MATERIAL SAFETY DATA SHEET

SULPHUR DIOXIDE

(Please ensure that this MSDS is received by an appropriate person)

Date: June 2017 Version1

Ref no.: MSNIG024

1 PRODUCT AND COMPANY IDENTIFICATION

Product Names	SULPHUR DIOXIDE
Synonym	Sulfurous Acid Anhydride
Chemical Formula	SO_2
Trade Name	Sulphur Dioxide
Colour coding	Brunswick green (H.O7) body with a Golden yellow (B49) shoulder Valve CGA 240 – Steel 3/8 inch 18 NGT right hand female
Company Identification	BOC Gases Nigeria Plc Block H Plot 1-3 Apapa Oshodi Expressway Oshodi, Lagos, Nigeria Tel No: +234 (01) 3429178
Emergency Number	**+234(0)8076411479 (24 hours)**

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Sulphur Dioxide
Chemical Family	Inorganic, acidic gas
CAS No.	7446-09-5
UN No.	1079
ERG No.	125
Hazchem Warning	Toxic and corrosive gas

3 HAZARDS IDENTIFICATION

Main Hazards

All cylinders are portable gas containers, and must be regarded as pressure vessels at all times. Sulphur dioxide is a highly irritating gas; it readily elicits respiratory reflexes. It is intensely irritating to the eyes, throat, and respiratory tract.

Adverse Health effects

Inhalation of this gas in concentrations of 8-12ppm in air causes throat irritation, coughing, constriction of the chest, lachrimation, and smarting of the eyes. A concentration of 150 ppm can be endured only a few minutes, because of eye irritation and the effect on the membranes of the nose, throat and lungs. Exposure to a concentration of 500 ppm by volume in air for a few minutes is very dangerous.

Chemical hazards

Sulphur dioxide dissolves in water forming sulphurous acid, which is unstable toward heat. In many of its reactions, sulphur dioxide behaves as a reducing agent.

Biological Hazards

Liquid Sulphur dioxide may cause skin and eye burns upon contact with these tissues, which results from the freezing effect of the liquid on the skin or eyes. Low (1%) concentrations of the vapour are irritating to moist skin within a period of 3 minutes.

Vapour Inhalation

Acute exposure through inhalation may result in dryness and irritation of the nose and throat, choking, sneezing, coughing, and bronchospasm. Severe overexposure may cause death through systemic acidosis, from pulmonary oedema, or from respiratory arrest.

Eye Contact

Corneal burns, opacification of the cornea, and blindness may result if liquid Sulphur dioxide is splashed in the eyes. Sulphur dioxide can penetrate the intact cornea and cause iritis.

Skin Contact

Liquid sulphur dioxide can cause frostbite and skin burns, and it converts to sulphurous acid in moist environments, which may cause skin irritation.

Ingestion

Severe burns to the mouth, throat, and gastrointestinal system may occur.

4 FIRST AID MEASURES

Move victims of sulphur dioxide inhalation to fresh air. If breathing has ceased, begin artificial respiration immediately. Administer oxygen if exposure has been severe and breathing is difficult. Skin exposure first aid treatment includes flushing the contaminated skin with copious amounts of water, and continuing as required in order to control burning sensation. Medical attention should be sought if irritation persists, or if skin is broken or blistered. In the event of eye contact, flush eyes immediately with copious amounts of water for at least 15 minutes. Eyelids should be held apart to ensure complete irrigation. Seek medical attention immediately.

5 FIRE FIGHTING MEASURES

Extinguishing Media

As sulphur dioxide is non-flammable, the correct extinguishing media should be used for the surrounding fire.

Specific Hazards

Water should never be sprayed at or into a tank or system which is leaking sulphur dioxide. The presence of water causes sulphur dioxide to be very corrosive, and water directed into a tank would also increase the venting rate.

Emergency Actions

A sulphur dioxide container exposed to a fire should be removed. If for any reason it cannot be removed, the container should be kept cool with a water spray until well after the fire is out. Fire fighting personnel should be equipped with protective clothing and respiratory equipment. CONTACT THE NEAREST AFROX BRANCH.

Protective Clothing

Exposed fire fighters should wear approved self- contained breathing apparatus with full face mask.

Environmental Precautions

When sulphur dioxide is released to the environment, the appropriate regulatory agency should be notified. In the event of a release however, provincial, municipal, and/or local reporting regulations must be complied with. It is most important that the response groups in the area affected be notified as quickly as possible.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions

It is essential that every facility handling sulphur dioxide has an emergency plan outlining the actions that employees should take in case of specific emergencies. These actions should include alerting fellow employees and area emergency control groups of the nature and extent of the emergency. The plan should also include co-ordination procedures with area emergency control groups in the event of a major release. If, despite all precautions, persons should become trapped in a sulphur dioxide atmosphere, they should breathe as little as possible and open their eyes only when necessary. Partial protection may be gained by holding a wet cloth over the nose and mouth.

Environmental Precautions

Only personnel trained for and designated to handle emergencies should attempt to stop a leak. Respiratory equipment of a type suitable for sulphur dioxide must be worn. All persons not so equipped must leave the affected area until the leak has been stopped.

Small spills

If sulphur dioxide is released, the irritating effect of the vapour will force personnel to leave the area long before they have been exposed to dangerous concentrations. Sulphur dioxide is fairly soluble in cool water and therefore the vapour concentration can be reduced by the use of spray or fog nozzles. If disposal of sulphur dioxide becomes necessary, such as from a leaking container or vessel, it can be vented into a lime or caustic soda solution. The resulting salt solution should be taken to a plant treating unit for neutralisation and disposal.

Large spills

See “Personal Precautions” above.

7 HANDLING AND STORAGE

Sulphur dioxide should be handled only in a well-ventilated area, preferably a hood with forced ventilation. Personnel handling sulphur dioxide should wear chemical safety goggles and/or plastic face shields, approved safety shoes, and rubber gloves. Additional gas masks, air-line gas masks, and self-contained breathing apparatus should be conveniently located for use in emergencies. Instant-acting safety showers should be available in convenient locations. Cylinders should always be transported in the upright position, with the valve uppermost, and be firmly secured. Use the “first in - first out” inventory system to prevent full cylinders from being stored for excessive periods of time. Compliance with all relevant legislation is essential. Keep away from children.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure hazards

Prolonged or repeated exposure may cause impaired lung function, bronchitis, hacking cough, nasal irritation and discharge, increased fatigue, alteration in the sense of taste and smell, and longer duration of common colds.

TLV	2 ppm
STEL	(15 minutes) 5 ppm
IDLH	100 ppm

Engineering control measures

Engineering control measures are preferred to reduce exposures. General methods include mechanical ventilation, process or personal enclosure, and control of process conditions. Administrative controls and personal protective equipment may also be required

.

Personal protection

Use an approved gas mask or self contained breathing apparatus when entering a sulphur dioxide contaminated area.

Eyes

Wear a chemical safety goggle or full face shield when handling cylinders.

Hands

Wear suitable protective gloves when handling cylinders.

Feet

Wear protective foot wear when working with cylinders.

Skin

Wear suitable protective clothing to prevent the gas from coming into direct contact with skin.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Chemical Symbol	SO_2
Molecular Weight	64,063
Specific volume	@ 20°C & 101,325 kPa 366.9 ml/g
Relative density of gas	@ 101,325 kPa (Air = 1) 2,263
Boiling point	@ 101,325 kPa - 10°C
Colour	None
Taste	Acidic
	Odour Pungent, Sulphurous

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10 STABILITY AND REACTIVITY

Conditions to avoid

Overheating of cylinders. Never use cylinders as rollers or supports; or for any other purpose than the storage of sulphur dioxide.

Incompatible Material

Moist sulphur dioxide is corrosive to carbon steel; therefore, other materials of construction have to be considered in this case.

Hazardous Decomposition Products

Sulphur dioxide is not flammable, or explosive, in either the gaseous or liquid state. It is a relatively stable chemical. Temperatures above 2000ºC are required to bring about detectable decomposition of sulphur dioxide.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity

In extreme cases, dental cavities, loss of fillings, gum disorders, and the rapid and painless destruction of teeth may result from repeated overexposure. See section 3.

Skin & eye contact

See Section 3

Chronic Toxicity

See Section 3

Carcinogenicity

No known effect

Mutagenicity

No known effect

Reproductive Hazards

No known effect

12 ECOLOGICAL INFORMATION

Environment

Poses a severe hazard to the ecology in the form of “acid rain”.

13 DISPOSAL CONSIDERATIONS

Disposal Methods

Due to the complexity and scope of sulphur dioxide disposal procedures, care must be taken to ensure that all existing regulations are complied with. For more detailed information or guidance. CONTACT THE NEAREST BOC BRANCH.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

UN No.	1079
Class	2.3
Subsidiary risk	Toxic and corrosive gas
ERG No	125
Hazchem warning	Toxic and corrosive gas

SEA TRANSPORTATION

IMDG 1079
Class 2.3
Label Toxic gas

AIR TRANSPORTATION

ICAO/IATA Code	1079
Class	2.3
Subsidiary risk	Toxic and corrosive gas

Packaging instructions

- Cargo 200
- Passenger Forbidden

Maximum quantity allowed

- Cargo 25 kg
- Passengers forbidden

15 REGULATORY INFORMATION

Reference standard: SANS 10234 and supplement
National legislation: OHSAct and Regulation (85 of 1993

16 OTHER INFORMATION

SANS 10234-Globally Harmonized System of Classification and Labelling of Chemicals and Matheson Gas data book

EXCLUSION OF LIABILITY

Information contained in this publication is accurate at the date of publication. The company does not accept liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.

BOC Gases Nigeria Plc
Block H, Plot 1-3 Apapa Oshodi Expressway,
PMB 1053 Oshodi, Lagos
Tel: 01-3429179, Email: Nigeria.customer.service@boc.com