2.3 : Toxic gas.

8 : Corrosive substance.

Danger

SECTION 1. Identification of the substance/mixture and of the company/undertaking

Product identifier

Trade name : Sulphur dioxide

SDS Nr : ALSA113

Chemical description : Sulphur dioxide
CAS No :007446-09-5
EC No :231-195-2
Index No :016-011-00-9

Registration-No. : Registration deadline not expired.

Chemical formula : SO_2

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use.
Laboratory use Chemical reaction / Synthesis.
Contact supplier for more uses information

Details of the supplier of the safety data sheet

Company identification : AIR LIQUIDE (PTY) LTD
Crn Vereeniging Road & Andre Marais Street
Alrode, Alberton
Gauteng SOUTH AFRICA
Tel. : +27 87 288 1100

E-Mail address (competent person) : scr.sales@airliquide.com

Emergency telephone number

Emergency telephone number : +27 87 288 1100

SECTION 2. Hazards identification

Classification of the substance or mixture

Hazard Class and Category Code Regulation EC 1272/2008 (CLP)

• Health hazards : Acute toxicity, Inhalation - Category 3 - Danger - (CLP : Acute Tox. 3) - H331
Skin corrosion - Category 1B - Danger - (CLP : Skin Corr. 1B) - H314
Corrosive to respiratory tract - (CLP : EUH071)

• Physical hazards : Gases under pressure - Liquefied gas - Warning - (CLP : Press. Gas) - H280

Classification EC 67/548 or EC 1999/45

: T; R23
C; R34

Label elements

Labelling Regulation EC 1272/2008 (CLP)

SECTION 2. Hazards identification (continued)

• Hazard pictograms

• Hazard pictograms code : GHS06 - GHS05 - GHS04

• Signal word : Danger

• Hazard statements : H331 - Toxic if inhaled.
H314 - Causes severe skin burns and eye damage.
H280 - Contains gas under pressure; may explode if heated.

• Supplemental hazard information : EUH071 - Corrosive to respiratory tract.

• Precautionary statements

- Prevention : P260 - Do not breathe gas, vapours.
P280 - Wear protective gloves, protective clothing, eye protection, face protection.

- Response : P304+P340+P315 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention.
P303+P361+P353+P315 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Get immediate medical advice / attention.
P305+P351+P338+P315 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice / attention.

- Storage : P405 - Store locked up.
P403 - Store in a well-ventilated place.

Other hazards

: None.

SECTION 3. Composition/information on ingredients

Substance / 3.2. Mixture

Substance.

Substance name		Contents	CAS No	EC No	Index No	Registration no	Classification
Sulphur dioxide	:	100 %	7446-09-5	231-195-2	016-011-00-9	* 2	T; R23 C; R34 --- Acute Tox. 3 (H331) Skin Corr. 1B (H314) Liq. Gas (H280) EUH071

Contains no other components or impurities which will influence the classification of the product.
* 1: Listed in Annex IV / V REACH, exempted from registration.
* 2: Registration deadline not expired.
* 3: Registration not required: Substance manufactured or imported < 1t/y
Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16

SECTION 4. First aid measures

Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

- Skin contact : Remove contaminated clothing. Drench affected area with water for at least 15 minutes.

- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.

- Ingestion : Ingestion is not considered a potential route of exposure.

Most important symptoms and effects, both acute and delayed

: May cause severe chemical burns to skin and cornea. Suitable first-aid treatment should be immediately available. Seek medical advice before using product.
Refer to section 11.

SECTION 4. First aid measures (continued)

Indication of any immediate medical attention and special treatment needed

: Treat with corticosteroid spray as soon as possible after inhalation
Obtain medical assistance.

SECTION 5. Fire-fighting measures

Extinguishing media

Extinguishing media

- Suitable extinguishing media : All known extinguishants can be used.

Special hazards arising from the substance or mixture

Specific hazards : Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : None.

Advice for fire-fighters

Specific methods : If possible, stop flow of product.
Coordinate fire measure to the surrounding fire. Cool endangered containers with water spray jet from a protected position. Do not empty contaminated fire water into drains.

Special protective equipment for fire fighters : Use self-contained breathing apparatus and chemically protective clothing.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

: Evacuate area.
Use self-contained breathing apparatus and chemically protective clothing.
Monitor concentration of released product.
Try to stop release.
Ensure adequate air ventilation.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Environmental precautions

: Try to stop release.
Reduce vapour with fog or fine water spray.

Methods and material for containment and cleaning up

: Ventilate area.
Hose down area with water.
Wash contaminated equipment or sites of leaks with copious quantities of water.

Reference to other sections

: See also sections 8 and 13.

SECTION 7. Handling and storage

Precautions for safe handling

Safe use of the product : Only experienced and properly instructed persons should handle gases under pressure.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Avoid exposure, obtain special instructions before use.
Do not smoke while handling product.
Ensure the complete gas system was (or is regularily) checked for leaks before use.
Installation of a cross purge assembly between the cylinder and the regulator is recommended.
Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when

SECTION 7. Handling and storage (continued)

system is placed out of service.
Avoid suck back of water, acid and alkalis.

Safe handling of the gas receptacle : Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminates particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

Conditions for safe storage, including any incompatibilities

: Keep container below 50°C in a well ventilated place.
Observe all regulations and local requirements regarding storage of containers. Containers should be stored in the vertical position and properly secured to prevent toppling. Stored containers should be periodically checked for general condition and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.
Containers should not be stored in conditions likely to encourage corrosion.

Specific end use(s)

: None.

SECTION 8. Exposure controls/personal protection

Control parameters

Occupational Exposure Limits : Sulphur dioxide : TLV© -TWA [ppm] : 2
Sulphur dioxide : TLV© -STEL [ppm] : 5

DNEL: Derived no effect level : None available.

PNEC: Predicted no effect concentration : None available.

Exposure controls

Appropriate engineering controls : Product to be handled in a closed system.
Ensure exposure is below occupational exposure limits (where available).
Consider work permit system e.g. for maintenance activities.
Preferably use only permanent leak-tight installations (e.g. welded pipes).
Systems under pressure shoud be regularly checked for leakages.
Provide adequate general and local exhaust ventilation.
Alarm detectors should be used when toxic gases may be released.

Individual protection measures, e.g. personal protective equipment : A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.
The following recommendations should be considered.
Keep suitable chemically resistant protective clothing readily available for emergency use.
Keep self contained breathing apparatus readily available for emergency use.
Protect eyes, face and skin from liquid splashes.
Wear leather safety gloves and safety shoes when handling cylinders.
Wear safety glasses with side shields
Wear goggles and a face shield when transfilling or breaking transfer connections

SECTION 8. Exposure controls/personal protection (continued)

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa	: Gas.
- Colour	: Colourless.
Odour	: Pungent.
Odour threshold	: Odour threshold is subjective and inadequate to warn for overexposure.
pH value	: If dissolved in water pH-value will be affected.
Molar mass [g/mol]	: 64
Melting point [°C]	: -75.5
Boiling point [°C]	: -10
Critical temperature [°C]	: 158
Flash point [°C]	: Not applicable for gases and gas-mixtures.
Evaporation rate (ether=1)	: Not applicable for gases and gas-mixtures.
Flammability range [vol% in air]	: Non flammable.
Vapour pressure [20°C]	: 3.3 bar
Relative density, gas (air=1)	: 2.3
Relative density, liquid (water=1)	: 1.5
Solubility in water [mg/l]	: Completely soluble.
Partition coefficient n-octanol/water	: Not applicable for inorganic gases.
Auto-ignition temperature [°C]	: Not applicable.

Other information

Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10. Stability and reactivity

Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

Chemical stability

: Stable under normal conditions.

Possibility of hazardous reactions

: None.

Conditions to avoid

: Avoid moisture in installation systems.

Incompatible materials

: Reacts with water to form corrosive acids.
May react violently with alkalis.
Reacts with most metals in the presence of moisture, liberating hydrogen, an extremely flammable gas.
With water causes rapid corrosion of some metals. Moisture.
For additional information on compatibility refer to ISO 11114

Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 10. Stability and reactivity (continued)

SECTION 11. Toxicological information

Information on toxicological effects

Acute toxicity	: Delayed fatal pulmonary oedema possible.
Rat inhalation LC50 [ppm/4h]	: 1260
Skin corrosion/irritation	: Severe corrosion to skin at high concentrations.
Serious eye damage/irritation	: Severe corrosion to the eyes at high concentrations.
Respiratory or skin sensitisation	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Reproductive toxicity	: No known effects from this product.
STOT-single exposure	: Severe corrosion to the respiratory tract at high concentrations.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas-mixtures.

SECTION 12. Ecological information

Toxicity

: No data available.

Persistence - degradability

: No data available.

Bioaccumulative potential

: No data available.

Mobility in soil

: No data available.

Results of PBT and vPvB assessment

: No data available.

Other adverse effects

: May cause pH changes in aqueous ecological systems.

Effect on ozone layer	: None.
Effect on the global warming	: No known effects from this product.

SECTION 13. Disposal considerations

Waste treatment methods

: Must not be discharged to atmosphere.
Gas may be scrubbed in alkaline solution under controlled conditions to avoid violent reaction.
Refer to the code of practice of EIGA (Doc. 30/10 “Disposal of Gases, downloadable at http://www.eiga.org) for more guidance on suitable disposal methods

Additional information

: None.

SECTION 14. Transport information

UN number : 1079

Labelling ADR, IMDG, IATA

: 8 : Corrosive substance.
2.3 : Toxic gas.

Land transport (ADR/RID)

H.I. nr : 268
UN proper shipping name : SULPHUR DIOXIDE
Transport hazard class(es) : 2
Classification code : 2 TC
Packing Instruction(s) : P200
Tunnel Restriction : C/D : Passage forbidden through tunnels of category C when carried in tanks. Passage forbidden through tunnels of category D and E.
Environmental hazards : None.

Sea transport (IMDG)

Proper shipping name : SULPHUR DIOXIDE
Class : 2.3
Packing group : P200
Emergency Schedule (EmS) - Fire : F-C
Emergency Schedule (EmS) - Spillage : S-U
Packing instruction : P200

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : SULPHUR DIOXIDE
Class : 2.3
Passenger and Cargo Aircraft : DO NOT LOAD IN PASSENGER AIRCRAFT.
Cargo Aircraft only : FORBIDDEN.

Special precautions for user

: 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 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.
- Ensure there is adequate ventilation.

SECTION 15. Regulatory information

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

EU legislation

Restrictions on use : None.
Seveso directive 96/82/EC : Covered

National legislation

: Ensure all national/local regulations are observed.

Chemical Safety Assessment

SECTION 15. Regulatory information (continued)

: This product is either exempt from REACH, does not meet the minimum volume threshold for a CSR or the CSA has not yet been carried out.

SECTION 16. Other information

Indication of changes : Revised safety data sheet in accordance with commisssion regulation (EU) No 453/2010

List of full text of R-phrases in section 3. : R23 : Toxic by inhalation.
R34 : Causes burns.

List of full text of H-statements in section 3. : EUH071 - Corrosive to respiratory tract.
H280 - Contains gas under pressure; may explode if heated.
H314 - Causes severe skin burns and eye damage.
H331 - Toxic if inhaled.

Note : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.

DISCLAIMER OF LIABILITY : Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.
Details given in this document are believed to be correct at the time of going to press. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

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