BOC
A Member of The Linde Group

SAFETY DATA SHEET

 # 2034

Product Name **6 COMPONENT MIXTURE (CO2, CF4, SO2, O2, N2, BALANCE F6S)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	**BOC LIMITED (AUSTRALIA)**
Address	10 Julius Avenue, North Ryde, NSW, AUSTRALIA, 2113
Telephone	131 262, (02) 8874 4400
Fax	132 427 (24 hours)
Emergency	1800 653 572 (24/7) (Australia only)
Web Site	http://www.boc.com.au/
Synonym(s)	2034 - MSDS NUMBER · PRODUCT CODE: 292 · SPECIAL GAS MIXTURE
Use(s)	CALIBRATION · INDUSTRIAL APPLICATIONS
SDS Date	26 April 2012

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS (GHS) ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

None allocated

SAFETY PHRASES

None allocated

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

UN Number	1956	**DG Division**	2.2
Packing Group	None Allocated	**Subsidiary Risk(s)**	None Allocated
Hazchem Code	2TE		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content
SULPHUR DIOXIDE	CAS: 7446-09-5 EC: 231-195-2	T;R23 C;R34	0.2%
OXYGEN	CAS: 7782-44-7 EC: 231-956-9	O;R8	Not Available
SULPHUR HEXAFLUORIDE	CAS: 2551-62-4 EC: 219-854-2	Not Available	Remainder
CARBON DIOXIDE	CAS: 124-38-9 EC: 204-696-9	Not Available	0.1%
CARBON TETRAFLUORIDE	CAS: 75-73-0 EC: 200-896-5	Not Available	0.1%
NITROGEN	CAS: 7727-37-9 EC: 231-783-9	Not Available	Not Available

4. 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 Poison 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. 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.

Advice to Doctor Treat symptomatically.

First Aid Facilities Eye wash facilities should be available.

5. FIRE FIGHTING MEASURES

Flammability Non flammable.

Fire and Explosion 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.

Extinguishing Use water fog to cool containers from protected area.

Hazchem Code 2TE

2	Water Fog (or fine water spray if fog unavailable)
T	Self Contained Breathing apparatus and protective gloves.
E	Evacuation of people in the vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

Spillage If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use personal protective equipment. Carefully move material to a well ventilated remote area, then allow to discharge. Do not attempt to repair leaking valve or cylinder safety devices.

7. STORAGE AND HANDLING

Storage 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.

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Carbon dioxide	SWA (AUS)	5000	9000	30000	54000
Carbon dioxide in coal mines	SWA (AUS)	12500	22500	30000	54000
Fluorides, as F	SWA (AUS)	--	2.5	--	--
Nitrogen	SWA (AUS)	Asphyxiant			
Sulphur dioxide	SWA (AUS)	2	5.2	5	13
Sulphur hexafluoride	SWA (AUS)	1000	5970	--	--

Biological Limits No biological limit allocated.

Engineering Controls Avoid inhalation. Use in well ventilated areas. Protective equipment should be worn if levels exceed recommended exposure standards or oxygen levels are below 21%. Maintain vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear leather gloves.
Body	Wear safety boots.
Respiratory	Where an inhalation risk exists, wear an Air-line respirator or a Full-face Type B (Inorganic and Acid gas) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	COLOURLESS GAS
Odour	PUNGENT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	5.11 (Sulphur hexafluoride)
Specific gravity	NOT APPLICABLE
Solubility (water)	0.001 cm^3/cm^3 (Sulphur hexafluoride)
Vapour pressure	2450 kPa @ 25°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
% Volatiles	100 %

10. STABILITY AND REACTIVITY

Chemical Stability Stable under recommended conditions of storage.

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

Material to Avoid Dust of aluminium, chrome, manganese ignite then explode when heated in carbon dioxide. Incompatible with acrylaldehyde, aziridine, sodium peroxide. Sulphur dioxide may violently react with strong alkalis and acids. Sulphur hexafluoride decomposition products above 150°C may affect some materials. Carbon dioxide and sulphur dioxide are corrosive when moist. Most rubbers and plastics are affected by carbon dioxide.

Hazardous Decomposition Products May evolve toxic gases if heated to decomposition.

Hazardous Reactions Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Asphyxiant gas - irritant. The sulphur dioxide level has the potential to cause adverse health effects with prolonged exposure. Chronic exposure to sulphur dioxide levels above 1 ppm can lead to a decline in respiratory function. Symptoms of exposure are directly related to displacement of oxygen. As the amount of oxygen inhaled is reduced from 21-14% volume, the pulse rate may accelerate and the rate and volume of breathing may increase. The ability to maintain attention and think clearly is diminished, muscular co-ordination is somewhat disturbed. As oxygen decreases from 14-10% volume, judgement becomes faulty, severe injuries may result in no pain. Muscular effort may lead to rapid fatigue. Further reduction to 6% may result in nausea and vomiting. Ability to move may be lost. Permanent brain damage may result even after resuscitation from exposure to this low level of oxygen. Below 6% breathing is in gasps and convulsions may occur. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death may follow in minutes. Sulphur dioxide at 5 ppm causes dryness to the mouth & throat and slight breathing

difficulties. Exposure at 50 ppm causes strong eye, nose, throat and respiratory tract irritation as well as changes in breathing volume. Carbon dioxide is potentially toxic at concentrations below 3% due to cellular membrane effects and biochemical alterations such as increased partial pressure of carbon dioxide, increased concentration of bicarbonate ions and acidosis. Long term exposures to levels between 0.5 and 1% are likely to cause calcium deposition in body tissues including kidneys.

Eye Irritant. Contact may result in irritation, lacrimation, pain and redness. Contact with liquid or vapour may result in corneal burns and frost-bite.

Inhalation Irritant - asphyxiant. Over exposure may result in irritation of the nose and throat, coughing, loss of taste and smell, headache, nausea, vomiting, drowsiness, weakness, lack of coordination, and asphyxiation and pulmonary oedema at very high levels. Individuals with pre-existing respiratory problems (eg. asthma) should avoid exposure.

Skin Irritant. Direct contact with the liquefied material or escaping compressed gas may cause frost-bite injury.

Ingestion Ingestion is considered unlikely due to product form.

Toxicity Data

SULPHUR DIOXIDE (7446-09-5)

LC50 (inhalation)	2520 ppm/1 hour (rat)
LCLo (inhalation)	1000 ppm/10 minutes (human)
TCLo (inhalation)	3 ppm/5 days (human)

SULPHUR HEXAFLUORIDE (2551-62-4)

LD50 (intravenous)	5790 mg/kg (rabbit)

CARBON DIOXIDE (124-38-9)

LC50 (inhalation)	470000 ppm/30M (rat)
LCLo (inhalation)	9 pph/5M (human)

CARBON TETRAFLUORIDE (75-73-0)

LCLo (inhalation)	895000 ppm/15M

12. ECOLOGICAL INFORMATION

Environment Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Return cylinder and contents to manufacturer or supplier for recycling. Contact the manufacturer for additional information.

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)
UN Number	1956	-	-
Proper Shipping Name	COMPRESSED GAS, N.O.S.	-	-
DG Class/ Division	2.2	-	-
Subsidiary Risk(s)	None Allocated	-	-
Packing Group	None Allocated	-	-
GTEPG	2C1		
Hazchem Code	2TE		

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

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)

Inventory Listing(s)

AUSTRALIA: AICS (Australian Inventory of Chemical Substances)
All components are listed on AICS, 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 valve or manifold with low pressure gas distribution to equipment.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this ChemAlert report is provided as a guide only. Factors such as 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: 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 ChemAlert 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
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
mg/m^3	Milligrams per Cubic Metre
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
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
TLV	Threshold Limit Value
TWA/OEL	Time Weighted Average or Occupational Exposure Limit

Revision History

Revision	Description
1.0	Standard SDS Review.

Report Status

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

It is based on information concerning the product which has been provided to RMT by the manufacturer 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.

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