Sulphur dioxide

AL013

Danger

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

1.1. Product identifier

Trade name : Sulphur dioxide
SDS Nr : AL013
Chemical formula : SO2

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

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use.
Test gas / Calibration gas. Laboratory use Contact supplier for more uses information

Use : Chemical reagent. Food preservative. Paper industry. Water treatment.

1.3. Details of the supplier of the safety data sheet

Company identification : Air Liquide Australia Limited
Level 9 / 380 St. Kilda Road
Melbourne VIC 3004 Australia
Tel: + 61 3 9697 9888
Fax: + 61 3 9690 7107
ALAEnquiries@AirLiquide.com

1.4. Emergency telephone number

Emergency telephone number : 1800 812 588

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

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

R Phrase(s) : R23 : Toxic by inhalation. - R34 : Causes burns.

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

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

Classification EC 67/548 or EC 1999/45

: T; R23
C; R34

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

• Hazard pictograms

• Hazard pictograms code : GHS06 - GHS05 - GHS04

• Signal word : Danger

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

• Supplemental hazard information : Asphyxiant in high concentrations.
EUH071 - Corrosive to respiratory tract.

SECTION 2. Hazards identification (continued)

• 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.
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.
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.

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

2.3. Other hazards

: Asphyxiant in high concentrations.
Corrosive to respiratory tract.

SECTION 3. Composition/information on ingredients

3.1. Substance / 3.2. Mixture

Substance.

Substance name		Contents	CAS No	EC No	Annex 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

4.1. Description of first aid measures

First aid measures

- Inhalation : Toxic if inhaled.
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/eye contact : May cause chemical burns to skin and cornea (with temporary disturbance to vision).
Immediately flush eyes thoroughly with water for at least 15 minutes.
Remove contaminated clothing. Drench affected area with water for at least 15 minutes.
Obtain medical assistance.

- Skin contact : Adverse effects not expected from this product.

- Eye contact : Adverse effects not expected from this product.

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

4.2. Most important symptoms and effects, both acute and delayed

: Irritation to the respiratory tract.
Refer to section 11.
Refer to section 11.
Corrosive to respiratory tract.

4.3. Indication of any immediate medical attention and special treatment needed

SECTION 4. First aid measures (continued)

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

SECTION 5. Fire-fighting measures

5.1. Extinguishing media

Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

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

Hazardous combustion products : None.

5.3. 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.
Move away from the container and cool with water from a protected position.

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

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Try to stop release.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Ensure adequate air ventilation.
Monitor concentration of released product.

Personal precautions : Evacuate area.
Use self-contained breathing apparatus and chemically protective clothing.
Ensure adequate air ventilation.

6.2. Environmental precautions

: None.
Try to stop release.

: Try to stop release.
Reduce vapour with fog or fine water spray.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3. Methods and material for containment and cleaning up

: None.

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

6.4. Reference to other sections

: See also sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Safe use of the product : Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
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.
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 system is placed out of service.

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.

Handling : Refer to supplier's container handling instructions.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Do not allow backfeed into the container.
Suck back of water into the container must be prevented.

7.2. Conditions for safe storage, including any incompatibilities

: Keep container below 50°C in a well ventilated pla ce.
Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
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.

Storage : Keep container below 50°C in a well ventilated pla ce.

7.3. Specific end use(s)

: None.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Sulphur dioxide

: Value 15min. (CZ) [mg/m3] : 10
: Value 8h (CZ) [mg/m3] : 5
: LTEL - UK [ppm] : 2
: STEL - UK [ppm] : 5
: MAK (AU) Tagesmittelwert (ml/m³) : 2
: MAK (AU) Tagesmittelwert (mg/m³) : 5
: MAK (AU) Kurzzeitwerte (mg/m³) : 10
: MAK (AU) Kurzzeitwerte (ml/m³) : 4
: Tentativ Grænserværdi (DK) (ppm) : 2.6
: Grænserværdier (DK) (ppm) : 1.3
: TLV© -TWA [ppm] : 2
: TLV© -STEL [ppm] : 5
: VLE - France [mg/m³] : 10
: VLE - France [ppm] : 5
: VME - France [mg/m³] : 5
: VME - France [ppm] : 2
: AGW (8h) - Germany [mg/m³] TRGS 900 : 0.5
: AGW (8h) - Germany [ppm] TRGS 900 : 1.3
: Exceeding factor AGW - Germany TRGS 900 : 1
: VLA-ED - Spain [ppm] : 2
: VLA-ED - Spain [mg/m3] : 5.3
: VLA-EC - Spain [ppm] : 5
: VLA-EC - Spain [mg/m3] : 13
: NGV - [ppm] : 2
: NGV - [mg/m³] : 5
: TGV - [mg/m³] : 13
: TGV - [ppm] : 5
: Grænserværdier (DK) (ppm) : 0.5
: HTP-värden (FI) - 8 H - [ppm] : 1
: HTP-värden (FI) - 8 H - [mg/m³] : 2.7
: HTP-värden - 15min - [ppm] : 4
: Grænserværdier (DK) : 1.3
: HTP-värden - 15min - [mg/m³] : 11
: GV Value Limit (Norway) [ppm] : 2
: GV Value Limit (Norway) [mg/m³] : 5
: 8-Hour TWA (PL) (NDS) (mg/m³) : 2
: 15-Minute STEL (PL)(NDSCh) (mg/m³) : 5
: TLV-TWA (Belgium) (ppm) : 2
: TLV-STEL (Belgium) (ppm) : 5

DNEL: Derived no effect level

: None available.
None available.

PNEC: Predicted no effect concentration

: None available.
None available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

: Systems under pressure shoud be regularily checked for leakages.
Alarm detectors should be used when toxic gases may be released.
Ensure exposure is below occupational exposure limits (where available).
Provide adequate general and local exhaust ventilation.
Consider work permit system e.g. for maintenance activities.

SECTION 8. Exposure controls/personal protection (continued)

8.2.2. 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.
Wear safety glasses with side shields
Wear leather safety gloves and safety shoes when handling cylinders.
Keep suitable chemically resistant protective clothing readily available for emergency use.
Keep self contained breathing apparatus readily available for emergency use.
Ensure adequate ventilation.

Personal protection : Keep suitable chemically resistant protective clothing readily available for emergency use.
Keep self contained breathing apparatus readily available for emergency use.
Do not smoke while handling product.
Ensure adequate ventilation.
Protect eyes, face and skin from liquid splashes.

8.2.3. 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

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20℃ / 101.3kPa : Gas.

- Colour : Colourless gas.

Odour : Pungent.

Odour threshold : Odour threshold is subjective and inadequate to warn for overexposure.

pH value : Not applicable for gas-mixtures.

Molar mass [g/mol] : Not applicable for gases and gas-mixtures.

Melting point [℃] : -75.5

Boiling point [℃] : -10

Critical temperature [℃] : 158

Flash point [℃] : Not applicable for gas-mixtures.

Evaporation rate (ether=1) : Not applicable for gas-mixtures.

Flammability range [vol% in air] : Non flammable.

Vapour pressure [20℃] : 3.3 bar

Relative density, gas (air=1) : 2.3

Relative density, liquid (water=1) : 1.5

Solubility in water [mg/l] : Hydrolyses.

Partition coefficient n-octanol/water : Not applicable for gas-mixtures.

Auto-ignition temperature [℃] : Not applicable.

Viscosity at 20℃ [mPa.s] : Not applicable.

Explosive Properties : Not applicable.

9.2. Other information

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

Molecular weight : 64

SECTION 10. Stability and reactivity

10.1. Reactivity

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

Stability and reactivity : 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.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: May react violently with alkalis.
Reacts with water.

10.4. Conditions to avoid

: Avoid moisture in installation systems.

10.5. Incompatible materials

: May react violently with alkalis.

10.6. Hazardous decomposition products

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

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Toxicity information : Severe corrosion to skin, eyes and respiratory tract at high concentrations.
Delayed fatal pulmonary oedema possible.

Acute toxicity : No known toxicological effects from this product.

Rat inhalation LC50 [ppm/4h] : • Sulphur dioxide : 1260

LC50 [ppm/1h] : 2520

Skin corrosion/irritation : No known effects from this product.

Serious eye damage/irritation : No known effects from this product.

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.

Toxic for reproduction : Fertility : No known effects from this product.

Toxic for reproduction : unborn child : No known effects from this product.

STOT-single exposure : Irritation to the respiratory tract.
Corrosive to respiratory tract.

STOT-repeated exposure : No known effects from this product.

Aspiration hazard : Not applicable for gases and gas-mixtures.

SECTION 12. Ecological information

12.1. Toxicity

: No data available.

12.2. Persistence - degradability

: No data available.

12.3. Bioaccumulative potential

: No data available.

SECTION 12. Ecological information (continued)

12.4. Mobility in soil

: No data available.

12.5. Results of PBT and vPvB assessment

: No data available.

12.6. Other adverse effects

Ecological effects information : May cause pH changes in aqueous ecological systems.

SECTION 13. Disposal considerations

13.1. Waste treatment methods

: May be vented to atmosphere in a well ventilated place.
Do not discharge into any place where its accumulation could be dangerous.
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
Contact supplier if guidance is required.
Avoid discharge to atmosphere.
Ensure that the emission levels from local regulations or operating permits are not exceeded.

General : Avoid discharge to atmosphere.
Do not discharge into any place where its accumulation could be dangerous.
Gas may be scrubbed in alkaline solution under controlled conditions to avoid violent reaction.
Contact supplier if guidance is required.

13.2. Additional information

: None.

SECTION 14. Transport information

UN number : 1079

Labelling ADR, IMDG, IATA

: 2.3 : Toxic gas.
8 : Corrosive substance.

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.
HAZCHEM - Emergency Action Code : 2RE

: *2 = Fine water spray.*
R = Recommended personal protective equipment : Liquid-tight chemical protective clothing and breathing apparatus. Appropriate measures : dilute.
E = There may be a public safety hazard outside the immediate area of the incident, and that the following actions should be considered :
1. People should be warned to stay indoors with all doors and windows closed, preferably in rooms upstairs and facing away from the incident. Ignition sources should be eliminated and any ventilation stopped.
2. Effects may spread beyond the immediate vicinity. all non-essential personnel should be instructed to move at least 250 metres away from the incident.
3. Police and fire brigade incident commanders should consult each other and with a product expert, or with a source of product expertise.

SECTION 14. Transport information (continued)

4. The possible need for subsequent evacuation should be considered, but it should be remembered that in most cases it will be safer to remain in a building than to evacuate.

Sea transport (IMDG)

Proper shipping name	:	SULPHUR DIOXIDE
Class	:	2.3
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 there is adequate ventilation.
- 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.

Labelling ADR : 2.3 : Toxic gas.
8 : Corrosive substance.

Other transport information : 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.
- Compliance with applicable regulations.

SECTION 15. Regulatory information

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

EU legislation

Seveso directive 96/82/EC : Not covered.

National legislation

: Ensure all national/local regulations are observed.

15.2. Chemical Safety Assessment

: A CSA does not need to be carried out for this product.

SECTION 16. Other information

Indication of changes	:	Revised safety data sheet in accordance with commisssion regulation (EU) No 453/2010
Training advice	:	Ensure operators understand the toxicity hazard. Receptacle under pressure. Users of breathing apparatus must be trained. Receptacle under pressure.
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.
Further information	:	Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD. This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
Note	:	This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
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