HAZARDOUS CHEMICALS DANGEROUS GOODS REGISTER

COMPANY NAME JET REFRIGERATION

LOCATION **OFFICE/WAREHOUSE/SITE**

ADDRESS: 5/7 Hepher Rd, Campbelltown, NSW 2560

NOTIFICATIONS **NO**

MANIFEST **NO**

#	CHEMICAL	COMMON NAME	BRAND	QTY	U.N. NO.	HAZARDOUS CHEMICAL	DANGEROUS GOOD	PACKING GROUP	HAZ. CHEM. CODE	POISON SCHEDULE	SDS (ISSUE DATE)	RISK ASSESSMENT AND/OR SWMS
1	*BSE32 OIL*	*OIL*	*BITZER*		N/A	Yes	Yes	*N/A*	*N/A*	*N/A*	*1/01/2020*	*Working with Hazardous Chemicals*
2	1, 2-PROPYLENE GLYCOL; MONOPROPYLENE GLYCOL	PROPYLENE GLYCOL	REDOX		N/A	Yes	Yes	*N/A*	N/A	*N/A*	14/12/2018	*Working with Hazardous Chemicals*
3	ACETYLENE	ACETYLENE	BOC		UN1001	Yes	Yes	*N/A*	2SE	*N/A*	19/08/2021	*Working with Hazardous Chemicals*
4	NITROGEN COMPRESSED	NITROGEN	BOC		UN1066	Yes	Yes	*N/A*	2T	N/A	19/08/2021	*Working with Hazardous Chemicals*
5	OXYGEN COMPRESSED	OXYGEN	BOC		UN1072	Yes	Yes	*N/A*	2S	N/A	19/08/2021	*Working with Hazardous Chemicals*
6	R134A	REFRIGERANT	BOC		UN3159	Yes	Yes	*N/A*	2TE	*N/A*	19/08/2021	*Working with Hazardous Chemicals*
7	R404A	REFRIGERANT	BOC		UN3337	Yes	Yes	*N/A*	2RE	*N/A*	19/08/2021	*Working with Hazardous Chemicals*
8	VACUUM PUMP OIL	OIL	CPS Australia Pty Ltd		N/A	Yes	Yes	*N/A*	N/A	*N/A*	14/09/2021	*Working with Hazardous Chemicals*
9	PROPYLENE GLYCOL BP/USP	PROPYLENE GLYCOL	REDOX		N/A	Yes	Yes	*N/A*	N/A	*N/A*	24/08/2022	*Working with Hazardous Chemicals*

Completed by: Jacob McLean-Pauley Position: WHS Consultant – HR Focus Signature: JMP Date: 10/06/2024

#	Chemical	Common Name	Brand	QTY	U.N. No.	Hazardous Chemical	Dangerous Good	Packing Group	Haz. Chem. Code	Poison Schedule	SDS (issue date)	Risk Assessment and/or SWMS
10												*Working with Hazardous Chemicals*
11												*Working with Hazardous Chemicals*
12												*Working with Hazardous Chemicals*
13												*Working with Hazardous Chemicals*
14												*Working with Hazardous Chemicals*
15												*Working with Hazardous Chemicals*
16												*Working with Hazardous Chemicals*
17												*Working with Hazardous Chemicals*
18												*Working with Hazardous Chemicals*
19												*Working with Hazardous Chemicals*
20												*Working with Hazardous Chemicals*
21												*Working with Hazardous Chemicals*

HAZARDOUS CHEMICALS / DANGEROUS GOODS KEY					
HAZARD PHRASES	**DANGEROUS GOODS CLASSES**			**POISON SCHEDULE**	
VERY TOXIC	CLASS 1	*EXPLOSIVES*		S2	PHARMACY MEDICINE
TOXIC	CLASS 2	*GASES*		S3	PHARMACIST ONLY MEDICINE
HARMFUL	CLASS 3	*FLAMMABLE LIQUIDS*		S4	PRESCRIPTION ONLY MEDICINE OR ANIMAL REMEDY MEDICINE
VERY CORROSIVE	CLASS 4	*FLAMMABLE SOLIDS*		S5	CAUTION (SLIGHTLY TOXIC)
CORROSIVE	CLASS 5	*OXIDISING AGENTS*		S6	POISON (MODERATELY TOXIC)
IRRITANT	CLASS 6	*POISONS*		S7	DANGEROUS POISON (HIGHLY TOXIC)
CARCINOGEN	CLASS 7	*RADIOACTIVE MATERIALS*		S8	CONTROLLED DRUG
MUTAGEN	CLASS 8	*CORROSIVES*			
TERATOGEN	CLASS 9	*MISCELLANEOUS*			

PACKING GROUPS	**D G CLASSES 3, 4, 5, 6.1, 8**	**DG CLASS 6.1**	**D G CLASS 3**
I	GREAT DANGER	TOXIC SUBSTANCES AND PREPARATIONS - VERY SEVERE RISK OF POISONING.	FLASH POINT = N/A INITIAL BOILING POINT= <35^{0}C
II	MEDIUM DANGER	TOXIC SUBSTANCES AND PREPARATIONS - SERIOUS RISK OF POISONING	FLASH POINT = <23 ^{0}C INITIAL BOILING POINT= >35^{0}C
III	MINOR DANGER	HARMFUL SUBSTANCES AND PREPARATIONS - RELATIVELY LOW RISK OF POISONING	FLASH POINT = >23<61 ^{0}C INITIAL BOILING POINT= >35^{0}C

USE THE SAFETY DATA SHEET FOR INDIVIDUAL CHEMICALS TO FIND THE INFORMATION YOU REQUIRED TO COMPLETE THIS REGISTER. DEFINITIONS

U.N. No.: This is the identification number assigned to chemicals, which are dangerous goods, by the United Nations Subcommittee of Experts on the Transport of Dangerous Goods. The U.N Number is a four-digit number. Some chemicals, which are not Dangerous Goods, do not have a U.N. number

Hazardous Chemical Category: If a chemical is classified as a Hazardous Chemical it will have a specific hazard category assigned to it, which describes the type of hazard it presents. If a chemical is classified as Hazardous, you will find the Hazard category listed on the first page of the chemical's Safety Data Sheet.

Dangerous Goods Class: Chemicals, which are classified as Dangerous Goods, are divided into Classes, and sub-classes. These chemicals can be dangerous and can cause serious damage and harm under certain conditions. They are classified according to their common hazardous properties. If a chemical is classified as a Dangerous Good, this will be stated in the SDS, and the DG class will be specified.

Packing Group: As well as a the nine different 'Class' designators indicating the **type of hazard** a dangerous goods presents, a 'Packing Group' is assigned to dangerous goods according to the **degree of hazard** they present. The packing codes assist with determining correct storage and transport of chemicals.

HAZCHEM Code: Hazchem Codes are designed to assist the emergency services in the first few minutes of dealing with a hazardous goods incident.

SAFETY DATA SHEET

Product Name: BSE 32 OIL **Revision Date: January 2020**

Not classified as hazardous according to criteria of WHS and GHS regulations

SECTION 1 PRODUCT/SUBSTANCE AND COMPANY IDENTIFICATION

Product Name: BSE 32 OIL

Product Description: Polyol Ester

Product Code: 1186769 Ester

Intended use: Synthetic refrigeration compressor oil

Company Name: CPI Corporation Pty Ltd

Address: 148 Old Pittwater Road, Brookvale NSW 2100, Australia

Telephone: (02) 9939 9988

Emergency telephone number: For transport emergency call CHEMTREC (+1) 703 527 3887 or within Australia (02) 9037 2994

SECTION 2 HAZARD(S) IDENTIFICATION

GHS classification of substance or mixture, and national or regional information: Not classified

GHS label elements

Hazard Symbol(s): No symbol

Signal Word: Not applicable

Hazard Statements: Not applicable

Precautionary Statements: Not applicable

Other hazards which do not result in GHS classification: None

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Composition: Polyol esters

General Information: The components are not hazardous or below required disclosure limits.

CAS#: Proprietary and not required.

SECTION 4 FIRST AID MEASURES

INHALATION Remove from further exposure and remove the source of contamination. Move the victim to fresh air and ensure airways are clear and use adequate respiratory protection or facemask if there is any breathing difficulty. If oil mist is inhaled, remove to fresh air and seek medical attention. If respiratory irritation, nausea, or unconsciousness occurs, seek immediate medical assistance.

SKIN CONTACT Prolonged exposure may irritate the skin. Remove any contaminated clothing. Wash exposed skin and contact areas with soap and water gently. If product gets under the skin seek immediate medical attention from a physician.

INGESTION Seek medical attention and do not induce vomiting. Immediately wash out mouth with clean water.

EYE CONTACT Wash thoroughly with clean water if contact with the eye occurs. If irritation and soreness develops or persists, seek medical attention.

Advice to Physician Treat symptomatically.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA DO NOT use water jet. Appropriate media includes carbon dioxide, foam, or dry chemical to extinguish flames. Water fog may be used to cool exposed containers.

FIRE FIGHTING TECHNIQUES Burning product or fluid may evolve irritating/noxious fumes. Evacuate area as soon as possible. Firefighters should use protective clothing / equipment and approved self-contained breathing apparatus (SCBA). Smoke, fumes, nitrogen and sulphur oxides, and carbon / inorganic products from incomplete combustion may be present. Water spray may be used to cool fire exposed surfaces and protect personnel.

FLAMMABILITY PROPERTIES

Flash Point (Open Cup): 240^0 C ASTM D 92 (Typical)

Flammability Limits: No data available

Autoignition Temperature: No data available

SECTION 6 ACCIDENTAL RELEASE MEASURES

SPILL MANAGEMENT Wear suitable protective equipment, especially goggles. Stop source of leak or spill if you can do so without risk.

In the case of small spills, use inert absorbent material (eg. sand, sawdust or diatomaceous earth) to soak up the spilled product. Dispose of absorbent material in accordance with state or local regulations. Wash spill area with large amounts of water and detergent.

With larger spills, dike the spill area for containment and recovery if possible. Place inert absorbent material onto the spillage. Prevent spill entering drains, waterways, sewers, rivers, basements etc. If large quantities of this material enter the waterways contact the Environmental Protection Authority.

NOTIFICATION PROCEDURES In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable local, state and national regulations.

SECTION 7 HANDLING AND STORAGE

HANDLING Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin, wash with sufficient amounts of water and soap. Flush eyes with water for 15 minutes and seek medical attention. Wash contaminated clothing or dispose appropriately.

Repeated or prolonged contact with this material should be avoided in order to reduce the possibility of skin disorders. Observe good personal hygiene. Good ventilation is recommended and avoid build up of oil mist in the working area.

Misuse of empty containers can be hazardous. Do not cut, weld, heat or drill containers. Residue in the container may ignite if exposed to heat. Do not expose container to open flame or excess heat. Always keep container closed and caps in place.

STORAGE This product is hydroscopic and storage under dry nitrogen is recommended. Keep container tightly sealed when not in use. Store in a cool, dry, well-ventilated area, out of direct sunlight. Keep away from open flames and other ignition sources. For safe storage refer to Australian Standards AS1940.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS No value assigned for this specific material by the GHS / WHS. However, the threshold limit value (Exposure Standards) for oil mist is listed as 5mg/m

ENGINEERING CONTROLS Use in a well ventilated area. Where vapours or oil mists are generated and exposure standards are exceeded, the use of personal respiratory protection equipment or an adequate exhaust ventilation system is recommended.

RESPIRATORY PROTECTION If engineering controls are still inadequate, the use of an approved respirator with organic vapour / particulate filter complying with AS/NZS 1715 (Selection, Use and Maintenance of Respiratory Protective Devises) and AS/NZS 1716 (Respiratory Protective Devices) is recommended. The selection of type of breathing protection should be based on expert advice. Reference should be made to the relevant Australian Standards.

In the case of high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode.

HAND PROTECTION Protective gloves is normally not required, but impervious gloves such as nitrile, viton or neoprene is recommended if required. Contact the glove manufacturer for specific advice on glove selection. Inspect and replace worn or damaged gloves.

EYE PROTECTION Goggles or safety glasses with side shields are recommended.

BODY AND SKIN PROTECTION No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact. If required, use a chemical resistance apron to avoid contact of material with skin.

PERSONAL HYGIENE MEASURES Always observe good personal hygiene measures. Dispose contaminated clothing and footwear that cannot be cleaned. Always practise good housekeeping.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE Liquid

COLOUR Clear amber to light yellow

BOILING POINT No data available

FREEZING POINT No data available

ODOUR Mild

SOLUBILITY IN WATER Insolub**le**

pH VALUE No data available

SPECIFIC GRAVITY (WATER=1) 0.94-0.96 @ 20^0C

FLASH POINT (Open Cup) 240^0 C ASTM D 92 (Typical)

FLAMMABLE LIMITS LEL / UEL No data available

AUTOIGNITION TEMPERATURE No data available

FLAMMABILITY Combustible Class C2 liquid (AS 1940). Remove all sources of heat and ignition.

VAPOUR PRESSURE No data available

EVAPORATION RATE No data available

VOLATILES (percent by volume) No data available

OXIDIZING PROPERTIES No data available

SECTION 10 STABILITY AND REACTIVITY

STABILITY Stable under normal conditions of storage and handling

HAZARDOUS POLYMERIZATION Will not occur

MATERIALS TO AVOID Do not expose to excessive heat, ignition sources or oxidizing materials

CONDITIONS TO AVOID Excessive heat or sources of ignition

EXPLOSIVE DATA Material does not have explosive properties

HAZARDOUS DECOMPOSITION PRODUCTS Material does not decompose at ambient temperatures. Analogous compounds evolve carbon monoxide, carbon dioxide, and other unidentified products and fragments when burned.

SECTION 11 TOXICOLOGICAL INFORMATION

TOXICOLOGY INFORMATION This product contains synthetic base oils that through process conditions, chemical analysis and results of mutagenicity all support these oils should not cause skin cancer.

INHALATION May cause irritation to the mucous membrane and upper airways, especially if the material is heated or mists are generated and/or is used in poorly ventilated areas. Symptoms may include headache, dizziness and nausea.

INGESTION May cause irritation to the mouth, oesophagus and stomach. Symptoms may include nausea, vomiting and diarrhoea.

SKIN Unlikely to irritate on brief contact. Repeated or prolonged contact may dry and defat skin, resulting in skin irritation and possible dermatitis.

EYE May cause slight to moderate transplant eye irritation, resulting in redness, stinging and lachrymation.

CHRONIC EFFECTS Prolonged or repeated contact with this material may result in skin irritation leading to dermatitis.

SECTION 12 ECOLOGICAL INFORMATION

ENVIRONMENT PROTECTION This information is based on data available for the material, the components of the material, and similar materials. Prevent this material from entering the environment.

SECTION 13 DISPOSAL CONSIDERATIONS

WASTE DISPOSAL Disposal of waste must be in accordance with state, local, EPA and national current applicable laws and regulations.

DISPOSAL RECOMMENDATIONS Incinerate this material and all associated wastes in an enclosed burner in a licensed facility. Empty containers may contain residue and can be dangerous. Empty drums should be safely stored until taken for recycling, recovery, or disposal in accordance with government regulations. Do not pressurise, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. This may result in an explosion and cause injury or death.

SECTION 14 TRANSPORT INFORMATION

This material is not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail and IATA/ICAO, IMDG..

U.N. NUMBER None allocated

PROPER SHIPPING NAME None allocated

DG CLASS None allocated

HAZCHEM CODE None allocated

PACKING GROUP None allocated

SECTION 15 REGULATORY INFORMATION

Material is not hazardous as defined by the Approved Criteria for Classifying Hazardous Substances NOHSC:1008 and WHS Regulations.

Product is not regulated according to Australian Dangerous Goods Code.

POISONS SCHEDULE No Poison Schedule number allocated by the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) established under the Therapeutic Goods Act.

Complies with the following national/regional chemical inventory requirements: AICS, IECSC, DSL, EINECS, ENCS, KECI, PICCS, TSCA. The product contains no known carcinogens.

SECTION 16 OTHER INFORMATION

The information and recommendations contained herein are, to the best of our knowledge and belief, accurate and reliable as of the date issued. The information and recommendations are offered for the user's consideration and examination. All reasonable care has been taken to ensure that the information and advice contained herein are accurate at the time of printing. However, CPI Corporation accepts no tortuous or contractual liability for any loss or damages suffered as a consequence of reliance on the information and advice contained herein. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedure should be provided to handlers and users. Alteration of this document is strictly prohibited.

-------- END OF MSDS -------

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HAZARDOUS CHEMICALS DANGEROUS GOODS REGISTER

COMPANY NAME JET REFRIGERATION

LOCATION **OFFICE/WAREHOUSE/SITE**

ADDRESS: 5/7 Hepher Rd, Campbelltown, NSW 2560

NOTIFICATIONS **NO**

MANIFEST **NO**

#	CHEMICAL	COMMON NAME	BRAND	QTY	U.N. NO.	HAZARDOUS CHEMICAL	DANGEROUS GOOD	PACKING GROUP	HAZ. CHEM. CODE	POISON SCHEDULE	SDS (ISSUE DATE)	RISK ASSESSMENT AND/OR SWMS
1	*BSE32 OIL*	*OIL*	*BITZER*		N/A	Yes	Yes	*N/A*	*N/A*	*N/A*	*1/01/2020*	*Working with Hazardous Chemicals*
2	1, 2-PROPYLENE GLYCOL; MONOPROPYLENE GLYCOL	PROPYLENE GLYCOL	REDOX		N/A	Yes	Yes	*N/A*	N/A	*N/A*	14/12/2018	*Working with Hazardous Chemicals*
3	ACETYLENE	ACETYLENE	BOC		UN1001	Yes	Yes	*N/A*	2SE	*N/A*	19/08/2021	*Working with Hazardous Chemicals*
4	NITROGEN COMPRESSED	NITROGEN	BOC		UN1066	Yes	Yes	*N/A*	2T	N/A	19/08/2021	*Working with Hazardous Chemicals*
5	OXYGEN COMPRESSED	OXYGEN	BOC		UN1072	Yes	Yes	*N/A*	2S	N/A	19/08/2021	*Working with Hazardous Chemicals*
6	R134A	REFRIGERANT	BOC		UN3159	Yes	Yes	*N/A*	2TE	*N/A*	19/08/2021	*Working with Hazardous Chemicals*
7	R404A	REFRIGERANT	BOC		UN3337	Yes	Yes	*N/A*	2RE	*N/A*	19/08/2021	*Working with Hazardous Chemicals*
8	VACUUM PUMP OIL	OIL	CPS Australia Pty Ltd		N/A	Yes	Yes	*N/A*	N/A	*N/A*	14/09/2021	*Working with Hazardous Chemicals*
9	PROPYLENE GLYCOL BP/USP	PROPYLENE GLYCOL	REDOX		N/A	Yes	Yes	*N/A*	N/A	*N/A*	24/08/2022	*Working with Hazardous Chemicals*

Completed by: Jacob McLean-Pauley Position: WHS Consultant – HR Focus Signature: JMP Date: 25/08/2022

#	Chemical	Common Name	Brand	QTY	U.N. No.	Hazardous Chemical	Dangerous Good	Packing Group	Haz. Chem. Code	Poison Schedule	SDS (issue date)	Risk Assessment and/or SWMS
10												*Working with Hazardous Chemicals*
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HAZARDOUS CHEMICALS / DANGEROUS GOODS KEY					
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MUTAGEN		CLASS 8	*CORROSIVES*		
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PACKING GROUPS	**D G CLASSES 3, 4, 5, 6.1, 8**	**DG CLASS 6.1**		**D G CLASS 3**	
I	GREAT DANGER	TOXIC SUBSTANCES AND PREPARATIONS - VERY SEVERE RISK OF POISONING.		FLASH POINT = N/A	INITIAL BOILING POINT= <35^{0}C
II	MEDIUM DANGER	TOXIC SUBSTANCES AND PREPARATIONS - SERIOUS RISK OF POISONING		FLASH POINT = <23 ^{0}C	INITIAL BOILING POINT= >35^{0}C
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HAZCHEM Code: Hazchem Codes are designed to assist the emergency services in the first few minutes of dealing with a hazardous goods incident.

BOC
A Member of The Linde Group

SAFETY DATA SHEET

 # 001

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **ACETYLENE**

Synonyms 001 - SDS NUMBER ● 16110367F - MATERIAL NUMBER ● DISSOLVED ACETYLENE ● ETHYNE ● PRODUCT CODES: 040, 041

1.2 Uses and uses advised against

Uses FUEL ● INDUSTRIAL APPLICATIONS

1.3 Details of the supplier of the product

Supplier name **BOC LIMITED (AUSTRALIA)**

Address 10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA

Telephone 131 262, (02) 8874 4400

Fax 132 427 (24 hours)

Website http://www.boc.com.au

1.4 Emergency telephone numbers

Emergency 1800 653 572 (24/7) (Australia only)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Flammable Gases: Category 1A
Chemically Unstable Gases: Category A
Gases Under Pressure: Dissolved gas

Health Hazards

Not classified as a Health Hazard

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **DANGER**

Pictograms

Hazard statements

H220 Extremely flammable gas.
H230 May react explosively even in the absence of air.
H280 Contains gas under pressure; may explode if heated.

Prevention statements

P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response statements

P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381	In case of leakage, eliminate all ignition sources.

Storage statements

P403	Store in a well-ventilated place.

Disposal statements

None allocated.

2.3 Other hazards

Asphyxiant. Effects are proportional to oxygen displacement.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content (v/v)
ACETYLENE	74-86-2	200-816-9	>98%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye Adverse effects not expected from this product.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. Apply artificial respiration if not breathing. Give oxygen if available. For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor.

Skin Adverse effects not expected from this product.

Ingestion Ingestion is not considered a potential route of exposure.

First aid facilities None allocated.

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. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.

4.3 Immediate medical attention and special treatment needed

Treat for asphyxia.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve. If the gas source cannot be isolated, do not extinguish the flame, since re-ignition and explosion could occur. Await arrival of emergency services or manufacturer's advisor. Drench and cool cylinders with water spray from protected area at a safe distance. If it is absolutely necessary to extinguish the flame, use only a dry chemical powder extinguisher. Do not move cylinders for at least 24 hours. Avoid shock and bumps to cylinders.

5.2 Special hazards arising from the substance or mixture

Extremely flammable. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, mobile phones etc. when handling.

5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. Cool cylinders or containers exposed to fire by applying water from a protected location. Do not approach cylinders or containers suspected of being hot. This material is capable of forming explosive mixtures in air. May react explosively even in the absence of air.

5.4 Hazchem code

2SE

2	Fine Water Spray.
S	Risk of violent reaction or explosion. Wear full fire kit and breathing apparatus. Dilute spill and run-off.
E	Evacuation of people in and around the immediate vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Eliminate all sources of ignition. Consider the risk of potentially explosive atmospheres.

6.2 Environmental precautions

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3 Methods of cleaning up

Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Use of safe work practices are recommended to avoid inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement. Never open an acetylene cylinder valve without the regulator attached. Gas regulator of suitable pressure and flow rating fitted to cylinder and manifold with low pressure gas distribution equipment which controls fuel gas mixture and flame. The regulator and other equipment must be compatible with the product and suited for the particular use. Never "sniff" acetylene as it may ignite spontaneously. Instead, carefully inspect the outlet and if there are any signs of dirt, blow it out with a jet of clean compressed air or nitrogen.

7.2 Conditions for safe storage, including any incompatibilities

Do not store near incompatible substances and sources of ignition. Cylinders should be stored: upright, prevented from falling, in a secure area; below 65°C, in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits. Post "No Smoking or Open Flames" signs in the storage areas. Refer to applicable legislation on flammable storage quantity restrictions. Never transfer acetylene to another cylinder or other container.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Acetylene	SWA [AUS]	Asphyxiant			

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Provide suitable ventilation to minimise or eliminate exposure. Confined areas (e.g. tanks) should be adequately ventilated or gas tested. Flammable/explosive vapours may accumulate in poorly ventilated areas.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear leather or cotton gloves.
Body	Wear coveralls and safety boots.
Respiratory	If using product in a confined area, wear an Air-line respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS GAS
Odour	GARLIC-LIKE ODOUR
Flammability	EXTREMELY FLAMMABLE
Flash point	< 23°C
Boiling point	-84°C
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	0.906 (Air = 1)
Relative density	NOT APPLICABLE
Solubility (water)	SOLUBLE
Vapour pressure	4700 kPa @ 25°C
Upper explosion limit	80 % to 85 %
Lower explosion limit	2.5 %
Partition coefficient	NOT AVAILABLE
Autoignition temperature	305°C
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	100 %
Critical pressure	6,242 kPa
Critical temperature	36.3°C (dissolved in acetone and porous medium)
Cylinder pressure (when full)	1550 kPa @ 15°C

10. STABILITY AND REACTIVITY

10.1 Reactivity

Forms explosive acetylides with copper, silver and mercury. Do not use alloys containing more than 65% copper.

10.2 Chemical stability

Generally stable under recommended conditions of storage. However, sensitive to heat or shock and may become explosive, even in the absence of air.

10.3 Possibility of hazardous reactions

Polymerises with evolution of heat. Avoid contact with curing agents, accelerators, and/or initiators.

10.4 Conditions to avoid

Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), copper, copper alloys (>70% copper), silver and mercury to form explosive acetylides. May decompose violently at high temperatures and/or pressures or in the presence of a catalyst. Hazardous by-products may be produced when this gas/gas mixture is used in welding, cutting and associated processes.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Based on available data, the classification criteria are not met.
Skin	Not classified as a skin irritant.
Eye	Not classified as an eye irritant.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT - single exposure	Asphyxiant. Effects are proportional to oxygen displacement. 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	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No ecological damage is expected to be caused by this product.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate.

12.4 Mobility in soil

Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5 Other adverse effects

No known effects from this product. Fume from fabrication processes which use this gas/gas mixture may be harmful to the environment.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Cylinders should be returned to the manufacturer or supplier for disposal of contents.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	1001	1001	1001
14.2 Proper Shipping Name	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED
14.3 Transport hazard class	2.1	2.1	2.1
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code 2SE

GTEPG 2A1

EmS F-D, S-U

Other information Refer to Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport. 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.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.

When using this gas/gas mixture for welding, cutting and associated processes, additional hazards may be generated by the process such as radiation, noise and fume. Risk assessments should be made for each activity to identify and quantify the individual hazards involved. Please refer to the relevant Safety Data Sheets for the welding consumables being used or, if available, the materials being welded.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

BOC
A Member of The Linde Group

SAFETY DATA SHEET

 # 069

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **NITROGEN, COMPRESSED**

Synonyms 069 - SDS NUMBER ● BOC NITROGEN, COMPRESSED ● CCS400522G - MATERIAL NUMBER ● NITROGEN ● NITROGEN AVIATION DOD DEF (AUST) 9011 ● PART# 2940007NR ● PRODUCT CODES: 030, 032, 033, 034, 035, 036, 038, 039, 129, 234, 236

1.2 Uses and uses advised against

Uses INERT GAS ● PNEUMATIC EQUIPMENT ● TYRE INFLATION

1.3 Details of the supplier of the product

Supplier name **BOC LIMITED (AUSTRALIA)**

Address 10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA

Telephone 131 262, (02) 8874 4400

Fax 132 427 (24 hours)

Website http://www.boc.com.au

1.4 Emergency telephone numbers

Emergency 1800 653 572 (24/7) (Australia only)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Gases Under Pressure: Compressed gas

Health Hazards

Not classified as a Health Hazard

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **WARNING**

Pictograms

Hazard statements

H280 Contains gas under pressure; may explode if heated.

Prevention statements

None allocated.

Response statements

None allocated.

Storage statements

P403 Store in a well-ventilated place.

Disposal statements

None allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content (v/v)
NITROGEN	7727-37-9	231-783-9	>99.9%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye Adverse effects not expected from this product.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Apply artificial respiration if not breathing. Give oxygen if available. For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor.

Skin Adverse effects not expected from this product.

Ingestion Ingestion is not considered a potential route of exposure.

First aid facilities None allocated.

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.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use water fog to cool containers from protected area.

5.2 Special hazards arising from the substance or mixture

Non flammable.

5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

5.4 Hazchem code

2T

2 Fine Water Spray.

T Wear full fire kit and breathing apparatus. Dilute spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS.

6.2 Environmental precautions

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3 Methods of cleaning up
Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Use of safe work practices are recommended to avoid inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

7.2 Conditions for safe storage, including any incompatibilities
Do not store near incompatible materials. Cylinders should be stored below 65°C in a secure area, upright and restrained to prevent cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Nitrogen	SWA [AUS]	Asphyxiant			

Biological limits
No biological limit values have been entered for this product.

8.2 Exposure controls
Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear leather gloves.
Body	Wear safety boots.
Respiratory	Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS GAS
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	-195.8°C
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	0.967 (Air = 1)
Relative density	NOT APPLICABLE

9.1 Information on basic physical and chemical properties

Solubility (water)	0.0149 cm^3/cm^3
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	100 %
Cylinder pressure (when full)	13000 kPa to 30000 kPa

10. STABILITY AND REACTIVITY

10.1 Reactivity

Unreactive under normal conditions.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Compatible with most commonly used materials. Avoid heating cylinders.

10.6 Hazardous decomposition products

This material will not decompose to form hazardous products other than that already present.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Based on available data, the classification criteria are not met.
Skin	Not classified as a skin irritant.
Eye	Not classified as an eye irritant.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT - single exposure	Asphyxiant. Effects are proportional to oxygen displacement. 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	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No ecological damage caused by this product. Nitrogen is the major component of the atmosphere (78 % v/v). It is a fairly unreactive gas and will not contribute to ozone depletion or global warming. If released to soil or water, nitrogen will quickly disperse to the atmosphere. Not toxic to plants or animals except at extremely high (asphyxiating) levels.

12.2 Persistence and degradability
Nitrogen occurs naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas.

12.3 Bioaccumulative potential
Not applicable.

12.4 Mobility in soil
The substance is a gas, not applicable.

12.5 Other adverse effects
No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Waste disposal Cylinders should be returned to the manufacturer or supplier for disposal of contents.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	1066	1066	1066
14.2 Proper Shipping Name	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED
14.3 Transport hazard class	2.2	2.2	2.2
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards
No information provided.

14.6 Special precautions for user
Hazchem code 2T

GTEPG 2C1

EmS F-C, S-V

Other information Ensure cylinder is separated from driver and that outlet of relief device is not obstructed.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.

APPLICATION METHOD: Gas regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

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SAFETY DATA SHEET

 # 076

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **OXYGEN, COMPRESSED**

Synonyms 076 - SDS NUMBER ● BOC OXYGEN, COMPRESSED ● CPG401205E, CPG402819G - MATERIAL NUMBER(S) ● OXYGEN ● OXYGEN COMPRESSED ● PRODUCT CODES: 020, 024, 025, 026, 027, 028, 128, 224, 226

1.2 Uses and uses advised against

Uses CHEMICAL REAGENT ● COMBUSTION AID ● FUEL ADDITIVE ● INDUSTRIAL APPLICATIONS ● LASER APPLICATIONS

1.3 Details of the supplier of the product

Supplier name **BOC LIMITED (AUSTRALIA)**

Address 10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA

Telephone 131 262, (02) 8874 4400

Fax 132 427 (24 hours)

Website http://www.boc.com.au

1.4 Emergency telephone numbers

Emergency 1800 653 572 (24/7) (Australia only)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Oxidizing Gases: Category 1
Gases Under Pressure: Compressed gas

Health Hazards

Not classified as a Health Hazard

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **DANGER**

Pictograms

Hazard statements

H270 May cause or intensify fire; oxidizer.
H280 Contains gas under pressure; may explode if heated.

Prevention statements

P220 Keep away from clothing and other combustible materials.
P244 Keep valves and fittings free from oil and grease.

Response statements

P370 + P376 In case of fire: Stop leak if safe to do so.

Storage statements

P403 Store in a well-ventilated place.

Disposal statements

None allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content (v/v)
OXYGEN	7782-44-7	231-956-9	>99.5%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye Adverse effects not expected from this product.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing. For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor.

Skin Adverse effects not expected from this product.

Ingestion Due to product form and application, ingestion is considered unlikely.

First aid facilities None allocated.

4.2 Most important symptoms and effects, both acute and delayed

Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion.

4.3 Immediate medical attention and special treatment needed

Treatment for hyperoxia.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use water fog to cool containers from protected area.

5.2 Special hazards arising from the substance or mixture

Non flammable - oxidising agent. Supports combustion and may cause fire/explosion in contact with incompatible substances, strong acids, reducing agents, combustibles and flammables. Materials which burn in air, will burn more vigorously in oxygen enriched atmospheres.

5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. Cool cylinders or containers exposed to fire by applying water from a protected location. Do not approach cylinders or containers suspected of being hot. Remove cool cylinders from the path of the fire if safe to do so. Ensure working area is well ventilated before re-use. Notify the manufacturer that you will be returning a faulty cylinder. Residual product will be disposed of when the cylinder is returned.

5.4 Hazchem code

2S

2 Fine Water Spray.

S Risk of violent reaction or explosion. Wear full fire kit and breathing apparatus. Dilute spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS.

6.2 Environmental precautions
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3 Methods of cleaning up
Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Use of safe work practices are recommended to avoid inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

7.2 Conditions for safe storage, including any incompatibilities
Do not store near sources of ignition or incompatible materials. Cylinders should be stored below 65°C in a secure area, upright and restrained to prevent cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

No exposure standards have been entered for this product.

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls
Engineering controls No special precautions are normally required when handling this product.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear leather gloves.
Body	Wear safety boots.
Respiratory	Not required under normal conditions of use.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS GAS
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	-183°C
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	NOT AVAILABLE
Relative density	NOT APPLICABLE
Solubility (water)	0.032 cm^3/cm^3

9.1 Information on basic physical and chemical properties

Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	OXIDISING GAS
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	100 %
Critical pressure	5,043 kPa
Critical temperature	-118.6°C (Permanent gas)
Cylinder pressure (when full)	Refer to Product Manuals
Density	1.105 (Air = 1)

10. STABILITY AND REACTIVITY

10.1 Reactivity

Unreactive under normal conditions.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Combustible materials such as oil and grease can spontaneously ignite at low temperatures in oxygen enriched atmospheres. Materials which burn in air, will burn more vigorously in oxygen enriched atmospheres. Metals can be ignited and will continue to burn in pure oxygen atmospheres under specific conditions of temperature and pressure.

10.6 Hazardous decomposition products

This material will not decompose to form hazardous products other than that already present.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Based on available data, the classification criteria are not met.
Skin	Not classified as a skin irritant.
Eye	Not classified as an eye irritant.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT - single exposure	Not classified as causing organ damage from single exposure.
STOT - repeated exposure	Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion.
Aspiration	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No ecological damage caused by this product.

12.2 Persistence and degradability
Not applicable.

12.3 Bioaccumulative potential
Not applicable.

12.4 Mobility in soil
The substance is a gas, not applicable.

12.5 Other adverse effects
No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Waste disposal Cylinders should be returned to the manufacturer or supplier for disposal of contents.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	1072	1072	1072
14.2 Proper Shipping Name	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED
14.3 Transport hazard classes	2.2 (5.1)	2.2 (5.1)	2.2 (5.1)
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards
No information provided.

14.6 Special precautions for user
Hazchem code 2S

GTEPG 2C6

EmS F-C, S-W

Other information Ensure cylinder is separated from driver and foodstuffs. Refer to Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.

APPLICATION METHOD: Gas regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m^3	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

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SAFETY DATA SHEET

 # 133

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **R134A**

Synonyms 1,1,1,2 TETRAFLUOROETHANE ● 133 - SDS NUMBER ● FORANE 134A ● HFC134A ● PRODUCT CODE: 155

1.2 Uses and uses advised against

Uses AIR CONDITIONING ● REFRIGERANT ● REFRIGERATION SYSTEMS

1.3 Details of the supplier of the product

Supplier name **BOC LIMITED (AUSTRALIA)**

Address 10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA

Telephone 131 262, (02) 8874 4400

Fax 132 427 (24 hours)

Website http://www.boc.com.au

1.4 Emergency telephone numbers

Emergency 1800 653 572 (24/7) (Australia only)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Gases Under Pressure: Liquefied gas

Health Hazards

Not classified as a Health Hazard

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **WARNING**

Pictograms

Hazard statements

H280 Contains gas under pressure; may explode if heated.

Prevention statements

None allocated.

Response statements

None allocated.

Storage statements

P403 Store in a well-ventilated place.

Disposal statements

None allocated.

2.3 Other hazards

Asphyxiant. Effects are proportional to oxygen displacement.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
1,1,1,2-TETRAFLUOROETHANE (HFC 134A)	811-97-2	212-377-0	>99.9%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. Apply artificial respiration if not breathing. Give oxygen if available. For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor.

Skin Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30°C) for 15 minutes. It is recommended that warm water is applied to clothing before removing it so as to prevent further skin damage. Apply sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention.

Ingestion Due to product form and application, ingestion is considered unlikely.

First aid facilities None allocated.

4.2 Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Direct contact with the liquefied material or escaping compressed gas may cause frostbite injury.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use water fog to cool containers from protected area.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (fluorides, carbon oxides, hydrocarbons) when heated to decomposition.

5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

5.4 Hazchem code

2TE

2 Fine Water Spray.

T Wear full fire kit and breathing apparatus. Dilute spill and run-off.

E Evacuation of people in and around the immediate vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS.

6.2 Environmental precautions
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3 Methods of cleaning up
Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

7.2 Conditions for safe storage, including any incompatibilities
Do not store near incompatible materials. Cylinders should be stored below 65°C in a secure area, upright and restrained to prevent cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
1,1,1,2-Tetrafluoroethane	SWA [AUS]	1000	4240	--	--

Biological limits
No biological limit values have been entered for this product.

8.2 Exposure controls
Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear nitrile gloves.
Body	Wear safety boots.
Respiratory	Where an inhalation risk exists, wear an Air-line respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	CLEAR GAS (LIQUEFIED UNDER PRESSURE)
Odour	SLIGHT ETHEREAL ODOUR
Flammability	NON FLAMMABLE

9.1 Information on basic physical and chemical properties

Flash point	NOT RELEVANT
Boiling point	-26.4°C
Melting point	-101°C
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	3.5 (Air = 1)
Relative density	1.10 to 1.21
Solubility (water)	0.9 g/L @ 20°C
Vapour pressure	665 kPa @ 25°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	100 %
Critical pressure	4,060 kPa
Critical temperature	100.6°C

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), alkalis (e.g. sodium hydroxide) and alkaline earth metals (e.g. manganese).

10.6 Hazardous decomposition products

May evolve toxic gases (carbon oxides, hydrogen fluoride, hydrocarbons) when heated strongly.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Based on available data, the classification criteria are not met.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
1,1,1,2-TETRAFLUOROETHANE (HFC 134A)	--	--	1500 g/m³/4 hour (rat)

Skin Not classified as a skin irritant. Contact with the liquefied material or escaping compressed gas may cause frostbite injury.

Eye Not classified as an eye irritant. Contact with the liquefied material or escaping compressed gas may cause frostbite injury.

Sensitisation Not classified as causing skin or respiratory sensitisation.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Not classified as a carcinogen.

Reproductive Not classified as a reproductive toxin.

STOT - single exposure	Asphyxiant. Effects are proportional to oxygen displacement. 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	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No information provided.

12.2 Persistence and degradability
No information provided.

12.3 Bioaccumulative potential
No information provided.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
Global warming has been predicted as a potential consequence of the emission of this product.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Cylinders should be returned to the manufacturer or supplier for disposal of contents.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	3159	3159	3159
14.2 Proper Shipping Name	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)
14.3 Transport hazard class	2.2	2.2	2.2
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards
No information provided.

14.6 Special precautions for user

Hazchem code	2TE
GTEPG	2C2
EmS	F-C, S-V
Other information	Ensure cylinder is separated from driver and that outlet of relief device is not obstructed. Refer to Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.

ASPHYXIANTS (2): There is a significant hazard associated with workers entering poorly ventilated areas (e.g. tanks) where oxygen may be deficient. An air supplied breathing apparatus may be required if adequate ventilation is not ensured.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

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[End of SDS]

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SAFETY DATA SHEET

 # 0164

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **R404A**

Synonyms 0164 - SDS NUMBER ● FORANE FX70 ● PENTAFLUOROETHANE (HFC125) ● PRODUCT CODE: 248 ● TETRAFLUOROETHANE (HFC134A) BLEND ● TRIFLUOROETHANE (HFC143A)

1.2 Uses and uses advised against

Uses REFRIGERANT

1.3 Details of the supplier of the product

Supplier name **BOC LIMITED (AUSTRALIA)**

Address 10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA

Telephone 131 262, (02) 8874 4400

Fax 132 427 (24 hours)

Website http://www.boc.com.au

1.4 Emergency telephone numbers

Emergency 1800 653 572 (24/7) (Australia only)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Gases Under Pressure: Liquefied gas

Health Hazards

Not classified as a Health Hazard

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **WARNING**

Pictograms

Hazard statements

H280 Contains gas under pressure; may explode if heated.

Prevention statements

None allocated.

Response statements

None allocated.

Storage statements

P403 Store in a well-ventilated place.

Disposal statements

None allocated.

2.3 Other hazards

Asphyxiant. Effects are proportional to oxygen displacement.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content (v/v)
1,1,1-TRIFLUOROETHANE (HFC-143A)	420-46-2	206-996-5	52%
PENTAFLUOROETHANE (HFC-125)	354-33-6	206-557-8	44%
1,1,1,2-TETRAFLUOROETHANE (HFC 134A)	811-97-2	212-377-0	4%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. Apply artificial respiration if not breathing. Give oxygen if available. For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor.

Skin Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30°C) for 15 minutes. It is recommended that warm water is applied to clothing before removing it so as to prevent further skin damage. Apply sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention.

Ingestion Due to product form and application, ingestion is considered unlikely.

First aid facilities None allocated.

4.2 Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Direct contact with the liquefied material or escaping compressed gas may cause frostbite injury.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use water fog to cool containers from protected area.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (fluorides, carbon oxides, hydrocarbons) when heated to decomposition.

5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

5.4 Hazchem code

2RE

2 Fine Water Spray.

R Wear liquid-tight chemical protective clothing and breathing apparatus. Dilute spill and run-off.

E Evacuation of people in and around the immediate vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS.

6.2 Environmental precautions
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3 Methods of cleaning up
Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

7.2 Conditions for safe storage, including any incompatibilities
Do not store near incompatible materials. Cylinders should be stored below 65°C in a secure area, upright and restrained to prevent cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
1,1,1,2-Tetrafluoroethane	SWA [AUS]	1000	4240	--	--
1,1,1-TRIFLUOROETHANE (HFC-143A)	SWA [AUS]	Asphyxiant			
PENTAFLUOROETHANE (HFC-125)	SWA [AUS]	Asphyxiant			

Biological limits
No biological limit values have been entered for this product.

8.2 Exposure controls
Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear nitrile gloves.
Body	Wear safety boots.
Respiratory	Where an inhalation risk exists, wear an Air-line respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance CLEAR COLOURLESS LIQUID

9.1 Information on basic physical and chemical properties

Odour	SLIGHT ETHEREAL ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	-46.8°C
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	NOT AVAILABLE
Relative density	NOT APPLICABLE
Solubility (water)	NOT AVAILABLE
Vapour pressure	1270 kPa @ 25°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	100 %
Critical pressure	3688 kPa
Critical temperature	72.4°C
Density	1.04 (Air = 1)

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), alkalis (e.g. sodium hydroxide) and alkaline earth metals (e.g. manganese).

10.6 Hazardous decomposition products

May evolve toxic gases (fluorides, carbon oxides, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Based on available data, the classification criteria are not met.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
PENTAFLUOROETHANE (HFC-125)	--	--	2735 g/m³/2 hours (mouse)
1,1,1,2-TETRAFLUOROETHANE (HFC 134A)	--	--	1500 g/m³/4 hour (rat)

Skin Not classified as a skin irritant. Contact with the liquefied material or escaping compressed gas may cause frostbite injury.

Eye Not classified as an eye irritant. Contact with the liquefied material or escaping compressed gas may cause frostbite injury.

Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT - single exposure	Asphyxiant. Effects are proportional to oxygen displacement. 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	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No information provided.

12.2 Persistence and degradability
No information provided.

12.3 Bioaccumulative potential
No information provided.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
Global warming has been predicted as a potential consequence of the emission of this product.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Cylinders should be returned to the manufacturer or supplier for disposal of contents.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	3337	3337	3337
14.2 Proper Shipping Name	REFRIGERANT GAS R404A	REFRIGERANT GAS R404A	REFRIGERANT GAS R404A
14.3 Transport hazard class	2.2	2.2	2.2
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards
No information provided.

14.6 Special precautions for user

Hazchem code	2RE
GTEPG	2C2
EmS	F-C, S-V

Ensure cylinder is separated from driver and that outlet of relief device is not obstructed. Refer to

Other information Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders. This product is a replacement for R502.

APPLICATION METHOD: Transferred as a liquid into and out of refrigeration equipment by controlled pressure decanting through flexible pipework.

ASPHYXIANTS (2): There is a significant hazard associated with workers entering poorly ventilated areas (e.g. tanks) where oxygen may be deficient. An air supplied breathing apparatus may be required if adequate ventilation is not ensured.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

Specification
Propylene Glycol BP/USP

The following specification is the latest revision (as at 24 Aug 2022) and supersedes all previous specifications for this product code.

Specification Details

Product Code	PRGLYC1003	**CAS Number**	57-55-6	**Shelf Life**	730 Day
Product	Propylene Glycol BP/USP				
Pack Size	215 kg net Drums				
Customer Name	Jet Refrigeration Pty Ltd				
Sales Order	5677162	**Customer Ref**	005929		
Revision	3 (on 5/12/2014)	**Std. Compliance**	EP, USP, FCC		
Authorised By	Damien Barrett Quality Assurance Manager	**Notes**	Complete revision.		

Specifications

Description	Unit	Typical	Guaranteed	Method
Appearance: clear and free from suspended matter			Passes Test	LPM5037
Purity	% m/m		Min 99.6	GC
Diproplylene Glycol	% m/m		Max 0.2	ASTM E202
Acidity as Acetic Acid	% m/m		Max 0.005	ASTM E202; D1613
Water	% m/m		Max 0.2	ASTM E202; E203
Colour	Pt-Co		Max 10	ASTM E202; D1209
Sulphate	mg/kg		Max 60	USP
Heavy metals	mg/kg		Max 5	USP
Residual Solvents			Passes Test	USP
Chloride, as Cl-	mg/kg		Max 1	ASTM E202; D891
Iron	mg/kg		Max 0.5	ASTM E202
Infrared Spectrum			Passes Test	
Specific gravity @ 20 deg C			1.0377 - 1.0390	ASTM E202; D891
Specific gravity @ 25 deg C			1.035 - 1.037	USP
Residue on ignition	mg/kg		Max 50	USP
Distillation, Initial Boiling Point	deg C		Min 185.0	ASTM E202
Distillation, Dry Point	deg C		Max 190.0	ASTM E202
Distillation Volume	deg C		Min 95.0	ASTM E202
Odour			Passes Test	
Oxidising substances			Passes Test	EP
Reducing Substances			Passes Test	EP
Refractive index @ 20 deg C			1.431 - 1.433	EP
Lead	mg/kg		Max 1	FCC
Limit of DEG and EG			Passes Test	USP
Conforms to the specifications of the European and US Pharmacopeia (EP and USP) and the Food Chemicals Codex (FCC)				

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