1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Argon 16/3
GHS Product Identifier	Argon / Carbon Dioxide / Oxygen mixture
Chemical Name	Compressed mixture of Argon (Remainder), Carbon Dioxide (16 %) and Oxygen (3 %)
Synonyms	Ar/CO_2/O_2 mix, Argon 16 welding gas, tri-mix shielding gas
Recommended Use	Shielding gas for MIG/MAG welding of mild and low-alloy steels.
Uses Advised Against	Any use inconsistent with this SDS or supplier instruction.

Details of the supplier

Supplier Name	Puregas Aust Pty Ltd
Address	15-17 Distribution Drive, Mickleham VIC 3064, Australia
Telephone	1300 733 097
Email / Web	sales@puregas.com.au

Emergency telephone number(s)

24 hr Emergency	1300 733 097 (24 hours)
Fire / Ambulance / Police	000 (within Australia)
Poisons Information Centre	13 11 26 (Australia)

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA.

CLASSIFIED AS DANGEROUS GOODS BY THE CRITERIA OF THE ADG CODE.

Physical Hazards	Gases Under Pressure: Compressed Gas
Health Hazards	Not classified as a Health Hazard (simple asphyxiant in confined spaces).
Environmental Hazards	Not classified as an Environmental Hazard.
Signal Word	WARNING

Pictogram: GHS04 — Gas Cylinder (gas under pressure)

Hazard statements

H280	Contains gas under pressure; may explode if heated.

Precautionary statements

Prevention	None allocated.
Response	None allocated.
Storage — P410+P403	Protect from sunlight. Store in a well-ventilated place.
Disposal	Return cylinders to supplier — see Section 13.

Other hazards

Asphyxiant — effects are proportional to oxygen displacement. Even though the mixture contains 3 % oxygen, a release in a confined space rapidly reduces breathable oxygen below safe levels. Elevated CO_2 may also cause headache, increased

respiration rate and disorientation before asphyxiation.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS Number	EC Number	Content
Argon	7440-37-1	231-147-0	Remainder (~81 %)
Carbon Dioxide	124-38-9	204-363-9	16 %
Oxygen	7782-44-7	231-956-9	3 %

No additional ingredients are present which, within current supplier knowledge and at the concentrations applicable, are classified as hazardous to health or the environment.

4. FIRST AID MEASURES

Eye contact	Not normally required. Flush with copious water if any particulate or contamination is suspected.
Inhalation	Remove casualty to fresh air, avoiding becoming a casualty yourself. If breathing is difficult or has stopped, apply artificial respiration — preferably with an automated oxygen resuscitator. Rescue from a confined space requires self-contained breathing apparatus (SCBA) or air-line respirator — never enter without monitoring atmosphere first.
Skin contact	Not normally required. Remove any cylinder-burn or impingement injury per standard first aid.
Ingestion	Not a relevant route of exposure (gas).
First aid facilities	No specific facilities required beyond normal workplace first aid.
Most important symptoms	In high concentrations: headache, dizziness, drowsiness, breathing difficulty and loss of consciousness. Victim may not be aware of asphyxiation. Elevated CO_2 may cause increased respiration before asphyxiation symptoms appear.
Medical attention	Treat symptomatically. No specific antidote.

5. FIRE FIGHTING MEASURES

Extinguishing media	Non-flammable. Use any extinguishing media suitable for the surrounding fire. Cool exposed cylinders with water fog or spray from a protected location.
Unsuitable media	None known.
Special hazards	Cylinders heated in a fire may rupture violently due to thermal pressure rise. Pressure-relief devices may activate. Although the gas itself is non-flammable, the oxygen content can intensify combustion of nearby fuels.
Advice for firefighters	Wear full bunker gear and self-contained breathing apparatus. Cool cylinders with water from a protected location until well after the fire is out. Move cool cylinders out of the path of the fire if it can be done safely. Do not approach cylinders suspected of being hot. Evacuate the area if cooling cannot be maintained.
Hazchem Code	2TE

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Evacuate the area. Ensure adequate ventilation. Do not enter confined or low-lying spaces without atmospheric monitoring — CO_2 and argon are heavier than air and will accumulate. Use PPE as specified in Section 8.
Environmental precautions	Prevent gas from entering sewers, basements, work pits or any confined space where accumulation can be dangerous.

Methods of cleanup	If safe, close the cylinder valve to stop the leak. If the leak is irreparable, carefully move the cylinder to a safe, open, well-ventilated location and allow the gas to dissipate to atmosphere. Do not attempt to repair leaking valves or pressure-relief devices — return the cylinder to Puregas.
Reference to other sections	See Section 8 for exposure controls and PPE; Section 13 for disposal considerations.

7. HANDLING AND STORAGE

Safe handling	Use only with adequate ventilation. Avoid breathing gas. Do not drag, drop, slide or roll cylinders — use a purpose-built cylinder trolley. Always fit the cylinder cap/guard during transport. Use equipment, regulators and hoses rated for the cylinder pressure. Open valves slowly. Close valves after each use and when empty.
Safe storage	Store cylinders upright in a secure, well-ventilated area at temperatures below 65 °C. Floor should be firm, level and constructed of non-combustible material (preferably concrete). Restrain cylinders with chains or similar to prevent toppling. Segregate from incompatible materials, ignition sources, and oxidisers / flammables. Keep clear of heavy traffic areas and emergency exits. Comply with AS 4332.
Specific end uses	Shielding gas for MIG/MAG welding of mild and low-alloy steels.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards (Safe Work Australia)

Ingredient	TWA (ppm)	TWA (mg/m³)	STEL (ppm)	STEL (mg/m³)
Argon	—	—	—	—
Carbon Dioxide	5000	9000	30000	54000
Oxygen	—	—	—	—

Argon and oxygen are not assigned exposure standards. Argon is a simple asphyxiant. Maintain workplace oxygen ≥19.5 % at all times.

Biological limits

No biological limit values established for this product.

Engineering controls

Use only with adequate general or local exhaust ventilation. Where an inhalation risk exists, use mechanical extraction ventilation to maintain CO_2 below 5 000 ppm (TWA) and oxygen above 19.5 % v/v. Monitor confined spaces continuously with calibrated O_2 / CO_2 detection.

Personal protective equipment (PPE)

Eye / Face	Safety glasses with side shields. Welding helmet with appropriate shade for the welding task being performed.
Hands	Leather welding gloves; insulated gloves when handling cold cylinders.
Body	Flame-retardant overalls, leather apron and safety boots appropriate to the welding task.
Respiratory	Not normally required with adequate ventilation. For confined-space work or oxygen-deficient atmospheres, use self-contained breathing apparatus (SCBA) or air-line respirator — filter respirators do not protect against asphyxiation. Use welding fume extraction or a powered-air respirator where welding fume is present.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colourless compressed gas.
Odour	Odourless.
pH	Not applicable.

Melting / Freezing Point	Not applicable.
Boiling Point	Not applicable (compressed mixture).
Flash Point	Not relevant (non-flammable).
Evaporation Rate	Not applicable.
Flammability	Non-flammable.
Lower Explosive Limit	Not relevant.
Upper Explosive Limit	Not relevant.
Vapour Pressure	Cylinder pressure typically ~200 bar at 15 °C (varies with cylinder spec and fill).
Vapour Density	Heavier than air — will pool in confined or low-lying spaces.
Solubility in Water	Slightly soluble.
Partition Coefficient	Not available.
Auto-Ignition Temperature	Not relevant (non-flammable).
Decomposition Temperature	Not available.
Viscosity	Not applicable (gas).
Explosive Properties	Not classified as explosive.
Oxidising Properties	Mixture is not classified as oxidising; however the 3 % oxygen content can intensify combustion of nearby fuels.
Volatiles	100 %

10. STABILITY AND REACTIVITY

Reactivity	No specific reactivity hazards under recommended conditions of use and storage.
Chemical stability	Stable under normal conditions of storage and use.
Hazardous reactions	Polymerisation will not occur.
Conditions to avoid	Heat, direct sunlight and physical damage to the cylinder. Avoid contact with incompatible materials.
Incompatible materials	Moist CO_2 is mildly corrosive — use stainless or other acid-resistant materials for fixed installations. Some plastics and rubbers may be affected by CO_2 over time (embrittlement, plasticiser leaching). Keep separated from incompatible flammables and oxidising agents.
Hazardous decomposition products	None expected under normal conditions of use and storage.

11. TOXICOLOGICAL INFORMATION

Acute toxicity — inhalation	Simple asphyxiant. Low concentrations of CO_2 cause increased respiration and headache. Higher concentrations cause dizziness, drowsiness, breathing difficulty and loss of consciousness. Based on available data, classification criteria for acute toxicity are not met.
Acute toxicity — skin	Not irritating to skin.
Acute toxicity — eye	Not irritating to the eye.
Acute toxicity — oral	Not a relevant route of exposure (gas).
Skin / Respiratory sensitisation	Not classified as a sensitiser.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.

Reproductive toxicity	Not classified as a reproductive toxin.
STOT — single exposure	Asphyxiant. Over-exposure may result in dizziness, drowsiness, weakness, fatigue, breathing difficulties and unconsciousness.
STOT — repeated exposure	Not classified as causing organ damage from repeated exposure.
Aspiration hazard	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Not classified as harmful to aquatic life.
Persistence and degradability	Will dissipate rapidly in air; argon is inert. CO_2 cycles naturally through the carbon cycle.
Bioaccumulative potential	Not expected to bioaccumulate.
Mobility in soil	Volatile — will evaporate from soil and water surfaces.
Other adverse effects	When released to atmosphere the carbon dioxide component contributes to the greenhouse effect. Not classified as an ozone-depleting substance.

13. DISPOSAL CONSIDERATIONS

Waste disposal	Return cylinders to Puregas or an authorised gas reseller for safe discharge and disposal of residual product. Do not dispose of cylinders to general or scrap-metal waste.
Legislation	Disposal of this product and any by-products must comply with Commonwealth, State and local environmental-protection and waste-management legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS DANGEROUS GOODS BY THE CRITERIA OF THE ADG CODE.

	Land (ADG)	Sea (IMDG/IMO)	Air (IATA/ICAO)
UN Number	1956	1956	1956
Proper Shipping Name	COMPRESSED GAS, N.O.S. (contains Argon, CO_2, O_2)	COMPRESSED GAS, N.O.S. (contains Argon, CO_2, O_2)	COMPRESSED GAS, N.O.S. (contains Argon, CO_2, O_2)
Transport Hazard Class	2.2	2.2	2.2
Packing Group	Not allocated	Not allocated	Not allocated
Hazchem / EmS	2TE	F-C, S-V	—

Pictogram: Class 2.2 — Non-Flammable Non-Toxic Gas (transport label)

Special precautions: ensure cylinders are secured upright with valves protected; outlet relief devices must not be obstructed; segregate from flammables and oxidisers; ensure cylinders are separated from the driver. Comply with the Australian Dangerous Goods Code (ADG 7.x) for road and rail transport. Not a Marine Pollutant.

15. REGULATORY INFORMATION

Safe Work Australia	Classified hazardous according to Safe Work Australia criteria (Globally Harmonised System — GHS).
Poisons Schedule (SUSMP)	No poisons schedule number allocated.
Inventory listings	AICS (Australian Inventory of Chemical Substances): all components listed or exempt.

Other Australian legislation	AS 4332 (Storage and handling of gases in cylinders); WHS Regulations; ADG Code; State environmental-protection legislation.

16. OTHER INFORMATION

Additional information	Storage of significant quantities of gas cylinders must comply with AS 4332 and the relevant State / Territory Dangerous Goods legislation. Welding processes generate additional hazards (radiation, noise, fume, ozone) — perform a separate risk assessment.
Application method	Pressure regulator of suitable rating fitted to cylinder, with shielding gas delivered to the welding torch via a flowmeter at the manufacturer-recommended rate.
PPE guidance	PPE recommendations above are a guide only. Final selection should consider method of application, working environment, quantities handled, and the effectiveness of engineering controls.
Health effects from exposure	Effects depend on frequency and duration of use, quantity, control measures, PPE used, and method of application. Assess risks for the specific application and apply appropriate controls.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ADG	Australian Dangerous Goods Code
AICS	Australian Inventory of Chemical Substances
AS 4332	Australian Standard — Storage and handling of gases in cylinders
CAS #	Chemical Abstracts Service registry number
EC No.	European Community Number
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IMDG/IMO	International Maritime Dangerous Goods Code / International Maritime Organisation
SCBA	Self-Contained Breathing Apparatus
STEL	Short-Term Exposure Limit
STOT	Specific Target Organ Toxicity
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TWA	Time-Weighted Average

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End of Safety Data Sheet. The information in this SDS is provided in good faith and is believed to be accurate at the date of issue. No warranty is given as to its completeness or accuracy. The user is responsible for satisfying themselves as to the suitability and completeness of this information for their own particular use.