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## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

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### 1.1 Product identifier

**Product name** 20 COMPONENT MIXTURE, BALANCE N2 (3139)  
**Synonyms** 3139 - SDS NUMBER • SPECIAL GAS MIXTURE

### 1.2 Uses and uses advised against

**Uses** CALIBRATION • 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)

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## 2. HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

**GHS classifications** Flammable Gases: Category 1  
Gases Under Pressure: Compressed gas  
Germ Cell Mutagenicity: Category 1B  
Carcinogenicity: Category 1A

### 2.2 Label elements

**Signal word** DANGER

**Pictograms**



### Hazard statements

H220 Extremely flammable gas.  
H280 Contains gas under pressure; may explode if heated.  
H340 May cause genetic defects.  
H350 May cause cancer.

### Prevention statements

P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P281 Use personal protective equipment as required.

### Response statements

P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 Eliminate all ignition sources if safe to do so.

**PRODUCT NAME 20 COMPONENT MIXTURE, BALANCE N2 (3139)****Storage statements**

P405 Store locked up.  
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

**Disposal statements**

P501 Dispose of contents/container in accordance with relevant regulations.

**2.3 Other hazards**

Asphyxiant. Effects are proportional to oxygen displacement.

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**3. COMPOSITION/ INFORMATION ON INGREDIENTS**

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**3.1 Substances / Mixtures**

Ingredient	CAS Number	EC Number	Content (v/v)
NITROGEN	7727-37-9	231-783-9	Remainder
ETHYLENE	74-85-1	200-815-3	<10%
PROPANE	74-98-6	200-827-9	<10%
PROPYLENE	115-07-1	204-062-1	<10%
1-BUTENE	106-98-9	203-449-2	<1%
BUTANE	106-97-8	203-448-7	<1%
CIS-2-BUTENE	590-18-1	209-673-7	<1%
CYCLOPROPANE	75-19-4	200-847-8	<1%
ETHANE	74-84-0	200-814-8	<1%
ISOBUTANE (CONTAINING <0.1% BUTADIENE)	75-28-5	200-857-2	<1%
ISOBUTENE	115-11-7	204-066-3	<1%
METHANE	74-82-8	200-812-7	<1%
METHYL ACETYLENE	74-99-7	200-828-4	<1%
PROPADIENE	463-49-0	207-335-3	<1%
TRANS-2-BUTENE	624-64-6	210-855-3	<1%
1,3-BUTADIENE	106-99-0	203-450-8	<0.3%
ACETYLENE	74-86-2	200-816-9	<0.3%
ISOPENTANE	78-78-4	201-142-8	<0.3%
N-HEXANE	110-54-3	203-777-6	<0.3%
BENZENE	71-43-2	200-753-7	0.1%

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**4. FIRST AID MEASURES**

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**4.1 Description of first aid measures**

**Eye** If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

**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.

**Skin** If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

**Ingestion** None allocated.

**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. Direct contact with eyes or skin of liquid form may result in severe frostbite. 1,3-Butadiene is classified as carcinogenic to humans (IARC Group 1). May cause heritable genetic damage.

**4.3 Immediate medical attention and special treatment needed**

Treat symptomatically.

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## 5. FIRE FIGHTING MEASURES

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### 5.1 Extinguishing media

Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve.

### 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.

### 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.

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## 6. ACCIDENTAL RELEASE MEASURES

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### 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.

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## 7. HANDLING AND STORAGE

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### 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 sources of ignition or incompatible materials. Cylinders should be stored below 45°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/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
1,3-Butadiene	SWA (AUS)	10	22	--	--
Acetylene	SWA (AUS)	Asphyxiant			
Benzene	SWA (AUS)	1	3.2	--	--
Butane	SWA (AUS)	800	1900	--	--
Ethane	SWA (AUS)	Asphyxiant			
Ethylene	SWA (AUS)	Asphyxiant			
Isobutane	SWA (AUS)	1000	--	--	--
Methane	SWA (AUS)	Asphyxiant			
Methyl acetylene	SWA (AUS)	1000	1640	--	--
Nitrogen	SWA (AUS)	Asphyxiant			
Propane	SWA (AUS)	Asphyxiant			
Propylene	SWA (AUS)	Asphyxiant			
n-Hexane	SWA (AUS)	20	72	--	--

#### Biological limits

Ingredient	Determinant	Sampling Time	BEI
1,3-BUTADIENE	1,2-Dihydroxy-4-(N-acetylcysteinyl)-butane in urine	End of shift	25 mg/g creatinine
	Mixture of N-1 and N-2-(hydroxybutenyl)valine hemoglobin (Hb) adducts in blood	Not critical	2.5 pmol/g Hb
BENZENE	S-Phenylmercapturic acid in urine	End of shift	25 µg/g creatinine
	t,t-Muconic acid in urine	End of shift	500 µg/g creatine
N-HEXANE	2,5-Hexanedione in urine (without hydrolysis)	End of shift at end of workweek	0.4 mg/L

Reference: ACGIH Biological Exposure Indices

### 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. Maintain vapour levels below the recommended exposure standard.

#### PPE

- Eye / Face** Wear safety glasses.
- Hands** Wear leather or insulated 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

<b>Appearance</b>	COLOURLESS GAS
<b>Odour</b>	SLIGHT ODOUR
<b>Flammability</b>	EXTREMELY FLAMMABLE
<b>Flash point</b>	< 0°C
<b>Boiling point</b>	NOT AVAILABLE
<b>Melting point</b>	NOT AVAILABLE

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

Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	NOT AVAILABLE
Specific gravity	NOT APPLICABLE
Solubility (water)	NOT AVAILABLE
Vapour pressure	NOT APPLICABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
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)	3000 kPa @ 15°C

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**10. STABILITY AND REACTIVITY**

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

**10.5 Incompatible materials**

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), heat and ignition sources. Do not use natural rubber flexible hoses. Also incompatible (potentially violently) with oxygen, halogens and metal halides.

**10.6 Hazardous decomposition products**

May evolve toxic gases if heated to decomposition.

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**11. TOXICOLOGICAL INFORMATION**

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**11.1 Information on toxicological effects**

**Acute toxicity** No known toxicological effects from this product. Based on available data, the classification criteria are not met.

**Information available for the ingredients:**

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
PROPANE	--	--	> 800000 ppm/15M (rat)
BUTANE	--	--	658000 mg/m <sup>3</sup> /4H (rat)
ETHANE	--	--	658 mg/L/4hrs (rat)
METHANE	--	--	326 gm/m <sup>3</sup> /2h (mouse)
1,3-BUTADIENE	--	--	270 g/m <sup>3</sup> /2 hours
N-HEXANE	25 g/kg (rat)	3000 mg/kg (rabbit)	48000 ppm/4 hours (rat)
BENZENE	930 mg/kg (rat)	48 mg/kg (mouse)	9980 ppm (mouse)

**Skin** Not classified as a skin irritant. Contact may result in mild irritation, redness and rash.

**Eye** Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.

**Sensitisation** Not classified as causing skin or respiratory sensitisation.

**PRODUCT NAME 20 COMPONENT MIXTURE, BALANCE N2 (3139)**

<b>Mutagenicity</b>	May cause genetic defects.
<b>Carcinogenicity</b>	1,3-Butadiene and benzene are classified as carcinogenic to humans (IARC Group 1).
<b>Reproductive</b>	Some studies have detected effects on the reproductive performance of animals exposed to 1,3-Butadiene. However, the concentration is below that to require classification as a reproductive toxin.
<b>STOT - single exposure</b>	Asphyxiant. Effects are proportional to oxygen displacement. Over exposure may result in dizziness, drowsiness, weakness, fatigue, breathing difficulties and unconsciousness.
<b>STOT - repeated exposure</b>	Not classified as causing organ damage from repeated exposure.
<b>Aspiration</b>	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**

Avoid release 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)
<b>14.1 UN Number</b>	1954	1954	1954
<b>14.2 Proper Shipping Name</b>	COMPRESSED GAS, FLAMMABLE, N.O.S. (Contains ethylene and propane)	COMPRESSED GAS, FLAMMABLE, N.O.S. (Contains ethylene and propane)	COMPRESSED GAS, FLAMMABLE, N.O.S. (Contains ethylene and propane)
<b>14.3 Transport hazard class</b>	2.1	2.1	2.1
<b>14.4 Packing Group</b>	None allocated.	None allocated.	None allocated.

**14.5 Environmental hazards**

No information provided.

**14.6 Special precautions for user**

<b>Hazchem code</b>	2SE
<b>GTEPG</b>	2A1
<b>EMS</b>	F-D, S-U

**PRODUCT NAME 20 COMPONENT MIXTURE, BALANCE N2 (3139)**

**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.

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**15. REGULATORY INFORMATION**

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**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** Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

**Hazard codes**

Carc.	Carcinogen
F+	Extremely flammable
Muta.	Mutagen

**Risk phrases**

R12	Extremely Flammable.
R45	May cause cancer.
R46	May cause heritable genetic damage.

**Safety phrases**

S9	Keep container in a well ventilated place.
S16	Keep away from sources of ignition - No smoking.
S45	In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
S53	Avoid exposure - obtain special instructions before use.

**Inventory listings** **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**  
All components are listed on AICS, or are exempt.

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**16. OTHER INFORMATION**

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

**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.

**PRODUCT NAME 20 COMPONENT MIXTURE, BALANCE N2 (3139)****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 <sup>3</sup>	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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