION

Shielding gas is heavier than air and can cause pockets of oxygen-depleted atmosphere in low-lying areas. It does not pose a hazard to the ecology.

13 DISPOSAL CONSIDERATIONS

Disposal Methods

Small amounts may be blown to the atmosphere under controlled conditions. Large amounts should only be handled by gas supplier.

Disposal of Packaging

The disposal of cylinders must only be handled by the gas supplier.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

| | |
|-----------------|---------------------------------|
| UN No | 1956 |
| Class | 2.2 |
| Danger Group | Non- flammable, non-toxic gases |
| Subsidiary Risk | Asphyxiant |
| ERG No | 121 |
| Hazchem warning | 2C Non-flammable gas |

SEA TRANSPORTATION

| | |
|-------|-------------------|
| IMDG | 1956 |
| Class | 2.2 |
| Label | Non-Flammable Gas |

AIR TRANSPORTATION

| | |
|--------------------------|-------------------|
| ICAO/IATA Code | 1956 |
| Class | 2.2 |
| Danger Group | Non-Flammable Gas |
| Packaging instructions | |
| - Cargo | 200 |
| - Passenger | 200 |
| Maximum quantity allowed | |
| - Cargo | 150kg |
| - Passenger | 75kg |

15 REGULATORY INFORMATION

EEC Hazard class Non-flammable

| Risk Phrase | Description | Safety Phrase | Description |
|-------------|-----------------------------------------------|---------------|-------------------------------------------|
| R44 | Risk of explosion if heated under confinement | S2 | Keep out of reach of Children |
| | | S9 | Keep container in a well-Ventilated place |
| | | S15 | Keep away from heat |
| | | S37 | Wear suitable gloves |
| | | S39 | Wear eye/face protection |

National legislation None
Refer to SABS 0265 for explanation of the above.

16 OTHER INFORMATION

Bibliography

Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases – 3rd Edition Matheson
Matheson Gas Data Book – 6th Edition
SABS 0265 - Labelling of Dangerous Substances

17 EXCLUSION OF LIABILITY

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