

SHIELDING GASES Ar/CO₂/O₂

(Please ensure that this MSDS is received by the appropriate person)

DATE: January 2018

Version 3

Ref. No.: MS090

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name	Shielding Gases
Chemical Formula	CO ₂ plus O ₂ plus Ar
Trade Names	Argoshield 5 Argoshield Light Argoshield Universal Argoshield Heavy Portashield 1.8 kg
Colour coding	Argoshield 5, Portashield 1.8kg - Silver body with the relevant stencilling on the body. Argoshield Light, Argoshield Universal and Argoshield Heavy – Metallic blue body with metallic blue valve guard.
Valves	3SO-Brass ½ inch BSP right-hand female valve.
Company Identification	AFROX Malawi Limited Johnstone Road Ginnery Corner Blantyre Tel No: +265(1) 871 611 Fax No: +265(1) 871 260
EMERGENCY NUMBER	+265(1) 871 611 (24 Hours)

2 HAZARDS IDENTIFICATION

Main Hazards

All cylinders are portable gas containers, and must be regarded as pressure vessels at all times. The above listed Shielding gases mixture does not support life. It can act as asphyxiants by diluting the concentration of Oxygen in the air to below levels necessary to support life.

Adverse Health effects

The Carbon Dioxide component of this Shielding gas can act as a stimulant and a depression on the central nervous system. Increases in heart rate and blood pressure have been noted at a concentration of 7.6 percent, and dyspnea (laboured breathing), headache, dizziness and sweating occur if exposure at that level is prolonged.

Chemical hazards

Although this Shielding gas contains both Carbon Dioxide and Oxygen, it is relatively inert and non-toxic.

Biological Hazards

These are linked to Carbon Dioxide component where the greatest physiological effect is to stimulate the respiratory centre, thereby controlling the volume and rate of respiration. It is able to cause dilation and constriction of blood vessels and is a vital constituent of the acid-base mechanism that controls the pH of the blood.

Vapour inhalation

This Shielding gas mixture can act as a simple asphyxiant. At concentrations of approximately 3% Carbon Dioxide, impairment of performance has been noted during prolonged exposure, even when the Oxygen concentration of the air was 21%.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Names	Carbon Dioxide plus Oxygen plus Argon
UN No	1956
ERG No	121
Hazchem Warning	2 C Non-flammable gas

4 FIRST AID MEASURES

Eye contact	No known effect.
Skin contact	No known effect.
Ingestion	(See Section 3 above)

Prompt medical attention is mandatory in all cases of the overexposure to this Shielding gas. Rescue personnel should be equipped with self-contained breathing apparatus. Relatively low concentrations of Carbon Dioxide may cause headache, sweating,

rapid breathing, increased heartbeat, mental depression, dizziness, shortness of breath, visual disturbances and shaking. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area, and given mouth-to-mouth resuscitation and supplemental Oxygen.

5 FIRE FIGHTING MEASURES

Extinguishing Media

This Shielding gas will not support combustion, and could help with the extinguishing by reducing the Oxygen content of the air by dilution to below the level to support combustion.

Specific Hazards

This Shielding gas will not support life, and can act as a simple asphyxiant by diluting the concentration of Oxygen in the air to below levels to support life.

Emergency Actions

If possible, shut off 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 the build-up of excessive pressure. Cylinders which have been exposed to excessive heat should be clearly identified and returned to the supplier. CONTACT THE NEAREST AFROX BRANCH.

Protective Clothing

Self-contained breathing apparatus, Safety gloves and safety shoes, or boots, should be worn when handling cylinders.

Environmental Precautions

This 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 affected area.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Don't enter any area where Shielding gas has been spilled unless tests have shown that it is safe to do so.

Environmental Precautions

This 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 forced 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 the "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 this Shielding gas is a simple asphyxiant, avoid 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.

Personal Protection

Self-contained breathing apparatus should always be worn when entering an area where Oxygen depletion may have occurred. Safety

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

Skin

No known effect.

9 PHYSICAL AND CHEMICAL PROPERTIES

Argon

Chemical Symbol	Ar
Molecular Weight	39,948
Specific volume @ 20°C & 101,325 kPa	603,7 ml/g
Relative density of gas @ 101,325 kPa (Air=1)	1,380
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
Relative density of gas @ 101,325 kPa (Air=1)	1,53
Colour	None
Taste	None
Odour	None

Oxygen

Chemical Symbol	O ₂
Molecular Weight	32,00
Specific volume @ 20°C & 101,325 kPa	755 ml/g
Relative density of gas @ 101,325 kPa (Air=1)	1,053
Colour	None
Taste	None
Odour	None

10 STABILITY AND REACTIVITY

Conditions to avoid

The dilution of 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 the cylinders to excessive heat, as this may cause sufficient build-up of pressure to rupture the cylinders.

Incompatible Materials

As dry Shielding gas is inert it may be contained in systems constructed of any of the common metals which have been designed to safely withstand the pressures involved.

Hazardous Decomposition Products

None

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	No known effect
Skin & eye contact	No known effect
Chronic Toxicity	No known effect
Carcinogenicity	No known effect
Mutagenicity	No known effect
Reproductive Hazards	No known effect

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

12 ECOLOGICAL INFORMATION

The Shielding gases are heavier than air and can cause pockets of Oxygen-depleted atmosphere in low-lying areas. They do 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 containers must only be handled by the gas supplier.

14 TRANSPORT INFORMATION



ROAD TRANSPORTATION

UN No.	1956
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
Packaging instructions	
- Cargo	200
- Passenger	200
Maximum quantity allowed	
- Cargo	150 kg
- Passenger	75 Kg

15 REGULATORY INFORMATION

EEC Hazard class Non-flammable
National legislation OHSact and Regulations 85 of 1993.
Reference SANS 10234 and its supplement.

16 OTHER INFORMATION

Bibliography

Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases - 3rd Edition
Matheson. Matheson Gas Data Book - 6th Edition