BOC
A Member of The Linde Group

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **RECLAIMED SULPHUR HEXAFLUORIDE**

Synonym(s) PRODUCT CODE: 266 • RECLAIMED SF6 • RECOVERED SULFUR HEXAFLUORIDE (FORMERLY) • USED SULFUR HEXAFLUORIDE FROM ELECTRICAL INSTALLATIONS

1.2 Uses and uses advised against

Use(s) GAS

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 number(s)

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

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s)
Skin Corrosion/Irritation: Category 1B
Gases Under Pressure: Liquefied gas
Acute Toxicity: Inhalation: Category 3
Acute Toxicity: Oral: Category 3
Acute Toxicity: Skin: Category 2

2.2 Label elements

Signal word **DANGER**

Pictogram(s)

Hazard statement(s)

H280	Contains gas under pressure; may explode if heated.
H301	Toxic if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H331	Toxic if inhaled.

Prevention statement(s)

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P262	Do not get in eyes, on skin, or on clothing.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P350	IF ON SKIN: Gently wash with plenty of soap and water.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P321	Specific treatment is advised - see first aid instructions.
P363	Wash contaminated clothing before reuse.

Storage statement(s)

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P410 + P403	Protect from sunlight. Store in a well-ventilated place.

Disposal statement(s)

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

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content (v/v)
SULPHUR HEXAFLUORIDE	2551-62-4	219-854-2	>95%
HYDROFLUORIC ACID	7664-39-3	231-634-8	<3%
THIONYL DIFLUORIDE	7783-42-8	231-997-2	<2%

4. FIRST AID MEASURES

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. Urgently seek eye specialist attention while continuing irrigation. Calcium gluconate gel may be applied to eyes if medical attention is delayed.

Inhalation If inhaled, remove from contaminated area. Remove contaminated clothing and check there is no obstruction to the airway. If breathing is weak or has ceased, give artificial respiration; preferably using an oxygen resuscitator. In all cases summon ambulance and transport to hospital for further observation. Four effervescent calcium gluconate tablets 600 mg should be given by mouth every 2 hours until the patient is admitted to hospital. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor.

Skin If skin or hair contact occurs, flush affected area with copious quantities of water. Use an emergency shower for large areas. Remove affected clothing as quickly as possible. Irrigate with tap or tepid water for 15 to 30 minutes. Do not apply chemical neutralisers. Apply sterile dressing and treat as thermal burn. Immerse large areas or limbs in tap water or tepid water for 15 to 30 minutes. Apply 10% Calcium gluconate gel to burn site. Urgently transport to hospital and recommend admission. Continue skin irrigation for up to 2 hours. Observe for symptoms of shock in severe cases.

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

First aid facilities Emergency shower and eye wash basin. Calcium gluconate gel and effervescent 600 mg tablets should also be available. Rescue personnel should use self contained breathing apparatus and a full chemical suit or full cover overalls. Air-VivaTM or Oxy-VivaTM. Water or sterile saline solution for irrigation.

4.2 Most important symptoms and effects, both acute and delayed

Gas and liquid causes severe skin burns and eye damage. Extremely corrosive to the upper and lower respiratory tracts. Onset of severe symptoms may be delayed for up to 48 hours. Initial symptoms of coughing, choking and chills lasting from 1 to 3 hours followed by symptom-free period and then onset of fever, coughing, cyanosis and pulmonary oedema. Direct contact with the liquefied material or escaping compressed gas may cause frostbite injury.

4.3 Immediate medical attention and special treatment needed

Treatment for pulmonary oedema, cold and hydrofluoric acid burns. Calcium gluconate gel is useful and may be reapplied every 15 minutes. Also the intra-cutaneous injection of a 10% solution of calcium gluconate into and around the burn. Replacement of serum electrolytes in burns involving skin areas greater than 160 cm2 is recommended. Injection of corticosteroids under and around the lesion is useful.

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) when heated to decomposition. May evolve flammable hydrogen gas in contact with some metals.

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. Do not approach cylinders or containers suspected of being hot. Remove cool cylinders from the path of the fire. Evacuate area if unable to keep cylinders cool.

5.4 Hazchem code

2XE

2	Fine Water Spray.
X	Wear liquid-tight chemical protective clothing and breathing apparatus. Contain 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 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 use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Fluorides, (as F)	SWA (AUS)	--	2.5	--	--
Fluorides, as F	SWA (AUS)	--	2.5	--	--
Hydrofluoric Acid	SWA (AUS)	3	2.6	--	--
Sulphur hexafluoride	SWA (AUS)	1000	5970	--	--

Biological limits

Ingredient	Determinant	Sampling Time	BEI
SULPHUR HEXAFLUORIDE	Fluoride in urine	Prior to shift	2 mg/L
	Fluoride in urine	End of shift	3 mg/L
THIONYL DIFLUORIDE	Fluoride in urine	Prior to shift	2 mg/L
	Fluoride in urine	End of shift	3 mg/L

Reference: ACGIH Biological Exposure Indices

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 rubber gloves.

Body Wear coveralls and safety boots.

Respiratory Wear a Full-face Type B (Inorganic and Acid gas) respirator. 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 LIQUEFIED GAS
Odour	PUNGENT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	-63.8°C
Melting point	-50.8°C
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	5.1 (Air = 1)
Specific gravity	NOT APPLICABLE
Solubility (water)	SLIGHTLY SOLUBLE
Vapour pressure	21.4 bar @ 20°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 %

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 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), alkalis (e.g. sodium hydroxide) and metals.

10.6 Hazardous decomposition products

May evolve toxic gases (fluorides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Information available for the product:

Fatal in contact with skin. Toxic if inhaled and if swallowed. Extremely corrosive to eyes, skin and the upper and lower respiratory tracts. Excessive irritation of the lungs causes acute pneumonitis and pulmonary oedema that can be fatal.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
HYDROFLUORIC ACID	--	--	342 ppm/1 hour

Skin Corrosive. Irritating and corrosive in contact with skin. Skin burns exhibit severe pain, redness, possible swelling and early necrosis.

Eye Causes severe burns. Contact may result in irritation, lacrimation, pain, redness and corneal burns with possible permanent eye damage.

Sensitization 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 Corrosive - toxic. Over exposure may result in irritation of the nose and throat, coughing and shortness of breath (dyspnoea). High level exposure may result in ulceration of the respiratory tract, lung tissue damage and pulmonary oedema. Effects may be delayed.

STOT – repeated exposure Chronic exposure has been associated with fluorosis, malaise, anemia, leukopenia, discoloration of teeth, osteosclerosis, hyperostosis, and liver or kidney damage.

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

Hazardous to the environment. ATMOSPHERE: Hydrofluoric acid will settle to the ground or be removed by precipitation. SOIL: Retention depends on pH. A high calcium content will immobilise fluorides which can be damaging to plants. WATER: In water, any natural alkalinity will slowly dissipate the acidity. BIOLOGICAL: Highly toxic to aquatic life. Toxic to plants above 0.1 ppm.

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	3308	3308	3308
14.2 Proper Shipping Name	LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S. (Contains hydrofluoric acid)	LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S. (Contains hydrofluoric acid)	LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S. (Contains hydrofluoric acid)
14.3 Transport hazard classes	2.3, 8	2.3, 8	2.3, 8
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 2XE

GTEPG 2C2

EMS F-C, S-U

Other information Ensure cylinder is separated from driver and foodstuffs.

15. REGULATORY INFORMATION

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

Poison schedule Classified as a Schedule 7 (S7) 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

C	Corrosive
T	Toxic
T+	Very toxic

Risk phrases

R23/25	Toxic by inhalation and if swallowed.
R27	Very toxic in contact with skin.
R34	Causes burns.

Safety phrases	S7/9	Keep container tightly closed and in a well ventilated place.
	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
	S36/37	Wear suitable protective clothing and gloves.
	S45	In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

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 withdrawal: 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 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
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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